

NUCLEAR REGULATORY COMMISSION ISSUANCES

OPINIONS AND DECISIONS OF THE NUCLEAR REGULATORY COMMISSION WITH SELECTED ORDERS

July 1, 1985 - December 31, 1985

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ADMINISTRATIVE LAW JUDGE

Ivan W. Smith

PREFACE

This is the twenty-second volume of issuances (1 - 982) of the Nuclear Regulatory Commission and its Atomic Safety and Licensing Appeal Boards, Atomic Safety and Licensing Boards, and Administrative Law Judge. It covers the period from July 1, 1985 to December 31, 1985.

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

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

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

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

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

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

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Issuance of Denial of Petition for Rulemaking

JOHN L. NANTZ

Docket PRM-50-35

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Nunzio J. Palladino, Chairman
Thomas M. Roberts
James K. Asselstine
Frederick M. Bernthal
Lando W. Zech, Jr.

In the Matter of

Docket Nos. 50-352-OL
50-353-OL

PHILADELPHIA ELECTRIC COMPANY
(Limerick Generating Station,
Units 1 and 2)

July 24, 1985

The Commission reviewed the Limerick Ecology Action's comments on effectiveness of the Second and Third Partial Initial Decisions of the Licensing Board (LBP-84-31, 20 NRC 446 (1984), and LBP-85-14, 21 NRC 1219 (1985)). These comments addressed delegation of issues to the Staff through license conditions, need for local organizations to approve their emergency plans, adequacy of surveys of transport-dependent individuals, possible measures to mitigate severe accidents, and procedural rulings. The Commission also reviewed the Licensing Board decisions *sua sponte*. The Commission determined that neither the comments nor the decisions warranted staying the effectiveness of the decisions. This Memorandum did not affect the Commission's prior determination that questions involving hearing rights of the inmates at the State Correctional Institution at Graterford, Pennsylvania, warrant staying effectiveness of the authorization for issuance of a full-power operating license.

MEMORANDUM

Pending before the Nuclear Regulatory Commission ("NRC" or "Commission") are comments by intervenor Limerick Ecology Action ("LEA") on whether the Commission should make effective the Atomic Safety and Licensing Board's ("Licensing Board") Partial Initial Decisions LBP-84-31, 20 NRC 446 (1984), and LBP-85-14, 21 NRC 1219 (1985), which would constitute part of any decision to authorize the Director, Office of Nuclear Reactor Regulation ("Director") to issue to the applicant Philadelphia Electric Company ("PECo") a full-power license for the Limerick Generating Station ("Limerick").

By a separate Memorandum and Order, CLI-85-11, 21 NRC 1585 (1985), the Commission declined to authorize issuance of a full-power operating license pending further consideration of the hearing rights of one of the parties, the inmates at the State Correctional Institution at Graterford, Pennsylvania.

This Memorandum does not affect that determination. Rather, the purposes of this Memorandum are to advise LEA and the other parties of the Commission's view that: (1) the concerns expressed by LEA do not appear to warrant staying the effectiveness of the Licensing Board's Partial Initial Decisions; and (2) no other aspect of those Partial Initial Decisions appears to warrant a stay of effectiveness.

In conducting an immediate effectiveness review, the Commission applies the criteria in 10 C.F.R. § 2.764(f)(2)(i) to parties' comments to determine whether to stay the effectiveness of a Licensing Board's decision.¹ The Commission has applied these criteria to the comments which LEA has submitted pursuant to § 2.764(f) and, for the reasons stated below, finds nothing in those comments which would warrant staying the effectiveness of the Licensing Board's decisions.

LEA has challenged the following Licensing Board actions: (1) post-hearing verification by the NRC Staff that license conditions on traffic control and staffing needs have been satisfied; (2) the finding of adequate assurance that the radiological emergency response plans will be implemented; (3) the use of survey rather than census data to determine the number of transportation-dependent individuals; (4) the refusal to admit contentions to additional measures to mitigate the consequences

¹ The criteria in § 2.764(f)(1)(i) are:

1. the gravity of the substantive issue;
2. the likelihood that it has been resolved incorrectly below;
3. the degree to which correct resolution of the issue would be prejudiced by operation pending review; and
4. other relevant public interest factors.

of a severe accident; and (5) various procedural rulings on time for cross-examination and consideration of evidence. The Commission has reviewed LEA's comments based on the criteria in § 2.764(f)(2)(i) and finds, for the reasons below, that a stay of effectiveness is not warranted.²

First, LEA contended that its rights to a hearing under § 189a of the Atomic Energy Act were denied by the license conditions imposed by the Licensing Board. Those conditions left to the NRC Staff the responsibility to make post-hearing verifications that post-accident traffic control measures have been implemented and that emergency planning staffing has been accomplished. The Commission's preliminary review of those conditions indicates that areas of concern are quite narrow and are arguably within the scope of matters which can be left to post-hearing verification by the NRC Staff. Therefore, the issues are neither grave nor substantially likely to have been incorrectly resolved by the Licensing Board, and operation pending review will not prejudice further review.

Second, LEA contended that the record does not support a finding of adequate assurance that the radiological emergency response plans will be implemented because some of the local organizations have not adopted the plans. However, LEA acknowledged that formal plan adoption is not required by the NRC's emergency planning regulations. The Licensing Board determined that the plans can be implemented and that the local organizations have agreed that they will implement a plan. Based on our preliminary review we are not prepared to say that the Board was incorrect in its analysis of this issue. Moreover, we believe that operation pending the review will not prejudice further review.

Third, LEA contended that transport-dependent individuals were not adequately identified by survey data. The Licensing Board appears to have adequately explained the adequacy of such data. Therefore, this issue does not appear substantial. Moreover, licensing will not prejudice any appeals of this issue.

Fourth, LEA contended that the Final Environmental Statement for Limerick is incomplete for failure to consider design alternatives to mitigate the risk of severe accidents. This issue does not raise serious safety concerns because the Licensing Board has found that the public's health and safety is adequately protected by the equipment already incorporated into the Limerick facility for mitigating the effects of severe accidents.

²The Commission notes that Atomic Safety and Licensing Appeal Board ("Appeal Board") has reviewed these same issues in denying LEA's stay request pending the resolution of the appeal and determined that LEA did not make a strong showing on any of these arguments. ALAB-808, 21 NRC 1595, 1600 (1985).

Moreover, at oral argument before the Appeal Board, LEA conceded that this issue could be resolved after licensing. Therefore, there is no dispute that even if the Licensing Board's decision is found to be incorrect, correct resolution of the issue would not be prejudiced by operation pending review.

Finally, LEA contended that the Licensing Board made some incorrect procedural rulings. These rulings do not appear to raise grave issues and our preliminary review does not suggest any substantial likelihood that the rulings were incorrect.

LEA has also alleged that a stay would not adversely affect the Applicant because a shortage of cooling water currently would prevent the plant from going to full power; and a stay would not affect the public because sufficient inexpensive electricity is already available. In view of our analysis of the other factors, these arguments do not support a stay.

For the foregoing reasons, the Commission has determined that nothing in LEA's comments would warrant staying the effectiveness of the Licensing Board's Partial Initial Decisions, LBP-84-31 and LBP-85-14. The Commission has also reviewed these decisions *sua sponte* and finds nothing in them which would warrant staying their effectiveness. This conclusion is without prejudice to the Appeal Board's pending review of these issues.

For the Commission

SAMUEL J. CHILK
Secretary of the Commission

Dated at Washington, D.C.,
this 24th day of July 1985.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

**Christine N. Kohl, Chairman
Dr. W. Reed Johnson
Howard A. Wilber**

In the Matter of

Docket No. 50-382-OL

**LOUISIANA POWER & LIGHT
COMPANY
(Waterford Steam Electric Station,
Unit 3)**

July 11, 1985

The Appeal Board denies most of Joint Intervenors' motion to reopen the record in this operating license proceeding on issues of quality assurance and management character and competence and refers the remainder to the Commission, insofar as it raises issues that may relate to matters under investigation by NRC's Office of Investigations. The Appeal Board also denies as moot Joint Intervenors' motion for a protective order.

RULES OF PRACTICE: REOPENING OF RECORD

A successful motion to reopen the record of an adjudicatory proceeding must be timely, address a significant safety or environmental issue, and show that a different result might have been reached had the newly proffered material been considered initially. Bare allegations or the simple submission of new contentions is not enough. *Louisiana Power & Light Co.* (Waterford Steam Electric Station, Unit 3), ALAB-786, 20 NRC 1087, 1089 (1984). *See also Pacific Gas and Electric Co.* (Diablo

Canyon Nuclear Power Plant, Units 1 and 2), CLI-81-5, 13 NRC 361, 363 (1981).

RULES OF PRACTICE: REOPENING OF RECORD (SPECIFICITY)

At a minimum, the new material in support of a motion to reopen must be set forth with a degree of particularity in excess of the basis and specificity requirements contained in 10 C.F.R. § 2.714(b) for admissible contentions. It must be tantamount to evidence and possess the attributes set forth in 10 C.F.R. § 2.743(c) defining admissible evidence for adjudicatory proceedings. Specifically, the new evidence supporting the motion must be relevant, material and reliable. *Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-775, 19 NRC 1361, 1366-67, *aff'd sub nom. San Luis Obispo Mothers for Peace v. NRC*, 751 F.2d 1287 (D.C. Cir. 1984), *vacated in part and reh'g en banc granted on other grounds*, 760 F.2d 1320 (1985). *See also id.* at 1367 n.18.

RULES OF PRACTICE: REOPENING OF RECORD

A motion to reopen that raises previously uncontested issues must also satisfy, in addition to other requirements, the standards for admitting late-filed contentions embodied in 10 C.F.R. § 2.714(a)(1). *Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), CLI-82-39, 16 NRC 1712, 1714-15 (1982).

RULES OF PRACTICE: REOPENING OF RECORD

The burden of satisfying all of the requirements of a motion to reopen that raises previously uncontested issues is a heavy one. *See Kansas Gas and Electric Co.* (Wolf Creek Generating Station, Unit No. 1), ALAB-462, 7 NRC 320, 338 (1978). *See also Metropolitan Edison Co.* (Three Mile Island Nuclear Station, Unit No. 1), CLI-85-7, 21 NRC 1104, 1106 (1985).

ATOMIC ENERGY ACT: SAFETY FINDINGS

Neither the Atomic Energy Act of 1954, as amended, nor the Commission's implementing regulations mandate a demonstration of error-free construction. What they require is simply a finding of reasonable

assurance that, as built, the facility can and will be operated without endangering the public health and safety. 42 U.S.C. §§ 2133(d), 2232(a); 10 C.F.R. § 50.57(a)(3)(i). *See also Union Electric Co.* (Callaway Plant, Unit 1), ALAB-740, 18 NRC 343, 346 (1983).

ADJUDICATORY HEARINGS: SCOPE OF REVIEW

In examining claims of quality assurance deficiencies, one must look to the implication of those deficiencies in terms of safe plant operation. To determine if the requisite reasonable assurance exists, two questions must be addressed: (1) whether all ascertained construction errors have been cured, and (2) even if so, whether there has nonetheless been so pervasive a breakdown in the quality assurance procedures as to raise legitimate doubt about the overall safety of the facility. *Ibid.*

RULES OF PRACTICE: REOPENING OF RECORD

The considerations that must be addressed in examining claims of quality assurance deficiencies — i.e., whether all ascertained construction errors have been cured, and if so, whether there has nonetheless been so pervasive a breakdown in the quality assurance procedures as to raise legitimate doubt about the overall safety of the facility — are also pertinent to the disposition of a motion to reopen on quality assurance. *See Union Electric Co.* (Callaway Plant, Unit 1), ALAB-750, 18 NRC 1205, 1209-11 (1983); *Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-756, 18 NRC 1340, 1344-45 (1983), *aff'd sub nom. San Luis Obispo Mothers for Peace v. NRC*, 751 F.2d 1287 (D.C. Cir. 1984), *vacated in part and reh'g en banc granted on other grounds*, 760 F.2d 1320 (1985); *Diablo Canyon*, ALAB-775, 19 NRC at 1367.

QUALITY ASSURANCE: REQUIREMENTS

The importance of “managerial attitude” to an applicant’s quality assurance program — i.e., the willingness of company officials to implement the program to the fullest — has long been recognized. *Consumers Power Co.* (Midland Plant, Units 1 and 2), ALAB-106, 6 AEC 182, 184 (1973).

OPERATING LICENSE PROCEEDINGS: APPLICANT'S CHARACTER AND COMPETENCE (REMEDIAL EFFORTS)

Remedial measures directed to construction and related quality assurance deficiencies may be considered as part of the appraisal of an applicant's character and competence. *Houston Lighting & Power Co.* (South Texas Project, Units 1 and 2), ALAB-799, 21 NRC 360, 371-74 (1985).

RULES OF PRACTICE: REOPENING OF RECORD

The untimely listing of historical examples of alleged construction quality assurance deficiencies is insufficient to warrant reopening of the record on the issue of management character and competence. *Diablo Canyon*, ALAB-775, 19 NRC at 1369-70.

RULES OF PRACTICE: REOPENING OF RECORD (NATURE OF SUPPORTING EVIDENCE)

Documents or portions of documents generated by an applicant or the staff in connection with the construction and regulatory oversight of a facility are acceptable evidence in support of a motion to reopen. *Diablo Canyon*, CLI-81-5, 13 NRC at 363.

QUALITY ASSURANCE: REQUIREMENTS

The NRC relies upon an applicant's quality assurance program, and its implementation, to ensure that a nuclear power plant and its component parts are designed to acceptable criteria and standards, and that the plant and its components are constructed or fabricated in accordance with their design. See 35 Fed. Reg. 10,498 (1970); 10 C.F.R. Part 50, Appendix B.

QUALITY ASSURANCE/QUALITY CONTROL: REQUIREMENTS (DELEGATION OF FUNCTIONS)

Delegation of quality assurance activities is acceptable under the NRC's regulations, so long as an applicant bears the ultimate responsibility for quality assurance performance and is able to assure itself that its delegate is performing adequately. 10 C.F.R. Part 50, Appendix B, Criterion I; *Commonwealth Edison Co.* (Byron Nuclear Power Station, Units 1 and 2), ALAB-793, 20 NRC 1591, 1598 (1984).

RULES OF PRACTICE: REOPENING OF RECORD (NATURE OF SUPPORTING EVIDENCE)

Serving up exhibits in support of a motion to reopen without citation to pertinent portions or an explanation of the purpose of the exhibits contributes nothing of value to a proceeding.

QUALITY ASSURANCE/QUALITY CONTROL: AUDIT REQUIREMENTS

Although audits are an important element of an applicant's overall program and are required by 10 C.F.R. Part 50, Appendix B, Criterion XVIII, they provide but a third level of assurance. The principal levels of assurance are provided by, first, quality craftsmanship and, second, quality inspections.

QUALITY ASSURANCE/QUALITY CONTROL: DOCUMENTS

Proper dispositioning of documents generated in a quality assurance program to identify and record discrepant or changed conditions is a vital part of a quality assurance program, because it is through this process that the suspect condition is eventually corrected or, in some cases, judged by a qualified person to be acceptable in spite of the discrepancy. *See* 10 C.F.R. Part 50, Appendix B, Criteria XV, XVI. In addition, certain of these documents must be evaluated for reportability to the Commission under 10 C.F.R. § 50.55(e) and 10 C.F.R. Part 21.

ADJUDICATORY BOARDS: ROLE

Lengthy discussion of charges devoid of merit is unnecessary. *See San Luis Obispo Mothers for Peace*, 751 F.2d at 1320-21.

RULES OF PRACTICE: REOPENING OF RECORD (NATURE OF SUPPORTING EVIDENCE)

Exhibits that are unintelligible, are submitted without citation to pertinent portions, are out of date, have no apparent relation to a specific charge, and generally do not support the point for which they are offered, do not constitute the "relevant, material and reliable" evidence required to support a motion to reopen. *Diablo Canyon*, ALAB-775, 19 NRC at 1366-67.

RULES OF PRACTICE: REOPENING OF RECORD (NATURE OF SUPPORTING EVIDENCE)

A draft is a working document and it is entirely reasonable that it will go through several revisions before it appears in final form and presumably reflects the actual, intended position of the preparer. As such, it is not a particularly useful item on which to rely in support of a motion to reopen.

RULES OF PRACTICE: EX PARTE COMMUNICATIONS

A board may not rely upon ex parte information, presented in camera by the Office of Investigations, in making licensing decisions. *See Statement of Policy; Investigations, Inspections, and Adjudicatory Proceedings*, 49 Fed. Reg. 36,032, 36,033 (1984).

ATOMIC ENERGY ACT: LICENSEE'S CHARACTER

The NRC's dependence on a licensee for accurate and timely information about its facility makes candor an especially important element of management character. *See Metropolitan Edison Co.* (Three Mile Island Nuclear Station, Unit 1), ALAB-772, 19 NRC 1193, 1208 (1984), *rev'd in part on other grounds*, CLI-85-2, 21 NRC 282 (1985). *See also id.*, CLI-85-9, 21 NRC 1118, 1136-37 (1985); *South Texas*, 21 NRC at 371 (nexus of particular character trait to particular performance standards contemplated by Atomic Energy Act and NRC regulations is required).

RULES OF PRACTICE: REOPENING OF RECORD (NATURE OF SUPPORTING EVIDENCE)

Evidence consisting of the views of an individual submitted in affidavit form in support of a motion to reopen should be submitted in an affidavit by that individual and not by counsel. *Diablo Canyon*, ALAB-775, 19 NRC at 1367 n.18.

QUALITY ASSURANCE/QUALITY CONTROL: DEFICIENCIES (RESOLUTION)

Because the Commission must necessarily depend heavily on a permittee or licensee to report important information and to assume a role of at least partial self-policing, it is essential that the motivation to discover, analyze, and correct potentially safety-significant problems originate with plant management.

OPERATING LICENSE PROCEEDINGS: APPLICANT'S CHARACTER AND COMPETENCE

It is entirely appropriate to consider an applicant's successful remedial efforts in connection with claims that it lacks the necessary character and competence to operate a plant safely. *See South Texas*, 21 NRC at 371-74. Not to do so would have the undesirable effect of discouraging applicants and licensees from promptly undertaking such corrective measures.

ADJUDICATORY BOARDS: ROLE

The adjudicatory boards are not obliged to do a party's research for it. *See Louisiana Power & Light Co.* (Waterford Steam Electric Station, Unit 3), ALAB-801, 21 NRC 479, 483-84 (1985); *Philadelphia Electric Co.* (Limerick Generating Station, Units 1 and 2), ALAB-804, 21 NRC 587, 592 & n.6 (1985).

RULES OF PRACTICE: LITIGABILITY OF ISSUES

A contention challenging the adequacy of the staff's review of an application is not litigable in an operating license proceeding. *See Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-728, 17 NRC 777, 807, *review declined*, CLI-83-32, 18 NRC 1309 (1983). This follows logically from the fact that it is the applicant that ultimately bears the burden of proving its entitlement to the privilege of an operating license. *See Consumers Power Co.* (Midland Plant, Units 1 & 2), ALAB-315, 3 NRC 101, 103 (1976).

ADJUDICATORY BOARDS: DELEGATED AUTHORITY (RELATION TO NRC STAFF)

The NRC's adjudicatory boards are not empowered to direct the staff in the conduct of its inspection and investigatory duties. *Carolina Power and Light Co.* (Shearon Harris Nuclear Power Plant, Units 1, 2, 3, and 4), CLI-80-12, 11 NRC 514, 516-17 (1980).

RULES OF PRACTICE: RESPONSIBILITIES OF STAFF

The staff's review of contested technical issues is a significant ingredient of NRC licensing proceedings, even though its adequacy cannot be litigated per se, as a contention.

TECHNICAL ISSUES DISCUSSED:

Construction Quality Assurance (QA)
Staffing
Welding
Audits
Inspector Qualifications
Welder Qualifications
QA Documentation
Pipe Supports.

APPEARANCES

Lynne Bernabei and George Shohet, Washington, D.C., for joint intervenors Oystershell Alliance and Save Our Wetlands, Inc.

Bruce W. Churchill, Dean D. Aulick, and Alan D. Wasserman, Washington, D.C., for applicant Louisiana Power & Light Company.

Sherwin E. Turk and Bernard M. Bordenick for the Nuclear Regulatory Commission staff.

DECISION

The last matter pending before us in this operating license proceeding is Joint Intervenors' fifth motion to reopen the record.¹ Filed on November 8, 1984, this 62-page motion, accompanied by 62 exhibits, seeks a hearing on three broad, new contentions.² Contention A alleges a systematic breakdown in the construction quality assurance (QA) program of applicant Louisiana Power & Light Company (LP&L). Joint Intervenors argue that, as a consequence of this breakdown, LP&L cannot

¹ A number of reported decisions issued over the last two years reflect the history of this proceeding. See ALAB-732, 17 NRC 1076 (1983); ALAB-753, 18 NRC 1321 (1983); ALAB-786, 20 NRC 1087 (1984); ALAB-801, 21 NRC 479 (1985). Just this past April, we denied another motion to reopen, concerning the adequacy of the concrete basemat of the facility. See ALAB-803, 21 NRC 575 (1985). The Commission has declined review of each of these decisions. See Notices from the Secretary (September 14, 1983; November 20, 1984; May 9, 1985; May 17, 1985); CLI-85-3, 21 NRC 471, 473 n.1 (1985).

² In ALAB-792, 20 NRC 1585 (1984), *clarified*, ALAB-797, 21 NRC 6 (1985), we explained, in response to arguments made by Louisiana Power & Light Company and the NRC staff, why we have jurisdiction to consider the entirety of the instant motion to reopen. The Commission has also declined review of these decisions. See Notice from the Secretary (March 22, 1985).

show that it can operate the plant safely. Contention B states that LP&L does not have the character and competence to operate Waterford in accordance with the Commission's safety requirements. Contention C claims that the NRC staff's inspection and investigation efforts at Waterford are not adequate to ensure that potentially safety-significant deficiencies have been corrected and the plant can operate safely.

LP&L and the staff filed lengthy replies in opposition to Joint Intervenor's motion. Because of significant deficiencies in both the form and substance of the staff's reply, however, we found it necessary to strike all but a small portion of it from the record. ALAB-801, *supra* note 1, 21 NRC at 482-84. At the same time, we explained why staff input on certain matters with a potential impact on plant safety is essential to our disposition of Joint Intervenor's motion. *Id.* at 482, 485-86. We therefore requested the staff to provide additional, clarifying information and offered both LP&L and Joint Intervenor's the opportunity to file further comments as well. *Id.* at 486-87. All parties have responded and, except for possibly relevant matters under investigation by the NRC's Office of Investigations (OI) (*see* pp. 45-47, *infra*), the record is now complete. For the reasons set forth below, we deny Joint Intervenor's November 8 motion to reopen the record in all respects save one: insofar as the motion raises issues that may relate to matters under investigation by OI, we are unable to rule and therefore leave that part of the motion for the Commission's resolution.³

I.

With the relatively recent plethora of motions to reopen, in both this proceeding and others, we have had frequent occasion to discuss the criteria that a movant must satisfy. The motion

must be timely and address a significant safety or environmental issue. It must also show that a different result might have been reached had the newly proffered material been considered initially.

³ In CLI-85-3, 21 NRC 471, the Commission authorized the issuance of a full-power license to LP&L to operate Waterford. The Commission explicitly stated that its decision was without prejudice to our consideration of this motion to reopen (as well as another then-pending motion concerning the basemat). *Id.* at 472. *See also* 10 C.F.R. § 2.764(g). Accordingly, we have given no weight to the Commission's prior license authorization in deciding to deny Joint Intervenor's motion.

Joint Intervenor subsequently petitioned for judicial review and a stay of the Commission's decision. *Oystershell Alliance v. NRC*, No. 85-1182 (D.C. Cir. filed March 25, 1985). In an order issued April 3, 1985, the court denied the motion for stay.

ALAB-786, *supra* note 1, 20 NRC at 1089. “[B]are allegations or simple submission of new contentions” is not enough. *Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), CLI-81-5, 13 NRC 361, 363 (1981).

At a minimum, . . . the new material in support of a motion to reopen must be set forth with a degree of particularity in excess of the basis and specificity requirements contained in 10 C.F.R. 2.714(b) for admissible contentions. . . . [I]t must be tantamount to evidence . . . [and] possess the attributes set forth in 10 C.F.R. 2.743(c) defining admissible evidence for adjudicatory proceedings. Specifically, the new evidence supporting the motion must be “relevant, material, and reliable.”

Pacific Gas and Electric Co. (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-775, 19 NRC 1361, 1366-67, *aff'd sub nom. San Luis Obispo Mothers for Peace v. NRC*, 751 F.2d 1287 (D.C. Cir. 1984), *vacated in part and reh'g en banc granted on other grounds*, 760 F.2d 1320 (1985). *See also id.* at 1367 n.18.

A motion to reopen that raises previously uncontested issues — such as Joint Intervenors’ motion here — must also satisfy the Commission’s standards for admitting late-filed contentions. *Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), CLI-82-39, 16 NRC 1712, 1714-15 (1982).⁴ The burden of satisfying all these requirements is heavy indeed. *See Kansas Gas and Electric Co.* (Wolf Creek Generating Station, Unit No. 1), ALAB-462, 7 NRC 320, 338 (1978). *See also Metropolitan Edison Co.* (Three Mile Island Nuclear Station, Unit No. 1), CLI-85-7, 21 NRC 1104, 1106 (1985).

Because Joint Intervenors’ motion raises quality assurance and management character and competence issues, it must also be considered in light of the guidance on those special issues provided in several recent decisions. For example, in *Union Electric Co.* (Callaway Plant, Unit 1), ALAB-740, 18 NRC 343, 346 (1983), we pointed out that

[i]n any project even remotely approaching in magnitude and complexity the erection of a nuclear power plant, there inevitably will be some construction defects tied to quality assurance lapses. It would therefore be totally unreasonable to hinge the grant of an NRC operating license upon a demonstration of error-free construction.

⁴ Those five standards, embodied in 10 C.F.R. § 2.714(a)(1), are:

- (i) Good cause, if any, for failure to file on time.
- (ii) The availability of other means whereby the petitioner’s interest will be protected.
- (iii) The extent to which the petitioner’s participation may reasonably be expected to assist in developing a sound record.
- (iv) The extent to which the petitioner’s interest will be represented by existing parties.
- (v) The extent to which the petitioner’s participation will broaden the issues or delay the proceeding.

Nor is such a result mandated by either the Atomic Energy Act of 1954, as amended, or the Commission's implementing regulations. What they require is simply a finding of reasonable assurance that, as built, the facility can and will be operated without endangering the public health and safety. 42 U.S.C. §§ 2133(d), 2232(a); 10 C.F.R. § 50.57(a)(3)(i). Thus, in examining claims of quality assurance deficiencies, one must look to the implication of those deficiencies in terms of safe plant operation. [Footnote omitted.]

To determine if the requisite reasonable assurance exists, two questions must be addressed: (1) whether all ascertained construction errors have been cured, and (2) even if so, whether there has nonetheless been so pervasive a breakdown in the QA procedures as to raise legitimate doubt about the overall safety of the facility. *Ibid.* Although these considerations were initially enunciated in the context of an appeal from a licensing board decision rendered after a hearing on QA, they are just as pertinent to the disposition of a motion to reopen on QA. *See Union Electric Co.* (Callaway Plant, Unit 1), ALAB-750, 18 NRC 1205, 1209-11 (1983); *Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-756, 18 NRC 1340, 1344-45 (1983), *aff'd sub nom. San Luis Obispo Mothers for Peace v. NRC*, 751 F.2d 1287 (D.C. Cir. 1984), *vacated in part and reh'g en banc granted on other grounds*, 760 F.2d 1320 (1985); *Diablo Canyon*, ALAB-775, 19 NRC at 1367.

We also had recent occasion to address the relationship between quality assurance deficiencies and the overall competence and character of an applicant's management.⁵ In *Houston Lighting & Power Co.* (South Texas Project, Units 1 and 2), ALAB-799, 21 NRC 360, 371-74 (1985), we expressly approved consideration of remedial measures directed to construction and related QA deficiencies as part of the appraisal of an applicant's character and competence. Further, the untimely listing of "historical examples" of alleged construction QA deficiencies has been found insufficient to warrant reopening of the record on the management character and competence issue. *Diablo Canyon*, ALAB-775, 19 NRC at 1369-70.

Keeping the requirements for motions to reopen and our own recent precedents on QA and management character and competence in mind, we now turn to Joint Intervenors' three proposed contentions and the numerous individual allegations offered as substantiation for each.

⁵ More than a decade ago, however, we recognized the importance of "managerial attitude" to an applicant's QA program — i.e., the willingness of company officials to implement the program to the fullest. *Consumers Power Co.* (Midland Plant, Units 1 and 2), ALAB-106, 6 AEC 182, 184 (1973).

II.

In ALAB-801, we noted “our preliminary view . . . that much of Joint Intervenors’ motion to reopen falls of its own weight.” 21 NRC at 481. Our further review of the matter confirms this. Although Joint Intervenors have attempted to support most of their individual charges with documentation, these exhibits are frequently lacking in substance or are deficient in some other respect. Many charges concern events that occurred years ago, and no effort has been made to show good cause why they were not raised earlier or to establish that the alleged problem was left uncorrected and continues today. Such charges could be rejected on the basis of untimeliness alone. Nonetheless, because of the overall seriousness of Joint Intervenors’ allegations, our principal focus as to most of the individual charges, as well as the three broad proposed contentions, has been on their safety significance — i.e., the second of the traditional reopening criteria.

A. Quality Assurance

Joint Intervenors’ first proposed contention states:

LP&L has failed to establish and implement an adequate quality assurance program in accordance with 10 CFR Part 50, Appendix B, throughout the life of construction of Waterford, which led to a serious, systematic breakdown of quality assurance. LP&L cannot now provide the required assurance that Waterford 3 has been constructed in accordance with all NRC requirements or that Waterford’s construction is verified to be of adequate quality to protect the public health and safety. Therefore, the Commission cannot make the finding required by 10 CFR 50.57(a) necessary for issuance of an operating license for Waterford 3.

Joint Intervenors’ Motion to Reopen (November 8, 1984) [hereafter, “Joint Intervenors’ Motion”] at 4. Joint Intervenors advance 12 groups of charges in support of this contention, purportedly illustrating how LP&L’s QA program, as implemented, has failed to satisfy all but two of the Commission’s 18 quality assurance criteria in 10 C.F.R. Part 50, Appendix B. There are a total of 73 individual charges specifically linked to this contention, but essentially no argument is presented, presumably in the belief that the examples presented are self-explanatory.⁶ Each charge

⁶ We continue here the practice of referring to the specific allegations in Joint Intervenors’ motion to reopen as “charges” and identify them by the same letter and number designations used by Joint Intervenors. See ALAB-801, 21 NRC at 485 n.15.

Charge A(1)(g) is addressed in our discussion of charge B(1) at pp. 45-47, *infra*, inasmuch as both concern matters possibly related to OI investigations. On the other hand, parts II.D and II.E of Joint Intervenors’ motion contain argument that concerns construction QA at Waterford. Hence, we include these latter parts of the motion here, in our discussion of contention A, relating to quality assurance.

contains references to one or more of the exhibits filed with the motion to reopen. These exhibits consist primarily of documents or portions of documents generated by LP&L or the staff in connection with the construction and regulatory oversight of Waterford.⁷ Also included are three affidavits by persons employed at the plant during construction.⁸

On the surface, this marshaling and organization of materials in support of reopening on the quality assurance contention seem to satisfy the format standards we have suggested for such filings. *See Diablo Canyon, ALAB-775, 19 NRC at 1368 n.22.* But many of the individual charges have little or nothing to do with the Appendix B criteria with which they are matched in the 12 broader groupings of allegations. Other charges are related to one another or are duplicative. In order to facilitate our task in addressing all of Joint Intervenors' claims, we have considered each charge without regard to the particular Appendix B criterion or criteria with which it is linked. (In other words, Joint Intervenors' failure to connect a charge with the correct criterion is not fatal to their case.) We have also grouped for discussion those charges that are obviously related or raise the identical issue.

With respect to the substance of Joint Intervenors' QA charges, we have found that they fall into three categories: (1) those that portend a serious breakdown in LP&L's construction QA program; (2) those that could be indicative of QA failures, but upon analysis appear to be without merit or are isolated events of no generic or safety significance; and (3) those that, for a variety of reasons, are unsupported on their face. In the following sections, we discuss each category in turn and conclude that the record need not be reopened to explore LP&L's quality assurance program. As explained below, the evidence before us does not indicate either the existence of significant uncorrected construction errors,

⁷ This type of material is acceptable evidence in support of a motion to reopen. *Diablo Canyon, CLI-81-5, 13 NRC at 363.*

⁸ Because the three affiants wish to remain anonymous, the copies of their affidavits served on the parties have all identifying information expunged. The Board's three copies of each, however, are unexpurgated and have been kept under seal. Joint Intervenors also filed, simultaneously with their motion to reopen, a Motion for a Protective Order, under which complete copies of the affidavits would be made available to representatives of the parties on a restricted basis.

Although the staff contends that Joint Intervenors have not established a sufficient basis for a protective order, it does not object to the entry of such an order. NRC Staff's Response (December 21, 1984) at 1 n.2. Although a protective order would have permitted disclosure of more detailed information about the background of the allegations, it would not have significantly enhanced the substance of the charges themselves. As a consequence, LP&L has responded quite fully to most of the charges in the anonymous affidavits, and it opposes Joint Intervenors' request. Applicant's Response to Motion for Protective Order (November 30, 1984).

We commend Joint Intervenors for their handling of this matter in accordance with *Diablo Canyon, ALAB-775, 19 NRC at 1367 n.18.* In view of our decision denying almost the entirety of their motion to reopen, however, we need not decide whether the entry of a protective order would have been warranted here. Joint Intervenors' motion for a protective order is therefore denied as moot.

or a breakdown of the overall QA program sufficient to raise a legitimate doubt as to the capability of Waterford to be operated safely. See p. 15, *supra*.

1. The NRC relies upon an applicant's quality assurance program, and its implementation, to ensure that a nuclear power plant and its component parts are designed to acceptable criteria and standards, and that the plant and its components are constructed or fabricated in accordance with their design. See 35 Fed. Reg. 10,498 (1970); 10 C.F.R. Part 50, Appendix B. As a result of certain events and their subsequent investigation by the NRC staff, deficiencies were found in several fundamental areas of the LP&L quality assurance program at Waterford — hence raising a potentially significant safety problem. Relying largely on the staff documents that set forth these deficiencies, Joint Intervenors present a series of charges that depict a serious breakdown in the LP&L program. Specifically, these are: (1) inadequate QA staffing; (2) LP&L's abdication of responsibility for QA to contractors; (3) inadequate qualification of quality control (QC)⁹ and QA inspectors; (4) failure to identify trends indicative of generic quality problems; (5) failure to perform effective audits of QA performance; and (6) failure to manage and "to disposition" properly Nonconformance Reports (NCRs) and other types of deficiency reports.¹⁰

a. Because these charges derive their principal support from NRC staff documents, it is appropriate to review briefly the circumstances from which those documents originated. In the spring of 1982, LP&L was preparing to accept the first turnovers of plant systems from its architect-engineer and construction manager, Ebasco Services, Inc. The LP&L construction QA organization found serious QA deficiencies in the four systems in question and in the accompanying QA records. LP&L reported this "significant construction deficiency" to the NRC. Following an inspection, the Commission issued a Notice of Violation and imposed a \$20,000 civil penalty on LP&L, citing inadequate control of activities affecting quality — a violation of 10 C.F.R. Part 50, Appendix B, Criterion II. In particular, the Commission found a breakdown in the quality assurance chain involving LP&L, Ebasco, and the subcontractor whose work and quality control was in question, Mercury Company

⁹ "Quality control" is included within quality assurance and concerns "those quality assurance actions related to the physical characteristics of a material, structure, component, or system which provide a means to control [their] quality . . . to predetermined requirements." 10 C.F.R. Part 50, Appendix B, Introduction.

¹⁰ As is evident from the following discussion, some of these deficiencies are necessarily interrelated. For example, the fact that LP&L's own construction QA staff was not adequate was partly responsible for all of the other problems cited here.

of Norwood, Inc. But the Commission also took note of the corrective action (including training for Mercury craft and QA personnel) already initiated by LP&L. JI Exh. 6, Inspection Report No. 50-382/82-14 (December 6, 1982) at 8-12, 13;¹¹ NRC Staff's Response (April 22, 1985) [hereafter, "Staff Response to ALAB-801"], Constable Affidavit, Exh. 2 (Notice of Violation). LP&L's problems with Mercury continued, however, and in late 1983 the contract with Mercury was terminated, and Ebasco completed the remaining work of that subcontractor. Staff Response to ALAB-801, Harrison Affidavit at 7.

Early in 1984, as part of a series of plant inspections undertaken by the NRC's Office of Inspection and Enforcement (I&E), a Construction Appraisal Team (CAT) visited the Waterford site. This group found the areas inspected to be generally in accordance with safety requirements, but noted some quality assurance deficiencies — namely, the failure to take proper corrective action on problems previously identified by the NRC's Regional Office. See JI Exh. 23, CAT Inspection Report No. 50-382/84-07 (May 14, 1984). At about the same time that the CAT was conducting its routine inspection of the plant, the NRC received approximately 350 allegations of construction and quality assurance deficiencies. The staff developed a Management Program to address the technical issues raised by those allegations. It also organized a Task Force of 40 persons who spent six weeks onsite, beginning in April 1984. Board Notification No. 84-170 (October 12, 1984), Waterford Safety Evaluation Report, Supplement No. 7 (September 1984) [hereafter, "SSER-7"], Appendix J at 2-3.¹²

By May this group had resolved most of the allegations, but there remained 23 issues with "potential safety implications" requiring further input from LP&L and review by the staff. These 23 issues are set forth in a June 13, 1984, letter from D. G. Eisenhut (then NRC Director of Licensing) to J. M. Cain, President and Chief Executive Officer of LP&L [hereafter, "Eisenhut Letter"]. See JI Exh. 9. Although the deficiencies that make up the 23 residual problem areas involve a wide range of activities and organizations at Waterford (i.e., LP&L, Ebasco, and various subcontractors), 10 of them relate to the work of Mercury, the subcontractor that had been the focus of the 1982 civil penalty

¹¹ "JI Exh." refers to exhibits submitted with Joint Intervenors' November 8, 1984, motion to reopen. "LP&L Exh." refers to those submitted with Applicant's Answer to Joint Intervenors' Motion to Reopen (November 30, 1984) [hereafter, "Applicant's Answer"], and "LP&L Supp. Exh." denotes those filed with Applicant's Supplemental Comments (April 10, 1985).

¹² The Task Force also included members of an NRC Inquiry Team organized in the summer of 1983 to investigate QA allegations reported in a local New Orleans weekly, SSER-7, Appendix J at 3. See *id.*, Attachment 6, Appendix A at 1.

action. LP&L and the staff held several meetings during the summer of 1984, and by December 1984, LP&L had, in the staff's view, adequately answered the 23 remaining questions. Staff Response to ALAB-801, Harrison Affidavit at 13-14. The staff's evaluation of the LP&L responses, Supplement No. 9 to the Waterford Safety Evaluation Report [hereafter, "SSER-9"], was made available in January 1985. See Board Notification No. 85-006 (January 14, 1985).¹³

Two other staff documents have a bearing on the matters raised by Joint Intervenors' motion. The Waterford Task Force issued Inspection Report No. 50-382/84-34 (July 20, 1984). See JI Exh. 5. There the staff noted LP&L's past problems, but concluded that its QA program is generally adequate except for several items also raised in the Eisenhut Letter and still "open" at that time. In SSER-7, the staff reported its findings on the some 350 allegations brought to its attention in early 1984. Most items were resolved in a manner acceptable to the staff and closed out — again, except for those related to matters discussed in the Eisenhut Letter and those that were referred to OI. See, e.g., ALAB-801, 21 NRC at 485-86.

b. In the following pages we explore the various major problem areas that resulted in the apparent breakdown in LP&L's quality assurance program.

(1) *Staffing*: In A(1)(b), Joint Intervenors charge that LP&L failed to maintain adequate QA staffing during the construction of Waterford, despite warnings about this potential problem in an internal audit. See also Joint Intervenors' Response to ALAB-801 (May 6, 1985) at 15-17. They rely on four exhibits for support: (1) a July 31, 1979, draft of a report prepared by Management Analysis Company ("MAC Report") and internal memoranda discussing the report — JI Exh. 1; (2) Waterford Task Force Inspection Report No. 50-382/84-34 — JI Exh. 5; (3) Inspection Report No. 50-382/82-14 — JI Exh. 6; and (4) a February 16, 1978, internal LP&L memorandum suggesting the addition of another QA engineer — JI Exh. 7.¹⁴

There is no real dispute that LP&L's construction QA staff was not large enough for the task it faced. Further, the MAC Report apprised LP&L of the disadvantages of this situation, but LP&L took no action

¹³ In ALAB-801, 21 NRC at 485, we noted the relevance of SSER-9 to many of the issues raised in this proceeding and requested the staff's affidavit attesting to the validity of the factual material contained in this document. The staff subsequently provided this, and vouched for SSER-7 as well. See Staff Response to ALAB-801, Crutchfield Affidavit at 5.

¹⁴ Joint Intervenors have failed to provide specific page references to JI Exhs. 1, 5, and 6. See p. 42, *infra*. Nonetheless, we were able to locate the sections of each document pertinent to charge A(1)(b). As for JI Exh. 7, Joint Intervenors do not explain what difference one more person would have made to LP&L's rather lean construction QA staff.

until the breakdown involving Ebasco and Mercury was clearly identified. Indeed, had there been greater attention to the warnings of the MAC Report earlier, the breakdown likely would not have occurred and the 1982 civil penalty action would not have been necessary. See JI Exh. 5 at II-13 to II-14, V-4 to V-7; Staff Response to ALAB-801, Harrison Affidavit at 46-47, Constable Affidavit at 2-11. See also JI Exh. 6 at 8, 12.¹⁵

LP&L, however, cannot turn back the clock and enlarge the QA staff that oversaw construction at the Waterford site. Our focus, then, must be on whether any significant construction deficiencies resulted and remain as a consequence of LP&L's inadequate staffing, and whether LP&L has taken steps to prevent understaffing in the future. As explained below, we are persuaded by the record here that there are no significant construction defects at the Waterford facility. Further, LP&L now appears to be more sensitive to the need for an adequate in-house QA staff and has accordingly increased its construction and, more important, its operational QA staff. See Staff Response to ALAB-801, Harrison Affidavit at 47-48. See also pp. 53-54, *infra*. Thus, although inadequate staffing has been a root cause of many of LP&L's QA problems, this seems to be a "lesson learned." See LP&L Supp. Exh. 1, Attachment, Table 2, Issue 23c.

(2) *Abdication of Responsibility*. Joint Intervenors' charge A(1)(h) states that, as is evident from the problems in the first systems turnover packages, LP&L effectively abdicated its QA responsibilities to Ebasco during early design and construction work at the plant. As support for this charge, they rely on Inspection Report No. 50-382/82-14, where the turnover problems are described. See JI Exh. 6 at 8-12.¹⁶

Delegation of QA activities is acceptable under the NRC's regulations, so long as an applicant bears the ultimate responsibility for QA perform-

¹⁵ Joint Intervenors place undue weight, however, on the MAC Report itself, in connection with this and other charges. It is, of course, noteworthy that LP&L did not heed the recommendations of its own consultant. But the MAC Report, though broad in scope, is limited in specifics. It is a 30 man-day study, only seven pages in length. Its importance should not be elevated above what is warranted.

Joint Intervenors also err in suggesting that LP&L should have disclosed the MAC Report to the NRC under 10 C.F.R. § 50.55(e). See Joint Intervenors' Response to ALAB-801 at 16 n.9. That provision requires the reporting of construction and design deficiencies (including a significant breakdown in the QA program) that, if left uncorrected, could affect the safe operation of the plant. But the MAC Report is simply a collection of 15 "Observations and Recommendations" on the broad topic of "Construction Monitoring." It does not identify any specific construction deficiency subject to the reporting requirements of 10 C.F.R. § 50.55(e).

¹⁶ Joint Intervenors also rely on JI Exh. 3, Ebasco's Quality Assurance Manual for Waterford, dated October 15, 1975. The exhibit is lengthy and no particular portion of it has been called to our attention. See p. 42, *infra*. Further, Joint Intervenors have failed to explain what purpose the exhibit is to serve or what point is made in relying on it. Serving up exhibits in this fashion — as Joint Intervenors have done in numerous instances in connection with their motion to reopen — contributes nothing of value to the proceeding.

ance and is able to assure itself that its delegate is performing adequately. 10 C.F.R. Part 50, Appendix B, Criterion I; *Commonwealth Edison Co.* (Byron Nuclear Power Station, Units 1 and 2), ALAB-793, 20 NRC 1591, 1598 (1984). As a consequence of its inadequate construction QA staff, discussed above, until 1982 LP&L was forced to rely heavily for QA performance on its construction manager, Ebasco. In and of itself, this heavy reliance does not present a QA problem. But the Mercury breakdown showed that Ebasco had failed to implement its own QA program fully. Thus, LP&L could not provide the assurance that its delegate was performing properly. See Staff Response to ALAB-801, Harrison Affidavit at 48-49; JI Exh. 6 at 8-12. Although this was serious enough to lead to LP&L's 1982 civil penalty for failure to control its QA activities (Criterion II), it does not demonstrate an abdication of QA responsibility by LP&L (Criterion I). See Staff Response to ALAB-801, Constable Affidavit, Exh. 2.

For one thing, it was LP&L's QA staff that discovered and reported to the NRC the deficiencies in the four turnover packages from Ebasco. *Id.*, Harrison Affidavit at 49; JI Exh. 6 at 10.¹⁷ As corrective action, LP&L organized a Task Force to review the safety-related work of all contractors in addition to Mercury. These contractors and Ebasco each performed 100 percent walkdowns of all systems prior to turnover, and LP&L performed sampling inspections of all systems during walkdowns. Deficiencies discovered during the walkdowns were documented and later corrected. Staff Response to ALAB-801, Harrison Affidavit at 34-36. Thus, although it originally relied too heavily on Ebasco, LP&L's QA staff ultimately performed its function of identifying and correcting deficiencies in the quality of construction at the facility. We are therefore unable to find any basis in this record for Joint Intervenors' charge that LP&L "abdicated" its QA responsibilities to Ebasco.¹⁸

(3) *Qualification of Inspectors*: In charge A(1)(c), Joint Intervenors question the qualifications and training of QA and QC personnel employed during construction at Waterford. They rely on the Eisenhut Letter as support for this charge.¹⁹ Although Joint Intervenors have not

¹⁷ LP&L's role in bringing this problem to the NRC's attention led to the assessment of a penalty one-half the amount that ordinarily would have been levied. Staff Response to ALAB-801, Constable Affidavit, Exh. 2 at 2.

¹⁸ Although Joint Intervenors limit charge A(1)(h) to construction activities, we also see no evidence of an abdication of QA responsibilities by LP&L at the operational phase. Indeed, LP&L's management now appears to recognize the need for active involvement in QA oversight. See *id.*, Harrison Affidavit at 44-45; LP&L Supp. Exh. 1, Attachment, "Operational Phase QA Program Assessment."

¹⁹ Joint Intervenors also rely on an affidavit of an anonymous former construction worker at Waterford (see note 8, *supra*) and the transcript of a public meeting held on August 17, 1984, between the NRC staff and representatives of LP&L to discuss LP&L's response to the Eisenhut Letter. See JI Exhs. 8,

(Continued)

specified the parts of that letter pertinent here, Issues 1, 10, and 20 concern the qualifications of various inspection personnel. *See* JI Exh. 9, Enclosure at 1, 7-8, 12. In part D(2) of their motion, Joint Intervenor raise a related objection to the manner in which LP&L proposed to (and did) respond to Issues 1, 10, and 20. Joint Intervenor assert that LP&L would rely on contractor certification or background checks, rather than formal QA documentation, to verify the credentials of the QA/QC inspectors employed by LP&L, Ebasco, and their subcontractors. They also claim that LP&L refused to perform 100 percent reinspection of work previously inspected by personnel who could not be shown to be qualified. According to Joint Intervenor, the staff's acceptance of the verification program proposed by LP&L in response to the Eisenhut Letter results in the use of a more lenient standard at Waterford than applied to plants with assertedly similar QA problems, such as Zimmer and Midland. Joint Intervenor's Motion at 37-38. *See also* Joint Intervenor's Motion for Leave to File Reply (January 25, 1985) [hereafter, "Joint Intervenor's Reply"] at 15-19.²⁰

The significance of Joint Intervenor's arguments is that an inspection by an unqualified person may be tantamount to no inspection at all, and thus, the quality of the work inspected is indeterminate. *See, e.g.*, JI Exh. 9, Enclosure at 1. Issues 1, 10, and 20 of the Eisenhut Letter set forth certain discrepancies or deficiencies found by the staff in the qualifications of some inspection personnel relied on by LP&L during the construction of Waterford. *Id.* at 1, 7, 12. According to LP&L, the cause of these problems was the inconsistent and often undocumented application of the qualification standard that permits substitution for education and experience, ANSI [American National Standards Institute] N45.2.6-1973. LP&L Exh. 12 (rev.) at 1-5. As corrective action, the staff required LP&L to "(1) verify the professional credentials of 100% of the site QA/QC personnel, including supervisors and managers, (2) reinspect the work performed by inspectors found unqualified, and (3) verify the proper certification of the remaining site QA/QC personnel to ANSI N45.2.6-1973." JI Exh. 9, Enclosure at 1. *See also id.* at 8, 12.

10. Neither, however, provides any support for charge A(1)(c). The affidavit contains allegations concerning the lack of qualifications of certain personnel (e.g., welders and maintenance workers), and assertions about inadequacies in QC coverage. But we see nothing in the affidavit about the qualifications of *inspection personnel*. As for the transcript, once again Joint Intervenor have failed to refer to the particular portions of this 171-page document that assertedly support charge A(1)(c). *See* p. 42, *infra*. This is despite the fact that, prior to the filing of Joint Intervenor's motion to reopen, we criticized the staff for submitting this same document to us without an explanation of its purpose and relevance to the matters then before us. *See* ALAB-786, 20 NRC at 1092 n.8.

²⁰ In ALAB-801, 21 NRC at 488, we granted Joint Intervenor permission to file this pleading to the extent it contained comments on Issues 1, 6, and 22 in the Eisenhut Letter and SSER-9. We also accepted the staff's and LP&L's responses to same.

LP&L submitted extensive replies to this staff request. *See* LP&L Exhs. 7, 12 (rev.), 17 (rev.). The staff likewise undertook a comprehensive review of LP&L's program to address the inspector qualification matters raised by the Eisenhut Letter. The staff concluded that LP&L had identified all unqualified site QA/QC inspection personnel, and that, where necessary, appropriate corrective action was taken. No significant rework, however, was required. *See* SSER-9, Appendix J at 7-18, 51-52, 75-76.

Contrary to Joint Intervenors' claims, the credentials of 100 percent of the persons who performed safety-related QA/QC inspections onsite were reviewed under LP&L's program, as required by the Eisenhut Letter. Background checks with former employers, schools, etc., were made, but for the purpose of verifying further or supplementing site personnel files that were no longer complete because the construction workforce was largely demobilized. Once the personal data were collected from the best available sources, they were measured against the appropriate standard and individual inspectors were judged qualified or unqualified. *See* LP&L Exh. 12 (rev.) at 1-1 to 1-4. *See also* Applicant's Answer to Joint Intervenors' Motion (November 30, 1984), Responses to Specific Allegations [hereafter, "LP&L's Responses to Specific Allegations"] at 81.

Although the staff initially required LP&L to "reinspect the work performed by inspectors found unqualified," actual reinspection was determined not to be necessary in all cases. *See* JI Exh. 9, Enclosure at 1. *See also* NRC Staff's Further Response (February 28, 1985), Harrison Affidavit at 15-16. Where records revealed that duplicate inspections by qualified inspectors had been performed, there was no need for yet another reinspection. *See, e.g.*, SSER-9, Appendix J at 51; LP&L Exh. 17 (rev.) at 10-4. A sampling approach was used with respect to nine unqualified inspectors responsible for QA on structural welding of HVAC (heating, ventilating, and air conditioning) duct supports. The work on all reinspected welds in a sample of 220 was found acceptable, providing a sufficient level of confidence to the staff that the remainder of the work covered by these inspectors was adequate. *See* SSER-9, Appendix J at 17; NRC Staff's Further Response, Harrison Affidavit at 26. *See also* LP&L Exh. 12 (rev.) at O-2. In other instances, actual testing and non-destructive examination of the hardware or system, along with the nature of the work actually performed and the on-the-job training of the individuals who conducted the inspection, were considered by the staff. *See, e.g.*, SSER-9, Appendix J at 12-13; NRC Staff's Further Response, Harrison Affidavit at 20-21. *See also* LP&L Exh. 12 (rev.) at I-2 to I-3.

On the other hand, 100 percent of the "N1" instrument tubing installed by Mercury — the principal source of the QA problems identified in 1982 — was reinspected. Only minor discrepancies, requiring little rework, were found in this instrumentation, which is vital to the safe shutdown of the plant. SSER-9, Appendix J at 13. With respect to the "N2" installations — which are required to maintain pressure boundary integrity but otherwise are not directly safety-related — the staff noted that 100 percent of those installed before July 1982 had already been reinspected. Although some inspectors whose qualifications were in question might have participated in those reinspections, the favorable results of the N1 reinspection program provide additional assurance of the quality of Mercury's N2 installations. Still further, the systems containing this equipment were tested and independently inspected, with acceptable results. *Id.* at 13-14; NRC Staff's Further Response, Harrison Affidavit at 21-22.

As a result of the work discussed above, we are not persuaded by Joint Intervenors' criticism of LP&L's verification program and the staff's acceptance of it, as described in SSER-9. *See* Joint Intervenors' Reply at 15-19.²¹ They have taken statements out of context or given them a strained reading in order to support their thesis that adequate reinspections have not been performed.²² The effort undertaken by LP&L to verify the qualifications of the QA/QC inspectors at Waterford and, where that was not possible, to verify the quality of their work, was extremely thorough. Its submission to the NRC — LP&L Exhs. 7, 12 (rev.), and 17 (rev.) — essentially includes an evaluation of the work of every inspector (or group of inspectors) whose qualifications could not be documented. The staff's own assessment of this material is likewise extensive. We see no basis for Joint Intervenors' claim that the staff has applied more lenient standards than applied at other plants such as Zimmer and Midland. Indeed, the comparison is inapt because, unlike the situation at Waterford, the QA deficiencies identified at those facilities extended well beyond primarily documentation problems to actual hardware deficiencies, requiring significant rework. NRC Staff's Further Response, Harrison Affidavit at 13-14, 26. *See, e.g., Cincinnati Gas & Electric Co.* (William H. Zimmer Nuclear Power Station), CLI-82-33, 16 NRC 1489 (1982). Accordingly, on the basis of the record here, we

²¹ The staff's response to this criticism is exceptionally detailed and convincing. *See* NRC Staff's Further Response, Harrison Affidavit at 15-27.

²² Joint Intervenors also complain that SSER-9 does not indicate the percent of inspectors in each category that were found to be unqualified. We agree with the staff that, regardless of whether it is one or 100 percent, the important thing is that all these individuals have been identified and appropriate corrective action has been taken. *Id.* at 17.

share the staff's conclusion that the matter of inspector qualifications has been satisfactorily resolved. This is not a significant matter warranting reopening of the record.

(4) *Trends*: In several charges — A(1)(p), A(10)(c) (in part), and A(10)(e) — Joint Intervenors assert that LP&L failed to trend QA problems so as to identify pervasive or generic deficiencies in the quality assurance program. They cite, without specific page references, to CAT Inspection Report No. 50-382/84-07 and the Eisenhut Letter as support for this claim. *See* JI Exhs. 23, 9.²³

Since 1974, LP&L has had in effect a three-phase program, under the responsibility of Ebasco, to analyze Nonconforming Condition (or Nonconformance) Reports (NCRs) for repetitive and widespread QA problems. LP&L's Responses to Specific Allegations at 18-20. The CAT Inspection Report, on which Joint Intervenors rely, found this program to be generally adequate. *See* JI Exh. 23 at VIII-3, VIII-4.²⁴ Issue 23 of the Eisenhut Letter, however, notes that LP&L's failure to determine the root cause of the Ebasco-Mercury breakdown allowed QA problems to continue. JI Exh. 9, Enclosure at 14. *Compare* SSER-7, Appendix J at 85, with *id.* at 98, 100. *See also* Staff Response to ALAB-801, Harrison Affidavit at 5-6.

Despite these problems in LP&L's trending program, the staff now "is satisfied that deficiencies in the performance of trending during construction did not have an impact on either the quality of construction or the safety of the plant." *Id.* at 50. The staff's satisfaction is based on the fact that nonconforming conditions were identified by the QA program and ultimately resolved properly. *Ibid.* *See* pp. 29-31, *infra*. Furthermore, LP&L considers this a major lesson learned. LP&L Exh. 5 at 23-9, 23-11. Consequently, it has improved and incorporated trending procedures in its operational QA program. It is noteworthy that, under these procedures, LP&L's senior management — i.e., its Senior Vice President for Nuclear Operations — oversees this program through

²³ Joint Intervenors also rely on JI Exh. 12, another affidavit from an anonymous former worker at Waterford, a QA engineer. Nothing in this affidavit, however, concerns LP&L's alleged failure to trend QA problems.

²⁴ The only references to trending of QA problems that we could locate in the CAT Inspection Report are in Section VIII. (The principal concern of this report is LP&L's failure to take corrective action in five areas previously identified as problems by the NRC. We discuss this matter in connection with Joint Intervenors' charge B(4) at pp. 51-53, *infra*.) Section VIII of the report briefly addresses a three-month lapse in the procedures for trending NCRs. The CAT concludes that this is not a major concern because the NCRs in question eventually did become part of the data base for the Ebasco quarterly trend analysis. JI Exh. 23 at VIII-3. The report also notes that Discrepancy Notices (DNs) and the like were not included at all in the data base. Although no omitted item was found to have safety significance, the CAT observes that "some repetitive problems may not be analyzed to preclude recurrence." *Id.* at VIII-4.

review of quarterly trending reports. LP&L Supp. Exh. 1, Attachment, "Operational Phase QA Program Assessment" at 16-18. The staff has reviewed LP&L's operational QA trending program and "believes that this program affords the necessary controls, during the operations phase, for the proper trending of nonconformance, audit and other data." Staff Response to ALAB-801, Harrison Affidavit at 51. In these circumstances, there is no basis for reopening.

(5) *Audits*: Joint Intervenors contend that the audits of construction work at Waterford were ineffective for several reasons: they were not documented properly, not conducted in accordance with specified procedures, and, in some cases, not done at all. See charges A(12)(a), A(12)(b), and A(12)(c). Joint Intervenors find support for these charges in Inspection Report No. 50-382/82-14, which was the basis of the 1982 civil penalty assessed against LP&L for the Ebasco-Mercury QA breakdown. See JI Exh. 6 at 7-10.

There is little doubt that the implementation of LP&L's audit program was lacking and led to the 1982 QA breakdown. Mercury's audits were not comprehensive and did not pick up failures in QA and construction procedures. Ebasco did not recognize trends in the Mercury nonconformances and inadequacies in the Mercury audits. LP&L, because of its staffing problems (see pp. 20-21, *supra*), only belatedly came to realize its contractors' deficiencies. Further, even after 1982, problems persisted and some corrective actions were insufficient. Staff Response to ALAB-801, Harrison Affidavit at 4-7, 17-18. Although Joint Intervenors do not rely on them, the Eisenhut Letter (Issue 23) notes these auditing problems, and SSER-7 (allegation A-48) documents the details of the auditing program failures. JI Exh. 9, Enclosure at 14; SSER-7, Appendix J at 96-100.

Given these serious deficiencies, two pertinent questions arise. Are the auditing failures responsible for actual hardware or workmanship deficiencies that may remain unidentified and uncorrected? What assurance is there that these auditing failures will not recur? In addressing LP&L's submission on Issue 23 of the Eisenhut Letter, the staff concluded generally that the "shortcomings" that existed in LP&L's QA program have been identified and adequately remedied. SSER-9, Appendix J at 85. In response to our request in ALAB-801, 21 NRC at 485-87, for further clarification on this conclusion, the staff has elaborated.

Focusing on the work of Mercury, the staff states that virtually all of the auditing deficiencies identified in SSER-7 were substantiated. Staff Response to ALAB-801, Harrison Affidavit at 17. Nonetheless it concludes "that these issues do not have safety significance." *Id.* at 18. The principal reason for the staff's conclusion is the extensive reinspection

of Mercury's work, which resulted in only "discretionary rework" to correct "minor problems." *Id.* at 18-19. *See* p. 25, *supra*. The staff also finds additional assurance of the quality of Mercury's work in, among other things, still more inspections and QA documentation reviews performed by qualified Ebasco personnel, the several NRC inspection teams, and the independent Authorized Nuclear Inspector (ANI);²⁵ plant system walkdowns; and satisfactory completion of various tests of Mercury systems. Staff Response to ALAB-801, Harrison Affidavit at 20.

With respect to the work of subcontractors other than Mercury, the staff "determined that these audit programs were generally effective, unlike the audit programs for Mercury installations." *Id.* at 21. They identified problems, which led, in turn, to timely corrective action. Ebasco's audits of these contractors were found to be "generally adequate," and LP&L's audits — while not in full compliance with the schedule and commitments set by LP&L itself — provided further assurance of the quality of the work of these subcontractors. The staff's overall conclusion, reflected in several specified staff inspection reports, is that the audits of these QA programs were effective. *Id.* at 21-23. As for the operations phase at Waterford, the staff is satisfied that "a comprehensive QA audit program is in place and that a realistic audit schedule is being implemented." *Id.* at 52. *See* LP&L Supp. Exh. 1, Attachment, "Operational Phase QA Program Assessment" at 3-7, 24-25.

Audits are an important element of an applicant's overall QA program and are required by 10 C.F.R. Part 50, Appendix B, Criterion XVIII. Nonetheless, as the staff has explained, through the systematic sampling of various work and the QA documentation for it, audits provide but a third level of assurance. The principal levels of assurance are provided by, first, quality craftsmanship and, second, quality inspections. Staff Response to ALAB-801, Harrison Affidavit at 16-17. The record here shows that auditing deficiencies existed only with respect to the work performed by Mercury. But as to that work, the first and second levels of assurance were, in fact, provided. This is demonstrated by the absence of significant safety deficiencies in the improperly audited Mercury work, as revealed by the major reinspection of that work that was undertaken by qualified personnel. Further, there is no basis for assuming that the implementation of future audits under LP&L's auspices will reflect the same failures associated with the audits of Mercury's work. Ac-

²⁵ The ANI is the agent of a state, municipality, or insurance company authorized to write boiler and pressure vessel insurance, and is qualified to conduct specified inspections. *See* ASME [American Society of Mechanical Engineers] Boiler and Pressure Vessel Code, Section III, Article NCA-5000 (July 1983).

cordingly, we conclude that Joint Intervenors' charges in connection with LP&L's audit program do not warrant reopening of the record.

(6) *NCRs*: Nonconformance Reports (NCRs) and other documents such as Discrepancy Reports (DRs), Engineering Deficiency Notices (EDNs), Field Change Requests (FCRs), and Design Change Notices (DCNs) are generated in a QA program to identify and to record discrepant or changed conditions. In general, these documents result from the work of QC inspectors. Proper dispositioning of these reports is a vital part of a QA program, because it is through this process that the suspect condition is eventually corrected or, in some cases, judged by a qualified person to be acceptable in spite of the discrepancy. *See* 10 C.F.R. Part 50, Appendix B, Criteria XV, XVI. For example, a weld that is undersized according to a governing standard may nevertheless be determined by analysis to be adequate for the particular service intended, and hence properly dispositioned "use-as-is."

The organizational level at which a deficiency may be dispositioned is governed by QA program procedures. Under certain circumstances, a condition first noted as a discrepancy (to be resolved perhaps by a subcontractor) must be upgraded to an NCR (resolvable only by the construction manager). In general, upgrading to a higher level means that more documentation and analysis are required for disposition. In addition, certain NCRs must be evaluated for reportability to the Commission under 10 C.F.R. § 50.55(e) and 10 C.F.R. Part 21. Failing to upgrade when required is itself a program nonconformance and, more important, involves the risk that a discrepant condition will not be properly evaluated and corrected.

Joint Intervenors raise several charges related to LP&L's treatment of NCRs and the like, relying on the Eisenhut Letter, presumably Issues 4, 6, and 13. *See* JI Exh. 9, Enclosure at 2-4, 5-6, 9.²⁶ In charges A(10)(a), A(10)(b), A(10)(c) (in part), and A(10)(f), they claim that LP&L failed to identify, through NCRs, serious nonconforming conditions; to upgrade lower-tier documents to NCR status; and to disposition NCRs properly. Joint Intervenors also assert, in charges D(3) and D(4), that LP&L's response to the Eisenhut Letter did not constitute an adequate review of the pertinent documentation or meet even the NRC's

²⁶ Joint Intervenors also cite two other exhibits. One, JI Exh. 40, is a one-page, illegible, handwritten memorandum from an unidentified source. The only words discernible are "loss of coal dust." Obviously, we can give this "document" no weight. The other exhibit, JI Exh. 43, is a 1977 NCR for certain piping material. Joint Intervenors offer no explanation of the purpose this single exhibit is to serve. Thus, it too is accorded no weight. *See also* LP&L's Responses to Specific Allegations at 53.

minimal requirements. Joint Intervenors' Motion at 38-39; Joint Intervenors' Reply at 19-21.²⁷

SSER-9 thoroughly addresses the NCR-related concerns raised by Joint Intervenors' charges and first described in the Eisenhower Letter. In Issue 4, the staff documented a number of examples of lower-tier documents that were not upgraded to NCRs — as they should have been. See JI Exh. 9, Enclosure at 3-4. The staff initially requested LP&L to review all of the pertinent lower-tier documents to assure that proper corrective action (including reporting to the NRC) was taken. *Id.* at 4. But LP&L proposed a modified sampling approach, which the staff found to be “conservative” and acceptable. SSER-9, Appendix J at 25-26.²⁸ Further, the staff considered LP&L's review team to be experienced and competent. Although LP&L acknowledged that there had been procedural and misinterpretation problems in the handling of hardware discrepancies, the staff found good engineering practice, appropriate corrective action where necessary, and no actual hardware deficiencies that raise a safety concern. *Id.* at 26. See generally LP&L Exh. 9.

Issue 6 of the Eisenhower letter involves mainly the dispositioning of Ebasco NCRs. The staff's random review of these documents revealed that about one-third contained “questionable dispositions.” JI Exh. 9, Enclosure at 5. The staff again provided examples of problem documents, including 23 Mercury NCRs. Consequently, the staff directed LP&L to propose a program to assure that all NCRs and DRs had been properly upgraded and dispositioned, and to correct any problems discovered. *Id.* at 5-6. Although the staff subsequently agreed to accept less than a 100 percent detailed review of these reports, after problems were encountered in the review process, LP&L then examined *all* NCRs (including over 7000 generated by Ebasco). Depending on the type of problem identified, some NCRs received a further in depth review. NRC Staff's Further Response, Harrison Affidavit at 28-29. A sampling approach was used for the lower-tier DRs, however. But of the 2,029 DRs reviewed, only 33 problems were identified and they were all administrative in nature. *Id.* at 29-30.

The staff found that program deficiencies did exist: the whole NCR system was complicated, the guidelines for implementation were not specific enough, and some documentation was lacking or indeterminate.

²⁷ Joint Intervenors also casually allege in this section of their motion to reopen that LP&L has made efforts to undermine an unspecified OI investigation. Joint Intervenors' Motion at 39. They neither explain nor support this accusation. It therefore warrants no discussion.

²⁸ LP&L's review included all of the lower-tier documents specifically identified by the staff and approximately 900 of 32,000 other documents. This sample included only safety-related components, but otherwise was random. LP&L Exh. 9 at 4-3, 4-4.

SSER-9, Appendix J at 32-35.²⁹ Notwithstanding these deficiencies, the staff concluded that “the problems with NCRs and DRs have been identified and properly resolved.” *Id.* at 35. The key to this finding was the absence of hardware problems and safety-significant issues. *Ibid.* See generally LP&L Exh. 8.

Thus, although substantial problems in the implementation of LP&L’s NCR system existed, the review of the documentation generated by that system has been extensive. Where a sampling approach, rather than a complete review, was undertaken, it was justified, given the total number of documents potentially involved and the absence of any serious safety problems in even the documents originally identified by the staff as questionable. Further, the programmatic deficiencies that were discovered are addressed by LP&L’s newly revised operational QA program. See LP&L Supp. Exh. 1, Attachment, “Operational Phase QA Program Assessment” at 10-15. In the circumstances, we have no cause to reopen the record for further pursuit of this matter.

2. In the second category of charges in contention A are those that ostensibly might indicate some quality assurance failures. However, after closer analysis of these charges themselves, as well as the rejoinders of LP&L and the staff (including SSER-9), we conclude that they are meritless. Further, even if these charges were to have substance, they are but isolated incidents of no generic or safety significance. As in the case of the more serious charges discussed in part II.A.1, we have grouped related or identical charges and discuss each grouping below.

a. Charges A(1)(d) (in part), A(7)(e), and A(7)(f) assert that special processes like welding were not performed in accordance with proper procedures. For example, Joint Intervenors claim that half of the welding on some two million feet of stainless steel tubing for the containment instrument lines was not “purged” of atmospheric contamination. As a consequence, “sugaring” (oxidation) formed on weld surfaces, leading to possible future cracking of the weld itself. Joint Intervenors also allege that welds were not cooled sufficiently between “passes” because of management pressure to speed up. The principal support for these charges of welding deficiencies is the affidavit of a former worker at the site. See JI Exh. 8 at 5-6.³⁰

²⁹ Issue 13 of the Eisenhut Letter specifically addressed the matter of missing NCRs. JI Exh. 9, Enclosure at 9. But the NCRs identified as missing had, in fact, been entered into the NCR system and were adequately dispositioned. The initial inability to locate them was attributed to the cumbersome NCR procedures. SSER-9, Appendix J at 59-60.

³⁰ Joint Intervenors also rely on the MAC Report, JI Exh. 1. But this document makes only the briefest reference to a general need for LP&L to assure that any problems with welding be resolved.

We note at the outset that the reliability of the alleged's claims is somewhat suspect. The informer's assertion that there are about two million feet of stainless steel tubing for the containment instrumentation is greatly overstated. The total amount of stainless steel tubing is actually about 121,000 feet, of which only 12,000 feet is safety-related tubing located in the containment building. Second, purging of the tubing is not required before welding in this instance. Mercury initially purged the tubing but discontinued this practice because it was unnecessary for the socket welds in question: the geometry of this type of weld does not expose the molten metal to the air inside the tube during the welding process. Further, sugaring was minimized by the use of special portable welding equipment with a very stable electrical current output. In the relatively few instances where some sugaring was detected, the welds were cut out and replaced. There is also no specific requirement for a certain amount of time to elapse between each welding pass. The only requirement is that the temperature not exceed 350°F before the second pass. This can be achieved within a few seconds. LP&L's Responses to Specific Allegations at 42a-42b (renumbered per revision attached to Letter to Appeal Board from B. W. Churchill (December 18, 1984)).³¹

It is also important to note, in this connection, that Mercury's work on the instrumentation lines here in question has been subjected to extensive reinspection and testing with satisfactory results. See pp. 25, 27-28, *supra*.

b. Joint Intervenors, in charges A(1)(d) (in part), A(1)(m) (in part), and A(7)(a), contend that welding and instrumentation work were not performed by qualified individuals. In particular, they claim that welders were not tested onsite and that pipefitters were substituted for welders. See JI Exh. 8 at 3, 10.³² See also Joint Intervenors' Reply at 21; Joint Intervenors' Response to ALAB-801 at 4-5.

Joint Intervenors fail to explain the significance of offsite testing of welders. LP&L acknowledges that this occurred, explaining that offsite testing was often more efficient and is acceptable under the ASME (American Society of Mechanical Engineers) Code. LP&L also states that some pipefitters are skilled and qualified to perform welding, but only those who passed welding tests were permitted to weld. LP&L's Responses to Specific Allegations at 40. With respect to instrumentation, union craftsmen, extensively trained onsite in an apprentice program,

³¹ We note that the NRC's Regulatory Guide 1.44, "Control of the Use of Sensitized Stainless Steel" (May 1973), at 1.44-2 lists the limiting of interpass temperature as just one of several techniques recommended to control the sensitization of stainless steel during welding.

³² Joint Intervenors again rely on the MAC Report, JI Exh. 1, but it contains no discussion of welder qualifications.

performed this work. It was also inspected and audited by site QA and QC personnel. *Id.* at 14.

The subject of welders' qualifications was reviewed in depth by the staff and LP&L because of concerns identified by the staff in Issues 9 and 22 of the Eisenhut Letter. *See* JI Exh. 9, Enclosure at 7, 13. Issue 9 involved missing documentation for some support welds on instrumentation cabinets, raising the question of whether all of the welders who performed this work were qualified. In response to the staff's request, LP&L reinspected 17 of the 18 cabinets and located some of the missing documentation. The staff then reviewed a sample of LP&L's work. The results of the reinspection and review showed that the welding was adequate to meet all expected loadings and that no rework was necessary. The staff also concluded that the generic aspects of this matter were adequately evaluated. SSER-9, Appendix J at 49-50.

Issue 22 reflected the staff's concerns that, due to documentation deficiencies, some Mercury welders did not appear to be qualified, and that code requirements for the control of weld filler material had not been met. LP&L performed a review of Mercury welders' qualifications and found that all were qualified except one, a nonconformance that had been properly dispositioned in an NCR. *See* LP&L Exh. 6 at 22-1 to 22-2. The staff's review confirmed that, although Mercury's records contained numerous clerical errors and were not maintained according to procedures, its welders were qualified for the various welding jobs performed. (For example, welders qualified to make groove welds were also qualified to make fillet welds, but not vice versa.) As for the control of filler material, the staff determined that the redrying process used by LP&L instead of the rebaking required by the American Welding Society and ASME Codes was an acceptable deviation and provided satisfactory results to ensure the necessary elimination of moisture. Consequently, the staff found this had no safety significance or impact on plant hardware. SSER-9, Appendix J at 79-83. *See also* NRC Staff's Further Response, Harrison Affidavit at 30-32; Staff Response to ALAB-801, Harrison Affidavit at 33. All welders thus appear to have been qualified for the work they performed. We also take note once again of the successful results of the reinspection and testing program for Mercury's work. *See* pp. 25, 27-28, *supra*.

c. Joint Intervenors charge that Ebasco procurement personnel were not adequately trained, especially in quality assurance. *See* charges A(1)(f) and A(3)(e). They have supplied five exhibits to support these charges, but none is of probative value. JI Exhs. 18, 19, 20, and 31 are various notes on, and listings of, audit items generated from 1976 to 1978. Joint Intervenors have made no effort to direct our attention to

the particular parts of these documents that supposedly support their charge, and our perusal of them is unavailing. LP&L notes one item of possible relevance — an NCR stating that there was no record of training for one Ebasco senior buyer — but points out that corrective action was taken on this matter and the NCR was closed out in 1977. LP&L's Responses to Specific Allegations at 13, 27. See JI Exh. 20 at 3. The fifth "supporting" document, JI Exh. 21, is a March 1981 NRC "Preliminary Notification" concerning the arrest of eight construction workers (none involved with either QA/QC or procurement) for possession and sale of marijuana. Obviously, this exhibit has nothing to do with the adequacy of the training of Ebasco's procurement employees.

d. In charge A(1)(n), Joint Intervenors allege that alcohol and drug abuse was common at the Waterford site. An informer's affidavit claims that not only was such abuse common, it was condoned and even participated in by management. JI Exh. 8 at 4. Joint Intervenors again cite JI Exh. 21, concerning the 1981 arrest of eight construction workers for the possession and sale of marijuana, but this time in a more relevant context.

LP&L denies that drug and alcohol abuse was common at Waterford. It points out that the allegations in JI Exh. 8 are vague and nonspecific.³³ It also notes that LP&L management cooperated fully with local law enforcement officials in the four-month undercover investigation that led to the arrest of the eight construction workers discussed in JI Exh. 21. LP&L describes its policy on drug and alcohol abuse — a policy strengthened after the 1981 arrests. This policy applies to LP&L and contractor employees alike, and it provides for disciplinary action against employees found in possession of a controlled substance, even during off-duty hours. Unannounced searches, urinalysis, and observation by security personnel and timekeepers are means used to detect the use of unauthorized substances. The policy also includes measures to educate and to assist employees with substance-abuse problems. LP&L's Responses to Specific Allegations at 15-17.

The staff confirms LP&L's work with local law enforcement to minimize drug use onsite. Following a recent review of LP&L's drug program, the staff concluded that it was better than the industry average and appeared to be implemented effectively. Hence, the staff has no concerns of this nature about the fitness of Waterford's operating staff. NRC Staff's Response, *supra* note 8, Crossman Affidavit at 2, Enclosure I.³⁴

³³ The unexpurgated copy of this exhibit (see note 8, *supra*) contains no additional details on this point.

³⁴ This was one of the staff responses that we did not strike in ALAB-801. See 21 NRC at 484.

e. Charges A(1)(o) and A(8)(a) concern an alleged lack of QC coverage for night shift construction work at Waterford. Joint Intervenors rely on the statement of a former worker, who claims that in 1982 Ebasco had no QC coverage on the night shift and that, according to a co-worker, Mercury had "only" one or two QC inspectors for 10 to 12-person night crews. See JI Exh. 8 at 6-7.³⁵

The allegations of the former worker are so nonspecific that they fail to provide any serious or credible support for the charge of no QC coverage at night. For instance, the work supposedly lacking in such coverage is not even described, and an inspector/crew ratio acceptable to Joint Intervenors is not specified. Nonetheless, LP&L conducted a sample survey of 1982 Ebasco and Mercury work schedules. The survey results show that, depending on the amount of work under way, Mercury had from one to 24 inspectors on the night shift. Also contingent on the amount of work involved, Ebasco had from one to four inspectors assigned to the night shift. LP&L's Responses to Specific Allegations at 17-18. Charges A(1)(o) and A(8)(a) are thus without merit.

f. Joint Intervenors rely on other allegations in JI Exh. 8 (at 4-5) to support charges A(2)(d) and A(2)(e). They claim that whip restraints and temporary hangers were installed first and design drawings were done later to conform to the actual installation. They also assert that design drawings did not accurately reflect interferences between pipe hangers and instrumentation.

LP&L replies that whip restraints and temporary hangers were installed at Waterford in accordance with regulatory requirements and accepted industry practice. It explains that temporary *construction* hangers are used only to hold piping in place while permanent hangers are installed; design drawings would serve no useful purpose and thus are not made for this type of hanger. Temporary *testing* hangers, on the other hand, provide additional pipe support during testing and are preceded by design drawings. Where field changes were necessary for this type of hanger, field or design engineering personnel were authorized, pursuant to approved procedures, to "redline" changes directly onto the design drawing. LP&L also points out that it is not uncommon to discover interferences in actual installation that were not contemplated by the design drawing. LP&L suggests that the alleged may have observed such

³⁵ Joint Intervenors also rely on JI Exhs. 1 and 22, the MAC Report and an August 1979 memorandum on the MAC recommendations. The latter contains no reference to QA/QC coverage at night, and the MAC Report itself makes only a passing reference to a likely future need for "covering the around-the-clock work that lies ahead." JI Exh. 1 at 2. Thus, neither adds support to these charges.

changes without understanding the differences in hangers or the propriety of making drawing changes in the field. LP&L's Responses to Specific Allegations at 22-23.

Although Joint Intervenors do not rely on it here, we note that the CAT Inspection Report discusses various discrepancies between as-built drawings and the actual installation of supports and restraints. The CAT concluded that, although no extensive structural integrity problems were identified, LP&L's inspection efforts in this area had not been totally effective. JI Exh. 23 at III-5 to III-9. As a result, LP&L performed two 100 percent reinspections of pipe supports and restraints. The staff reviewed this work and found only minor deficiencies, none of safety significance. Staff Response to ALAB-801, Mullikin Affidavit at 5-6. See p. 52 and note 63, *infra*.

g. Affidavits from two former workers at Waterford provide the basis for Joint Intervenors' charge A(2)(f), concerning the allegedly improper installation of Hilti bolts. The alleges claim that, although design drawings required four such bolts on baseplates, often only two were used; welding to the bottom of the baseplate was done but not permitted; and bolts shorter than authorized were used on occasion. See JI Exh. 8 at 6, 10-11; JI Exh. 27 at 6-7.

LP&L has extensively addressed the informers' allegations, including those not explicitly encompassed within charge A(2)(f). It first notes generally that, whenever it was necessary to deviate from design requirements for the installation of Hilti expansion bolts (used to install anchor plates to existing concrete structures), engineering approval was obtained. More specifically, LP&L points out that there are numerous instances, involving both safety- and nonsafety-related hardware, where the approved designs called for two, rather than four, Hilti bolts in the anchor plate. With respect to the claim that such bolts were welded to the bottom of baseplates, LP&L states that this would be extremely unlikely, inasmuch as this procedure would be more difficult than that authorized and would have been discovered through QC inspections or supervisor observation. The use of bolts shorter than required would be readily detected during testing because they could not withstand the torque applied at installation. One such case was, in fact, identified and dispositioned in an NCR. LP&L adds further that Hilti bolts are conservatively designed and have substantial reserve capacity. Thus, in the event of the isolated incidents described in the affidavits, there would be no danger to the structural integrity of the plant. LP&L's Responses to Specific Allegations at 23-25.

h. In charges A(3)(g), A(5)(b), and A(10)(h), Joint Intervenors complain that there was inadequate control of design documents. For

example, design errors assertedly went uncorrected because it was not cost-beneficial to correct them, and labeling errors and the like made retrieval and maintenance of these documents difficult. Joint Intervenors rely on a letter (undated, but probably written in late 1979) from LP&L to Ebasco concerning certain errors on drawings. *See* JI Exh. 26.³⁶

While LP&L's letter describes the drawing errors as "significant," the attachments to the letter listing the errors show that virtually all involve either the same misspelling ("extration steam" rather than "extraction steam") or wrong cross-reference numbers. *Id.* at 1, attachments. As LP&L explains, these discrepancies appeared on appliques or stickers affixed to drawings received by the project to facilitate distribution and review. The errors did not appear on the drawings themselves and did not affect the design information. They also did not affect document maintenance or retrieval. Thus, they can properly be considered minor (*see* note 36, *supra*), particularly because all items involved were classified as nonsafety and nonseismic. Nevertheless, this matter was addressed as an audit item, followed by corrective action and eventual closeout. LP&L's Responses to Specific Allegations at 29-30. *See also id.* at 36, 54.

i. Charges A(3)(h), A(3)(i), and A(10)(g) (in part) concern alleged deficiencies in LP&L's records management system. Joint Intervenors argue that LP&L resisted recommendations to establish a suitable computerized records system, and that the contractor hired for this job quit as a result. They submit as support for these charges three September 1978 internal LP&L memoranda, reflecting one individual's views on the recommendations of a task force on records management. *See* JI Exhs. 32, 33, 34. Another document, JI Exh. 35, is an April 1980 letter to the Waterford project manager from the contractor for the records system, expressing that firm's difficulties in installing and implementing the Master Tracking System (MTS) at the site.³⁷

LP&L strongly defends its records management system. It notes that the computer system recommended by the author of JI Exhs. 32, 33, and 34 was, in fact, installed and used by LP&L. It also states that, despite some initial problems and complaints from the contractor concerning installation of the MTS at Waterford, the work was completed in 1980 by that contractor and the system remains in use today. LP&L's

³⁶ They also refer to an October 1979 handwritten memorandum from and to unidentified persons about errors on manufacturers' drawings. This document is largely illegible and unintelligible, although it characterizes the errors in question as "minor." *See* JI Exh. 25 at 2.

³⁷ JI Exhs. 1 and 5 — the MAC Report and the NRC's Waterford Task Force Inspection Report — are also cited by Joint Intervenors. Our attention is directed to no particular portion of these documents that might support the charges in question, and none is apparent.

Responses to Specific Allegations at 30-31. There is thus no basis to Joint Intervenors' charges.

j. Joint Intervenors express a concern, based on a former worker's statement, that the safety of the plant may be affected by the alleged continuing use of temporary pipe supports. In charge A(4)(e), they claim that possibly more than 300 such supports have not been replaced with permanent hangers, which have a greater allowance for thermal expansion. *See* JI Exh. 8 at 4.

But as we noted earlier, pipe supports were extensively examined during several walkdowns and reinspections, and no significant safety deficiencies were found. *See* p. 36, *supra*. *See also* LP&L's Responses to Specific Allegations at 34-35. We note further that the satisfactory performance of pipe supports and restraints was verified during the Pre-Core Hot Functional Thermal Monitoring Program. *See* SSER-9, Appendix J at 16-17. Thus, Joint Intervenors' concern about thermal expansion has been addressed.

k. Joint Intervenors assert in charges A(6)(a) and A(10)(g) (in part) that LP&L failed to establish an adequate and consistent components numbering system.³⁸ They rely on JI Exh. 39, two November 1978 memoranda that simply suggest a particular numbering and identification scheme. The exhibit thus does not establish Joint Intervenors' point. Indeed, as LP&L points out, the system recommended in these memoranda was employed for plant startup and continues in use today, during the operations phase. LP&L's Responses to Specific Allegations at 37.

l. Charge A(6)(b) states that LP&L failed to ensure that safety-related pipe hangers were fabricated from the correct steel and included all necessary parts. JI Exh. 8, a former worker's affidavit upon which Joint Intervenors rely, contains nothing directly on this point. There is, however, a related allegation that the metal used for some safety-related work at the plant lacked the proper identification and markings (e.g., heat numbers), precluding traceability in the event of a defect. JI Exh. 8 at 9.

³⁸ In addition to this allegation and another (*see* p. 37-38, *supra*), charge A(10)(g) also includes a claim that LP&L never corrected certain problems identified by the MAC Report (*see* JI Exh. 1 at 6) and various audits. Joint Intervenors refer to JI Exh. 5, the July 1984 Waterford Task Force Inspection Report, to support this charge further. Although they have once again failed to specify the applicable portion of this lengthy report, Section V is addressed to Joint Intervenors' apparent concern. There the staff notes LP&L's staffing and auditing problems and its failure to respond promptly enough to the MAC Report recommendations. *See* JI Exh. 5 at V-4 to V-7. We have already considered these matters at pp. 20-21, 27-29, *supra*, and need not review them again in the context of omnibus charge A(10)(g). We add, however, that the Task Force Report considered this item to be "closed." JI Exh. 5 at V-7.

LP&L replies that hangers were not required to have heat numbers; rather, this hardware was accompanied by certificates of compliance with the appropriate specifications, provided by the suppliers. LP&L's Responses to Specific Allegations at 38. The staff addressed a similar issue in SSER-7, allegation A-126. It noted that, in 1978, changes were made in the traceability system at Waterford, but implementation problems occurred. As a result, these changes were abandoned in late 1983. The steel certification program, however, had continued in effect throughout this time, and the staff found that it met the NRC's requirements. Moreover, the individual who originally brought this concern to the staff's attention was satisfied with the certification procedures and the staff's conclusions. SSER-7, Appendix J at 135-36. It is also worth noting, once again, the favorable results of the several walkdowns and reinspections of the pipe hangers and supports at the facility. *See* p. 36, *supra*.

m. Joint Intervenors raise essentially the same objection in charges A(6)(c), A(7)(c), and A(7)(d) — that weld rod traceability records were not reliable. They point to JI Exh. 8 at 9, where a former worker avers that, because the weld rod room was not open during the night shift, workers themselves filled out weld rod forms. These forms supposedly show that more weld rods were used than was in fact the case. This lack of accurate records, in the affiant's view, means there is no assurance that proper weld rods were used.

LP&L denies the charge, stating that there were detailed procedures for the storage, issuance, and control of welding materials at the plant site. It describes the special welding requisition forms and notes that these, along with a "weld traveller package," are stored in permanent files to assure traceability. LP&L acknowledges that Ebasco's weld rod room was locked during nights and weekends when less work was in progress, but this was to prevent unauthorized entry. If welding material was needed, an attendant who could be easily summoned was available. Other contractors maintained a full-time attendant whenever welding was being done. This system and the relevant documentation were audited several times over the years and found acceptable. LP&L's Responses to Specific Allegations at 39-40. LP&L has thus effectively rebutted Joint Intervenors' charge.³⁹

n. Charges A(8)(d) and A(8)(e) assert that, contrary to existing documentation, QC inspectors failed to perform adequate inspections of safety-related work, such as main steam valves and fit-ups on Mercury instrumentation tubing. *See* JI Exh. 8 at 7-8, 10.

³⁹ We think it noteworthy in this regard that JI Exh. 27, an affidavit from a former welder at Waterford, does not identify any problems related to weld rod traceability.

In denying this charge, LP&L describes the procedures for inspection and maintenance of valves. It also refers to one instance where the QA program found that the Main Steam Isolation Valve had *not* been inspected properly. This was written up in an NCR, the valve was reinspected, and no deficiencies were found. In LP&L's view — and we agree — this shows that the QA program was functioning properly. LP&L also adds that each valve has been stroked (closed, then opened) and verified as correctly installed and operable.

With respect to the alleged problems with fit-ups in Mercury tubing, LP&L explains why this charge is not credible. Assuring a proper fit-up gap is a relatively simple procedure; on the other hand, an attempt to deceive a QC inspector by erroneous external markings (as JI Exh. 8 asserts) would be more difficult and time-consuming. If the gap in the tubing were not sufficient, the weld would likely crack and be immediately detected and repaired. Further, because the purpose of the gap is to facilitate proper welding, once a weld is completed and found acceptable, the size of the gap is no longer significant. LP&L's Responses to Specific Allegations at 45-47. We need only repeat that Mercury's work has been extensively reinspected with favorable results. *See* p. 25, *supra*.

o. Joint Intervenors argue, in charges A(1)(m) (in part), A(9)(a), A(9)(b), and A(9)(c), that LP&L failed to establish and follow procedures (including the improper use of unqualified personnel) to control the handling, storage, cleaning, and maintenance of electrical equipment, valves, etc. They mention, in particular, two 1981 incidents of flood damage to electrical equipment and suggest that it may not have been reinspected and retested. These charges are based on allegations in a former worker's statement. *See* JI Exh. 8 at 3-4, 8-9.⁴⁰

LP&L states in response that there were two flooding incidents in October 1981. One was in a nonsafety-related area (the Turbine Building) and resulted in no damage to safety-related equipment. The other was in the Reactor Auxiliary Building and was caused by the failure of a valve to operate during pneumatic testing — not by unqualified workers. The emergency diesel generator control panels incurred substantial damage and consequently were completely replaced. This incident was documented and resolved, to the NRC staff's satisfaction, through the NCR system. LP&L's Responses to Specific Allegations at 47-48.

Speaking more generally to the charges, LP&L explains the care and maintenance procedures for equipment employed during the construction phase. Valves are not ordinarily stroked during this period because

⁴⁰ We note that there are some inconsistencies between JI Exh. 8 and Joint Intervenors' actual charges. For example, the affidavit refers to flood damage in 1982, rather than 1981. *See* JI Exh. 8 at 8.

dust and construction debris could damage them. As part of the startup process, however, all valves are tested, the results are documented, and repairs are made. These procedures were audited and, despite minor deficiencies, found adequate. *Id.* at 48-49. LP&L also explains its procedures for hiring, training, supervising, and testing maintenance workers. It points out that some maintenance positions require no prior experience. Thus, the use of former cab drivers and bartenders, as alleged, would not be improper for some work. *Id.* at 14-15.

p. In part D(1) of their motion to reopen, Joint Intervenor complain that LP&L's corrective action for Issue 5 in the Eisenhut Letter — "Vendor Documentation - Conditional Releases" — is not adequate. *See* JI Exh. 9, Enclosure at 4-5. In their view, this issue concerns the lack of visual inspection of safety-related equipment by either vendor or site personnel at the time of receipt; i.e., documentation was checked, but not the quality of the equipment or workmanship. LP&L's sample review of vendor documentation, according to Joint Intervenor, cannot substitute for visual inspection. Joint Intervenor's Motion at 36-37. *See* JI Exh. 10 at 136-38.

As LP&L points out, Joint Intervenor misunderstand the concern raised by the staff in Issue 5. *See* LP&L's Responses to Specific Allegations at 80-81. The staff had found certain deficiencies in the handling of conditional certifications of equipment supplied by Combustion Engineering (the vendor of the nuclear steam supply system for Waterford) — namely, QA documents (as-built drawings, material certifications, and fabrication plans) apparently missing since 1976. The staff considered this documentation deficiency safety-significant because problems with vendor QA records could affect installed safety-related equipment. The staff therefore directed LP&L to review its records to determine if such conditional certifications were identified and resolved. JI Exh. 9, Enclosure at 4-5. Thus, this issue has nothing to do with visual inspection of equipment at the time of receipt; rather, it is essentially another missing records problem.

In any event, LP&L has responded adequately to the matter raised by Issue 5. In its submission to the staff, LP&L acknowledged that some conditional certifications from Combustion Engineering were not formally tracked, but this was because the conditional nature of the certification was thought to reflect incompleting purchase orders, rather than hardware or software deficiencies. LP&L re-reviewed the records associated with Combustion Engineering material and equipment, as well as those of other manufacturers, and found no matters that would adversely affect plant safety. In addition, LP&L has taken steps to assure that conditional certifications will be formally tracked in the future, and it

has made a commitment to review all Combustion Engineering conditional certifications to determine if the conditions noted could affect the operability of the equipment. LP&L Exh. 16 at 5-1 to 5-3. The staff as well reviewed a sufficient sample of purchase orders and Material Receiving Inspection Reports. It concluded that LP&L's identification of, and corrective action taken on, the conditional releases of equipment satisfactorily resolved any concerns about vendor-supplied safety-related equipment. SSER-9, Appendix J at 27-28.

q. Charges A(4)(b) and A(8)(c) and part E of Joint Intervenor's Motion (at 39-44) all concern the concrete basemat on which the Waterford facility rests and the backfill surrounding it. We previously addressed this matter at length in three decisions — ALAB-753, 18 NRC at 1324-29, ALAB-786, 20 NRC at 1090-95, and, most recently, ALAB-803, 21 NRC at 578-86, where we concluded that “no significant safety issue exists as to the basemat.”⁴¹ Joint Intervenor's raise no basemat-related arguments in the instant motion to reopen that we have not already considered. Indeed, many of the exhibits on which they rely are rather familiar documents (e.g., JI Exhs. 41, 59, 60, 61, 62), and others are illegible and unintelligible or provide no support for the argument that LP&L has failed to identify, analyze, and correct problems connected with the basemat (e.g., JI Exhs. 37, 38, 40, 56). We remain convinced of the adequacy of the basemat and reiterate that “any QA problems associated with [it] have been satisfactorily resolved.” ALAB-803, 21 NRC at 586 n.21.

3. A number of other QA charges in Joint Intervenor's contention A still remain. But although we have considered each individually, they are so devoid of merit for one or more “generic” reasons that no lengthy discussion of them is warranted. *See San Luis Obispo Mothers for Peace*, 751 F.2d at 1320-21.

In some cases, the exhibits on which Joint Intervenor's rely are simply of no probative value because they are illegible, unintelligible, or undated, or they fail to identify their source.⁴² Joint Intervenor's also rely on certain large documents but fail to cite to the specific pages or portions assertedly pertinent to the charge, likewise making them of no value. *See* ALAB-801, 21 NRC at 483-84. *See also* p. 54, *infra*.⁴³ As noted earlier, some charges and their corresponding exhibits are years old, yet Joint Intervenor's make no attempt to establish that the alleged QA defi-

⁴¹ No party petitioned the Commission for review of any of these decisions.

⁴² *See* charges A(1)(e), A(1)(k), A(2)(a), A(2)(b), A(2)(c), A(3)(c), A(8)(b), A(10)(h).

⁴³ *See* charges A(1)(a)(i), A(1)(a)(ii), A(1)(a)(iii).

ciencies have not been remedied and thus continue to the present.⁴⁴ In other cases, the exhibits have no apparent relation to the specific charge, or the particular nature of the QA problem alleged is neither evident nor explained in the motion.⁴⁵ Finally, Joint Intervenors at times rely on documents that, in fact, refute the corresponding charge or, at best, provide no support for it.⁴⁶ Thus, Joint Intervenors have failed to supply, for these charges, the “‘relevant, material, and reliable’” evidence required to support a motion to reopen. *Diablo Canyon*, ALAB-775, 19 NRC at 1366-67.

4. The extensive record compiled in connection with Joint Intervenors’ motion to reopen unequivocally demonstrates that a quality assurance breakdown did, in fact, occur in the LP&L-Ebasco-Mercury chain. The breakdown was due in large measure to LP&L’s inadequate staffing and a cumbersome NCR system, which in turn created problems in implementation of the QA auditing program and difficulties in trending deficiencies. SSER-7 (allegation A-48) and the Eisenhut Letter document these problems. See SSER-7, Appendix J at 96-100; JI Exh. 9. Some of these problems also prevented LP&L from initially acting as promptly as it should have, when various QA problems began to crop up during the major period of plant construction.

On the other hand, the more serious QA lapses (e.g., in the inspector qualification area) involved the work of primarily one subcontractor — Mercury. To be sure, the work of other subcontractors was not without irregularities; but they were shown to be largely isolated instances and typical of problems found at other nuclear plants under construction. See Staff Response to ALAB-801, Harrison Affidavit at 10.⁴⁷ No serious hardware or system defects were discovered in any of the work, despite

⁴⁴ See charges A(1)(a)(i), A(1)(a)(ii), A(1)(i), A(1)(k), A(2)(a), A(3)(b), A(3)(f), A(4)(a), A(5)(a), A(5)(c), A(7)(b), A(10)(d), A(11)(a), A(11)(b), A(11)(d).

⁴⁵ See charges A(1)(f), A(1)(j), A(3)(c), A(4)(a), A(4)(c), A(4)(d), A(5)(c), A(11)(a), A(11)(b), A(11)(c).

⁴⁶ See charges A(1)(e), A(1)(i), A(3)(a), A(3)(b), A(3)(d), A(3)(f), A(5)(a), A(10)(d).

⁴⁷ Joint Intervenors argue that a May 1984 draft of SSER-7 (allegation A-48) shows that there was a “complete” breakdown of “all QA functions.” Joint Intervenors’ Response to ALAB-801 at 3 & n.1. We disagree. In the first place, a draft is just that — a working document. It is entirely reasonable that a document like SSER-7 would go through several revisions before it appears in final form and presumably reflects the actual, intended position of the preparer(s). In the absence of a legitimate reason to doubt that SSER-7, as published, represents the staff’s position — and Joint Intervenors have supplied none — the draft is not a particularly useful item on which to rely. See Staff Response to ALAB-801, Crutchfield Affidavit at 4-5. This is true whether the draft document is a technical or investigatory report, a litigant’s brief, or a judge’s decision.

Second, the specific portion of the draft Joint Intervenors have called to our attention is entitled “Assessment of Allegation.” Read in context, it does not represent the staff’s findings, evaluation, or conclusions — which are set forth in subsequent portions of the discussion of allegation A-48. Further, we do not find the differences between the draft and the final version of SSER-7 so compelling. Both tell us what we already know from the substantial additional information available: there was a QA breakdown in the LP&L-Ebasco-Mercury chain.

an extensive reinspection and document review effort. Indeed, the QA documentation — originally suffering from numerous infirmities itself — is now materially complete and reflects the as-built condition of the facility. In short, the problems that existed either have been corrected or are without significance insofar as the safe operation of the plant is concerned. *See Callaway*, ALAB-740, 18 NRC at 346.

Moreover, LP&L's QA program has shown considerable improvement in the last two years. LP&L's management responded convincingly to the several NRC inspections and investigations into its QA program during this time; its submissions in response to the Eisenhower Letter (and the actual work they represent) are impressive. Further, LP&L has incorporated the lessons it has learned from its past quality assurance failures into what appears to be an effective QA program for future operation, so as to prevent a recurrence of the deficiencies revealed in this record.

Thus, the questions we posed in ALAB-801, 21 NRC at 486-87, have been fully and satisfactorily answered. *See generally* Staff Response to ALAB-801, Harrison Affidavit at 15-45. The record shows that no safety-related construction errors remain uncorrected, and the breakdown in LP&L's QA procedures has not been shown to be complete, systemic, or so pervasive as to raise legitimate doubt about the safe operation of the plant. *See Diablo Canyon*, ALAB-756, 18 NRC at 1344-45. Reasonable assurance that the plant can be operated safely exists, and, hence, there is no ground for reopening on Joint Intervenors' contention A.⁴⁸

⁴⁸ The staff recently informed us and the parties of its proposed \$130,000 civil penalty against LP&L for various failures in 13 areas of its construction QA program. Board Notification No. 85-062 (June 4, 1985). The staff considers the violations to be Severity Level III — Level I being the most serious and Level V the least serious from a safety standpoint. *See* 10 C.F.R. Part 2, Appendix C, Supplement II. The Notice of Violation and accompanying letter request an extensive response (which may incorporate by reference previous submittals) from LP&L within 60 days.

The request for more information from LP&L and some of the language in the staff's letter and Notice are somewhat curious in light of the staff's recent strong endorsement, in filings before us, of both LP&L's corrective actions and its operational QA program. Nonetheless, the issues raised by the Notice of Violation are all derived from SSER-7, SSER-9, and various earlier inspection reports; nothing new is presented or revealed. Indeed, the proposed civil penalty appears to be simply the culmination of the staff's various inspection efforts over the last few years and was suggested in several reports. *See, e.g.*, SSER-7, Appendix J at 15; SSER-9, Appendix J at 5; JI Exh. 5, Appendix B; JI Exh. 23 at B-1 to B-2. Thus, we fully expected that some enforcement activity (including the imposition of a punitive monetary fine) was likely to result from the deficiencies the staff identified in LP&L's construction QA program. In other words, even if the full amount of the proposed penalty is ultimately exacted, neither it nor the events on which it is based would alter the outcome of our ruling here.

B. Management Character and Competence

The second proposed contention on which Joint Intervenors seek reopening states:

LP&L does not have the necessary character and competence to operate Waterford 3 in accordance with all NRC requirements and in a manner which protects the public health and safety. Therefore, the Commission cannot make the findings required by 10 CFR 50.57(a) needed to issue a license to operate Waterford 3.

Joint Intervenors' Motion at 15. Joint Intervenors argue that LP&L's lack of character and competence is demonstrated in essentially six ways: (1) pending investigations by the NRC's Office of Investigations into allegations of falsification of records and harassment of QA/QC personnel at the site; (2) misstatements and misleading statements by LP&L to the Securities and Exchange Commission (SEC) about the status and schedule of the plant; (3) inaccurate and misleading statements by LP&L in an April 27, 1984, letter to the NRC staff; (4) LP&L's historical failure to comply with NRC regulations and to correct noncompliances adequately; (5) LP&L's failure to upgrade its staff; and (6) LP&L's failure to ensure the competence of Ebasco site management.

Again, in considering Joint Intervenors' claims, we have focused on whether these charges raise a significant safety issue. We conclude that charges B(2) through B(6) do not, either individually or collectively. Thus, there is no justification for reopening the record on these grounds to explore LP&L's character and competence at an adjudicatory hearing. As for charge B(1), however, the state of the record does not permit us to make a judgment one way or the other. The unusual problems presented by this charge compel us to leave the matter for the Commission's resolution.

1. Joint Intervenors' first ground for challenging LP&L's character and competence is the pendency of several OI investigations into alleged records falsification and harassment of QA personnel.⁴⁹ They provide a

⁴⁹ In charge A(1)(g), Joint Intervenors claim that LP&L took retaliatory action against QA personnel who adhered strictly to QA procedures. They rely on JI Exh. 12, an affidavit from an anonymous former QA engineer at the plant, who avers that he was terminated from his position for voicing concerns about quality assurance. The staff initially advised us only that OI was "reviewing issues in this area." NRC Staff's Response, Crutchfield Affidavit, Attachment 1 (Matrix) at 1. Because of the lack of specificity in the publicly available version of the affidavit (*see* note 8, *supra*), OI cannot state whether this particular allegation is encompassed within the matters it is investigating in connection with the Waterford facility. OI acknowledged, however (in a letter it made public), that one of those investigations "addresses the issue of the alleged harassment and intimidation of QA/QC personnel." Letter to Appeal Board from B. B. Hayes (April 12, 1985) at 1. We have therefore grouped charges A(1)(g) and B(1) together for the purpose of our discussion here.

transcript of a July 13, 1984, meeting between staff and OI personnel and officers of LP&L. The purpose of that meeting was to discuss LP&L's program plan for responding to the 23 issues raised in the Eisenhower Letter, and the credibility of the LP&L personnel responsible for implementing that plan. See JI Exh. 46, Tr. 3. Relying on an article from the *Wall Street Journal*, Joint Intervenors claim that OI is ready to refer "over four cases" to the Department of Justice (DOJ) for criminal prosecution. Joint Intervenors' Motion at 15; JI Exh. 45.

LP&L replies that an OI investigation is conducted to determine if a problem exists. Thus, the validity of any allegation that prompted an investigation is indeterminate until an investigatory finding is made. Without knowing any of the details of the investigations, LP&L is unable to respond more specifically. It strongly asserts, however, that its management has demonstrated the commitment, sincerity, and involvement necessary to operate Waterford in a safe manner. Applicant's Answer, *supra* note 11, at 23-24.

Because of the dearth of publicly available information concerning OI's investigations (see, e.g., SSER-7, Appendix J at 15), we solicited more details directly from OI. Order of December 19, 1984 (unpublished). Recognizing OI's likely desire to keep sensitive investigative material confidential, however, we invoked the Commission's special policy for handling the inevitable conflicts that arise when investigations are conducted in areas with potential relevance to a pending adjudication. See 49 Fed. Reg. 36,032 (1984). Under this policy, our subsequent communications with OI have been on an ex parte, in camera basis. See Notices of March 22, May 2, and June 4, 1985 (unpublished).⁵⁰

Unfortunately, those communications have not been fully productive. We solicited specific information from OI, in both written and oral form — the kind of specific information we need "to determine the relevance of material to [this] adjudication, and whether that information must be disclosed to the parties." 49 Fed. Reg. at 36,033. Despite our efforts, complete, usable information has not been forthcoming. Some of the information does not yet exist; i.e., although the investigations were begun in 1983 or 1984, most are not yet complete, and they will not be until late summer at the earliest. Further, OI is generally reluctant to provide anyone with information that it considers incomplete. In addition, the OI personnel who responded to our requests did not have first-hand knowledge of the subjects of our inquiry, or they were not ade-

⁵⁰ Joint Intervenors recognize that we are bound by the Commission's policy, but formally note their objection to, and seek to participate in, such briefings pursuant to a protective order. Joint Intervenors' Response to ALAB-801 at 11-12.

quately prepared; i.e., neither were they the actual investigators who conducted the interviews, nor had they read the notes or transcriptions of the interviews.⁵¹

To remedy this information gap — where it was apparent that information on a particular subject did indeed exist but OI was unable to describe or to summarize it for us — we took the unusual step of reviewing some of the investigative documents ourselves, in the NRC Regional Office where they are located. Nothing we have seen gives us cause for significant concern about the integrity of LP&L's management.⁵² On the other hand, we cannot rule out all possible grounds for Joint Intervenors' charges. But OI's position is that, until its investigation is truly complete (which may include consultation with DOJ), it opposes the release of information to the parties, even under a protective order. If the information is not available to the parties, however, we cannot rely on it in making our decision. *Ibid.* Simply stated, we have no expectation of getting adequate information from OI, which we can share with the parties and on which we can rely in making a decision, within a reasonable, definite period of time. In this circumstance, neither a denial nor a grant of the motion to reopen would be sustainable or fair. Thus, we are at an impasse.

Only the Commission, it would appear, can obtain full access to the information discovered by OI and thus determine its relevance to Joint Intervenors' motion. And, under the Policy Statement, only the Commission can decide if and when that information is to be released to the parties. *See id.* at 36,034. Our experience here convinces us that there is a fundamental and philosophical conflict between the mission and duties of OI and those of the adjudicatory boards.⁵³ The Commission alone is in the position to resolve this conflict. We thus have no real option but to leave this matter for the Commission to resolve.⁵⁴

⁵¹ These circumstances are no doubt attributable to the limited resources of, and many demands made on, OI.

⁵² We have been scrupulous in the protection of the information OI has provided us. We do not feel constrained, however, from "revealing" the following. There is no basis for Joint Intervenors' claim that over four cases have been referred to DOJ. OI has advised us that it has referred only one case so far, and DOJ declined to prosecute. Letter to Appeal Board from B. B. Hayes, *supra* note 49. A number of cases involve allegations of QA records falsification and harassment and intimidation. *See* note 49, *supra*. Some of them, however, appear to be isolated or anecdotal examples of QA problems already and fully addressed elsewhere. Several cases have been closed, with findings that do not reflect adversely on LP&L.

⁵³ A licensing board recently experienced similar difficulties. *See Long Island Lighting Co.* (Shoreham Nuclear Power Station, Unit 1), LBP-85-18, 21 NRC 1637, 1643-44 (1985).

⁵⁴ We believe it would be futile to pursue the further procedures outlined in the Policy Statement, 49 Fed. Reg. at 36,034. Those measures focus on disclosure to the parties. We are not even at that point yet; the problem here is disclosure to this Board of possibly relevant information, within a reasonable time period. We have attempted to obtain information from OI since February 1984. Our efforts have

(Continued)

2. Joint Intervenors assert that “LP&L has made a significant number of misstatements and misleading statements in financial statements submitted to the [SEC] about the status and schedule of the Waterford project.” Joint Intervenors’ Motion at 16. They cite seven instances, during February-July 1984, in which LP&L made these statements.⁵⁵ According to Joint Intervenors, LP&L’s estimated time of receipt of an operating license in these documents was disingenuous, given that the NRC staff had already informed LP&L that alleged construction QA deficiencies would have to be resolved before license issuance. And, in their view, LP&L’s misleading statements to the SEC show “its lack of honesty with regulatory bodies” and inability to be trusted with regard to statements about the safety of Waterford. *Id.* at 21.

We do not and cannot properly decide if LP&L’s filings with the SEC and related issuances to stockholders are “misleading” for the purposes of the securities laws. But neither do we disclaim entirely any interest in how LP&L portrays its dealings with the NRC in public documents — as did the staff in its submission stricken in ALAB-801. *See* NRC Staff’s Response, Crutchfield Affidavit at 4. For, if LP&L’s statements to the SEC and stockholders were to be so at odds with the facts as we know them, there would be room for legitimate concern, and possibly further inquiry, about LP&L’s honesty with the NRC. The NRC’s dependence on a licensee for accurate and timely information about its facility makes candor an especially important element of management character. *See Metropolitan Edison Co.* (Three Mile Island Nuclear Station, Unit 1), ALAB-772, 19 NRC 1193, 1208 (1984), *rev’d in part on other grounds*, CLI-85-2, 21 NRC 282 (1985). *See also id.*, CLI-85-9, 21 NRC 1118, 1136-37 (1985); *South Texas*, 21 NRC at 371 (nexus of particular character trait to particular performance standards contemplated by Atomic Energy Act and NRC regulations is required).

We have scrutinized each of the seven statements cited by Joint Intervenors. To be sure, the drafters of the statements chose their words care-

been largely unsuccessful: what we have learned has come only after considerable prodding on our part. Further, the last two years of this proceeding have been characterized by extreme, albeit often unavoidable, delays. We are not willing to incur further delay in the disposition of Joint Intervenors’ motion while OI completes its work. In this decision, we rule on all other matters before us. We believe it is both logical and more efficient for the Commission to address this remaining, unique matter in the context of its consideration of our opinion here.

⁵⁵ (1) LP&L 1983 Annual Report (February 23, 1984) — JI Exh. 47; (2) SEC Form 10-K (for fiscal year ended December 31, 1983; filed March 30, 1984) — JI Exh. 48; (3) Preliminary Prospectus (May 25, 1984) — LP&L Exh. 10; (4) Prospectus (filed June 7, 1984) — JI Exh. 50; (5) Amendment to Registration Statement (July 24, 1984) — LP&L Exh. 11; (6) Middle South Utilities, Inc. (the parent of LP&L), Memorandum to Members of the Financial Community (July 30, 1984) — JI Exh. 51A; (7) Middle South Utilities, Inc., Report to Stockholders (July 1984) — JI Exh. 52.

fully, including appropriate qualifying words and phrases, as necessary.⁵⁶ As events developed and the NRC's inspection efforts intensified, the language in the statements was modified on the basis of the best information available at the time.⁵⁷ The statements indeed reflect an attitude of optimism, but it is sufficiently tempered by reality. They also show LP&L's confidence in its Waterford facility — a view naturally expected from the management of an organization. But we cannot conclude, as Joint Intervenors urge, that the statements are either misleading or inaccurate, so as to cast serious doubt on LP&L's willingness and ability to deal honestly with the NRC.

3. Joint Intervenors allege that LP&L made inaccurate and misleading statements to the NRC as well in an April 27, 1984, letter. Joint Intervenors' Motion at 21-26. This letter was LP&L's formal response to an April 2, 1984, letter, in which the staff set forth some 39 allegations of improper construction practices at Waterford. See JI Exhs. 54 and 53. Joint Intervenors claim five of LP&L's 39 responses were "false statements." Joint Intervenors' Motion at 21-26.

Joint Intervenors' arguments are without merit. As "proof" of the falsity of LP&L's April 27 response, Joint Intervenors rely on several

⁵⁶ For example, LP&L's 1983 Annual Report states that "[s]ubject to the timely issuance of the necessary license by the [NRC], fuel is *scheduled* to be loaded into the reactor during the second quarter of 1984, and commercial operation is *anticipated* by the end of 1984." JI Exh. 47 at 3 (emphasis added). The 10-K statement explicitly notes that, although LP&L "currently expects to receive an operating license from the NRC in April 1984," the opposition of "anti-nuclear groups" can result in "regulatory delays." The statement goes on to set forth the estimated additional financing charges that would be incurred were such delay to occur — again explicitly acknowledging that possibility. JI Exh. 48 at 6. Virtually identical language appears in the May 1984 Preliminary Prospectus, June 1984 Prospectus, and July 1984 Registration Statement amendment. See LP&L Exh. 10 at 5; JI Exh. 50 at 5; LP&L Exh. 11 at 5.

⁵⁷ In the Preliminary Prospectus, LP&L no longer states when it expects to receive a license; rather, it "anticipates that Waterford 3 will be *ready for fuel loading* in late May 1984." LP&L Exh. 10 at 5 (emphasis added). The Prospectus filed on June 7 states that LP&L "believes" the plant is ready for fuel loading. JI Exh. 50 at 5. Six weeks later, the amendment to the Registration Statement discusses the June 13, 1984, Eisenhower Letter. It notes that the NRC required these issues to be resolved before licensing, that LP&L had submitted a program plan for resolution of the issues, and that it was involved in continuing discussions with the staff on these matters. It also mentions commencement of a program of ultrasonic testing of the basemat "for the purpose of providing final assurances" of the mat's structural integrity. The statement cautions that license issuance "should not be expected before possibly late August or September 1984." LP&L Exh. 11 at 5. The Middle South memorandum to the financial community, issued one week later, reflects an upbeat attitude but is also consistent with LP&L's SEC filings. See JI Exh. 51A.

Joint Intervenors argue that LP&L essentially knew that its problems were more significant than its filings reflected. But in support of this, they *repeatedly* rely on documents that were prepared or events that occurred *after* the issuance of the particular statements in question or the time period they were intended to cover. For instance, LP&L's 10-K filing expressly covered the year ending December 31, 1983, and it was filed March 30, 1984. See JI Exh. 48. Yet Joint Intervenors rely on a letter from the NRC to LP&L — dated April 2, 1984, and requesting additional information on 39 issues — as an indication that LP&L's 10-K statement of an expectation of license issuance in April 1984 was misleading. Joint Intervenors' reliance is all the more misplaced in view of the staff's request for the additional information by April 18, "[i]n order to maintain the scheduled licensing decision date of late April or early May." JI Exh. 53.

NRC-generated documents, which identify certain problems in LP&L's construction QA program.⁵⁸ These documents, however, were not even in existence at the time of the April 27 letter.⁵⁹ More important, the 39 allegations in the staff's letter — described as having been “received over the last several months” — were broad and unspecific. See JI Exh. 53.⁶⁰ Further, LP&L had a limited time in which to respond to the staff (less than a month). It is thus not surprising that LP&L's response was lacking in detail.

It is also clear from the staff's letter that the review of the QA allegations was then at a relatively early stage and was expected to continue for some time. See *ibid.* Consequently, there is no indication that the staff either viewed LP&L's April 27 reply as the final word on the matters set out in the staff's letter, or was misled by it. Indeed, this was the first of several exchanges of correspondence, with each round becoming more focused on particular, asserted construction or QA deficiencies.

⁵⁸ See Eisenhut Letter (June 13, 1984) — JI Exh. 9; Waterford Task Force Inspection Report No. 50-382/84-34 (July 20, 1984) — JI Exh. 5; Robert E. Philleo, “Evaluation of Concrete Construction Adequacy in the Basemat” (May 18, 1984), attached to NRC Staff's Motion for Additional Extension of Time (June 14, 1984) — JI Exh. 41; CAT Inspection Report No. 50-382/84-07 (May 14, 1984) — JI Exh. 23; viewgraphs from staff meeting with LP&L (August 17, 1984) — JI Exh. 56.

Joint Intervenors also rely on an affidavit from their counsel, dated September 24, 1984 (JI Exh. 55). The purpose of the affidavit is not clear, other than to show that certain documents were lost during part of 1983 and 1984 — a fact no one disputes. The affidavit refers to the findings of George Hill, the former head of a document review team at Waterford. Any views held by Mr. Hill, however, should have been submitted in an affidavit by *him*, not Joint Intervenors' counsel. *Diablo Canyon*, ALAB-775, 19 NRC at 1367 n.18.

⁵⁹ The only matter cited by Joint Intervenors that predates the April 27 letter is NCR W3-7549 (February 1, 1984). Joint Intervenors state that this NCR recorded many of the same problems identified by the staff in Item (11) of the April 2 letter (i.e., extra supports for instrumentation cabinets were allegedly made from materials with no heat numbers, completed by uncertified welders, and examined by uncertified inspectors). See Joint Intervenors' Motion at 25-26. Joint Intervenors thus suggest that LP&L did not respond entirely truthfully when it described this allegation, in its April 27 letter, as “[p]artially valid.” See JI Exh. 54, Attachment, Item (11). LP&L agrees that the NCR and Item (11) concern essentially the same thing, but states that the “disposition of the NCR at the time was the same as in the April submittal.” It subsequently supplemented the NCR, and the matter was closed as part of SSER-9/ Issue 9. LP&L's Responses to Specific Allegations at 71.

⁶⁰ The five items of concern here to Joint Intervenors demonstrate the unparticularized nature of the allegations in the staff's April 2 letter:

1. It has been alleged that civil/structural and piping QC inspectors were not certified in accordance with the appropriate requirements.
6. It has been alleged that basemat concrete was not placed in accordance with the ACI [American Concrete Institute] Codes.
7. It has been alleged that a complete (100%) review of all concrete placement packages was not performed thoroughly in that all NCR's, Nasty Grams, EDN's and letters were not included in the review.
11. It has been alleged that the extra supports for instrumentation cabinets covered by an FCR that were mounted on gratings inside containment were fabricated with materials for which there is no heat numbers traceability by uncertified welders and examined by uncertified inspectors [sic].

21.b. It has been alleged that . . . [w]elders and QC weld inspectors were not adequately qualified. JI Exh. 53, Enclosure. The subjects raised by these allegations are addressed above in our discussion of Joint Intervenors' contention A and in our decisions concerning the basemat, ALAB-753, ALAB-786, and ALAB-803.

Nor is there any evidence that LP&L did not supply the best answers possible in the circumstances at that time. Much closer review of more specific allegations by LP&L later, at the staff's urging, did bring to light correspondingly more accurate (and sometimes less favorable to LP&L) information than that provided in LP&L's April 27 letter. But that fact does not fairly raise "doubts about LP&L's forthrightness and honesty with the staff" in the April 27 letter. Joint Intervenors' Motion at 25. We therefore reject Joint Intervenors' argument that this letter was either inaccurate or misleading.

4. In further support of their challenge to LP&L's management character and competence, Joint Intervenors allege that "LP&L historically has failed to comply with NRC regulations and when cited by the NRC has failed adequately to respond to correct noncompliances and prevent their recurrence." Joint Intervenors' Motion at 26. They cite generally to Issue 23 in the Eisenhut Letter, concerning the QA program breakdown between Ebasco and Mercury (*see* JI Exh. 9, Enclosure at 14), and to five particular items listed in the CAT Report as matters LP&L failed to correct despite its previous commitments to the NRC to do so.⁶¹ In their supplementary comments, Joint Intervenors stress that LP&L's asserted failure to correct these QA problems, until after the NRC's repeated urgings, shows a lack of initiative and absence of basic managerial capabilities. Joint Intervenors' Response to ALAB-801 at 13-14.

We agree with Joint Intervenors that it is undesirable for the NRC routinely to be the principal stimulus in getting a licensee to correct previously identified deficiencies. The Commission must necessarily depend heavily on a permittee or licensee to report important information and to assume a role of at least partial self-policing. *See* p. 48, *supra*. It is therefore essential that the motivation to discover, analyze, and correct potentially safety-significant problems originate with plant management.

We are unable to conclude here, however, that LP&L lacks either the willingness or desire to correct deficiencies that could affect the safe operation of the Waterford plant. With respect to Joint Intervenors' reliance on Issue 23 in the Eisenhut Letter, we have already discussed in part II.A, *supra*, the fact that a serious breakdown in a portion of

⁶¹ Although Joint Intervenors repeatedly refer to "Exhibit 24" as CAT Inspection Report No. 50-382/84-07, it is in fact their Exhibit 23. The five items concern (1) heating, ventilating, and air conditioning and electrical raceway seismic supports, (2) as-built verification of pipe supports and whip restraints, (3) maintenance of safety-related motors, (4) structural steel welding by Peden Steel, and (5) the clearance between piping and adjacent structures. *See* JI Exh. 23 at II-4 to II-5, III-5 to III-9, II-13 to II-15, IV-10 to IV-11, III-1 to III-5, VIII-5 to VIII-6.

LP&L's construction QA program indisputably occurred. Further, this breakdown was, in part, a consequence of applicant's failure to respond fully to the 1982 Notice of Violation. But it is also true that LP&L's QA program first reported this situation. More important, the record shows that significant matters have not gone uncorrected and the breakdown was not so pervasive as to raise a legitimate concern about overall plant safety. *See* pp. 43-44, *supra*.

Moreover, the five particular matters highlighted in the CAT Report as remaining uncorrected despite previous citations from the agency must be viewed in their proper perspective.⁶² In the first place, the CAT Report itself notes that the underlying cause of these deficiencies was LP&L's "difficulties in implementing an effective in-process quality assurance program." JI Exh. 23 at A-1. Our conclusion that LP&L now appears to have remedied that more fundamental problem (*see* pp. 43-44, *supra*) logically suggests that significant improvement in LP&L's corrective action program will follow. In fact, LP&L has already acted to strengthen its "Licensing Commitment Tracking Program." The staff (including members of the CAT) has reviewed the revised program and concludes that it is adequate and, if implemented adequately, "there should be no future concern that NRC-identified problems will not be corrected." Staff Response to ALAB-801, Mullikin Affidavit at 4. Moreover, the five instances of uncorrected deficiencies identified in the CAT Report and relied on by Joint Intervenors were the *only* such instances found by the CAT. *Ibid*. The CAT did followup inspections as to each and determined that all of its concerns were satisfactorily resolved, despite some minor problems that were identified. *Id.* at 4-8.⁶³

Thus, while LP&L did fail to correct certain deficiencies identified by the NRC in earlier inspections, the record does not establish a pattern of recalcitrance on the part of LP&L so as to suggest the continuance of a historical trend. LP&L eventually — albeit at the staff's urging — addressed and corrected the identified deficiencies. *See* LP&L's Responses to Specific Allegations at 77-78. But more important, it has acted to

⁶² In addition to these five items, Joint Intervenors refer as well to Issue 16 in the Eisenhut Letter, which concerns LP&L's asserted failure to pursue vigorously surveys and exit interviews it conducted with QA personnel in early 1984. Because this was not a matter previously identified by the NRC as requiring corrective action, which LP&L failed to undertake, the relevance of Issue 16 to Joint Intervenors' specific argument here is unclear. Rather, Issue 16 seems more pertinent to LP&L's responsibility to identify possibly programmatic QA deficiencies. *See* pp. 26-27, *supra*. In any event, despite its earlier criticism in the Eisenhut Letter, the staff now finds LP&L's QA interview program — initially undertaken voluntarily — to be significantly improved and working well. SSER-9, Appendix J at 65-68; Staff Response to ALAB-801, Crutchfield Affidavit at 6-11. We have been given no cause to conclude otherwise.

⁶³ For example, in one case, "a minor procedural violation" concerning documentation was discovered, and "minor rework" of no safety significance was required on about one-ninth of the 3,600 pipe supports/restraints. Staff Response to ALAB-801, Mullikin Affidavit at 6.

assure better tracking of such matters in the future.⁶⁴ In these circumstances, we have no reasonable basis to doubt LP&L's management character or competence in this regard. *See generally Diablo Canyon, ALAB-775, 19 NRC at 1369-70.*

5. Joint Intervenors separately raise another example of LP&L's asserted failure to correct a problem identified previously by the NRC: "LP&L failed to take necessary action to upgrade its staff after repeated warnings by the NRC that its staffing was too low and affected the readiness of the utility to begin operations." Joint Intervenors' Motion at 28.⁶⁵ They rely on two NRC documents as support for this charge. One is a memorandum, dated May 7, 1981, in which the NRC's Division of Human Factors Safety states that it could not complete an audit at the site because the level of staffing and management readiness was so low at that time. JI Exh. 57. The other is an August 4, 1981, memorandum from a staff member to the Advisory Committee on Reactor Safeguards (ACRS), comparing the organizational structure and staff of several plants. He observed that there was little commercial nuclear operating experience at Waterford and that many plant and corporate support positions needed to be filled. JI Exh. 58 at 3.

Joint Intervenors' exhibits, however, do not tell the whole story. They offer only a snapshot glimpse of the status of the plant's operations staff in mid-1981, without providing any relevant developments since then. To begin with, the NRC's appraisal of the operating staff level at Waterford in 1981 was made on the basis of LP&L's "overly optimistic," then-scheduled fuel load date of October 1982. Staff Response to ALAB-801, Constable Affidavit at 12-13. More significant, however, is the fact that, after being advised of the NRC's concerns, LP&L quickly acted to alleviate them. By December 1981, the staff found that LP&L had already "taken positive steps to significantly improve its organization." *Id.* at 13. These changes, including substantial increases in experienced personnel, were implemented from January 1982 to December 1984. *Id.* at 14. In March 1982, the ACRS, as well, was able to report that, contrary to its concern seven months earlier, LP&L's organization and staffing would be adequate to operate Waterford in a safe manner by the then-projected fuel load date of January 1983. LP&L Exh. 15. The staff continued to monitor LP&L's progress in this regard up to the time LP&L

⁶⁴ It is entirely appropriate that we consider an applicant's successful remedial efforts in connection with claims that it lacks the necessary character and competence to operate a plant safely. *See South Texas, 21 NRC at 371-74.* Not to do so would have the undesirable effect of discouraging applicants and licensees from promptly undertaking such corrective measures.

⁶⁵ At pp. 20-21, *supra*, we have discussed Joint Intervenors' related charge in connection with contention A — i.e., A(1)(b) — that LP&L failed to maintain adequate staffing for its QA program during construction of the plant.

was actually ready (and later authorized) to load fuel and to operate at low power. It concluded in December 1984, and still maintains, that LP&L has adequately upgraded its staff. Staff Response to ALAB-801, Constable Affidavit at 15-16. Its operational QA staffing levels, in particular, now compare favorably to those of other plants. *Id.*, Harrison Affidavit at 54-55.

Joint Intervenors have thus failed to show that LP&L did not address a significant matter brought to its attention by the NRC. Indeed, the record shows that LP&L responded promptly to the Commission's expressed concerns that the plant might not be staffed adequately, in terms of both manpower and experience, by the time of fuel load. A skilled workforce cannot be hired overnight. Given that inherent constraint, LP&L actively recruited personnel and steadily increased its operations staff in the three years since the NRC first brought the matter to its attention. No more could reasonably be expected from LP&L's management.

6. Joint Intervenors' last argument in support of its claim that LP&L lacks the character and competence to operate Waterford safely concerns Ebasco's site management. Joint Intervenors rely on the fact that, in May 1983, Ebasco assigned Robert Marshall, a former Kaiser Construction superintendent at the Zimmer nuclear plant in Ohio, to Waterford as site manager. They refer to some ten QA problems allegedly associated with Mr. Marshall and discussed in a November 1981 NRC inspection report on the Zimmer facility. Joint Intervenors' Motion at 29-32. Joint Intervenors thus suggest that, in permitting Mr. Marshall to serve at Waterford, "LP&L failed to ensure that Ebasco site management was competent, trustworthy, and dedicated to quality principles . . ." *Id.* at 29.

Joint Intervenors have not provided any documentary support for their allegation — specifically, neither the Zimmer inspection report on which they so heavily rely, nor even any page citations to it. At a minimum, Joint Intervenors were obliged to direct our attention to the specific portions of the report that ostensibly support their serious charges against Mr. Marshall. Their having failed to do so, we are not obliged to do Joint Intervenors' research for them. See ALAB-801, 21 NRC at 483-84; *Philadelphia Electric Co.* (Limerick Generating Station, Units 1 and 2), ALAB-804, 21 NRC 587, 592 & n.6 (1985).⁶⁶

⁶⁶This is particularly true here because the Zimmer inspection report in question is about 420 pages long (including exhibits) and our copies are all on microfiche, making review of the report extremely difficult. (Due to space limitations, readily available copies of older NRC inspection records are now retained only on microfiche. Moreover, the Zimmer construction permit has been revoked and the operating license proceeding terminated. See *Cincinnati Gas & Electric Co.*, Docket No. 50-358, Order Revoking Construction Permit (May 16, 1985).)

More important, Joint Intervenors fail to link Mr. Marshall's brief tenure at Waterford to any particular problem at that site. They allege that "[a]fter NRC complaints about Mr. Marshall circulated at Waterford, he was removed from his position and moved to Ebasco corporate headquarters . . ." but, as noted above, they neither cite to nor submit any support whatsoever for this charge. *See* Joint Intervenors' Motion at 29 n.2. LP&L, on the other hand, strongly denies the allegation, asserting that Mr. Marshall was only temporarily assigned to Waterford to complete the last phase of construction. When that was essentially accomplished by May 1984, "Ebasco requested that he be released to assume his role as Vice President, Nuclear and Defense for Ebasco Constructors in . . . New Jersey." LP&L's Responses to Specific Allegations at 76. Joint Intervenors have thus clearly failed to satisfy their burden of showing that the employment of Robert Marshall at Waterford raises significant questions about LP&L's management competence and integrity.

C. The Adequacy of the NRC Staff's Inspections and Investigations

Joint Intervenors' third proposed contention states:

The NRC Staff's special CAT inspection, Special Inquiry Team inspection, Task Force inspection and Office of Investigation inquiry, and the corrective action, including reinspection and rework, which the Staff has required of LP&L, are not adequate to ensure that construction deficiencies of potential safety significance at Waterford have been resolved and that LP&L will be able to operate Waterford 3 in accordance with all regulatory requirements and to protect the public health and safety.

Joint Intervenors' Motion at 32. The contention reflects Joint Intervenors' general dissatisfaction with the staff's efforts at Waterford and its treatment of the allegations addressed in SSER-7. Joint Intervenors are similarly dissatisfied with LP&L's response to the QA problems identified by, and of concern to, the staff. *See id.* at 32-36, 46a-49, 51-57.⁶⁷

Insofar as Joint Intervenors seek to litigate the adequacy of the staff's work in connection with the Waterford facility, they propose a conten-

⁶⁷ The structure of Joint Intervenors' motion — organized around the proposed contentions — starts to break down with contention C. Nonetheless, we attempt to address their arguments in the context where they most logically seem to fit. The motion also contains two pages numbered "46;" we have renumbered the second "46a."

tion that is not litigable.⁶⁸ “[I]n an operating license proceeding . . . , the applicant’s license application is in issue, not the adequacy of the staff’s review of the application. An intervenor . . . may not proceed on the basis of allegations that the staff has somehow failed in its performance.” *Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-728, 17 NRC 777, 807, *review declined*, CLI-83-32, 18 NRC 1309 (1983). This follows logically from the fact that it is the *applicant* that ultimately bears the burden of proving its entitlement to the privilege of an operating license. *See Consumers Power Co.* (Midland Plant, Units 1 & 2), ALAB-315, 3 NRC 101, 103 (1976). Moreover, the NRC’s adjudicatory boards are not empowered to direct the staff in the conduct of its inspection and investigatory duties. *Carolina Power and Light Co.* (Shearon Harris Nuclear Power Plant, Units 1, 2, 3, and 4), CLI-80-12, 11 NRC 514, 516-17 (1980). Absent such authority, it would make little sense to litigate the adequacy of the staff’s independent performance.

This is not to say, however, that the staff’s review — and, necessarily, its adequacy — play no role at all in a licensing proceeding. They do indeed, as is evident from this very case. In ALAB-801, for instance, we explained why “thorough staff input” is essential to our resolution of certain “important matters [raised by Joint Intervenors’ motion] that could bear directly on plant safety.” 21 NRC at 482. *See also* ALAB-786, 20 NRC at 1091 & n.7. We would be less than candid were we to deny that the adjudicatory boards have traditionally found it useful and desirable to rely on the staff’s expertise for an evaluation of contested issues, especially technical ones. *See, e.g., Florida Power and Light Co.* (St. Lucie Nuclear Power Plant, Unit No. 2), ALAB-553, 10 NRC 12, 14 n.7 (1979). *See also South Carolina Electric and Gas Co.* (Virgil C. Summer Nuclear Station, Unit 1), ALAB-663, 14 NRC 1140, 1156 (1981), *review declined*, CLI-82-10, 15 NRC 1377 (1982). This is particularly true where, as here, the primary basis for the proposed contentions is a series of findings that resulted from staff inspections and investigations. Thus, the staff’s review is a significant ingredient of NRC licensing proceedings, even though its adequacy cannot be litigated *per se*, as a contention.

⁶⁸ To the extent that contention C challenges the adequacy of both the corrective actions required by the staff and LP&L’s response — in general and with regard to specific allegations (e.g., NCRs) — we have already addressed these matters in our discussion of contentions A and B. Our determination that neither of these proposed contentions raises a significant issue warranting reopening of the record (with the exception of the matters relating to OI investigations) necessarily required our consideration of the adequacy of the corrective action for identified deficiencies.

Because we have concluded that Joint Intervenor's contention C, challenging the adequacy of the staff's work at Waterford, does not raise a litigable issue, we need not address any of the reopening criteria with regard to this contention. Nevertheless, some comment on Joint Intervenor's criticism of the staff is warranted. On the one hand, they characterize the staff's recent inspections in connection with the plant as "unprecedented" and "comprehensive" and refer to the "increasingly strict reinspection programs" imposed on LP&L by the staff. Joint Intervenor's Motion at 32, 33, 46a. But on the other, Joint Intervenor is quite critical of the staff's efforts, particularly in comments directed at staff work not yet completed by early November 1984, when Joint Intervenor filed this motion to reopen. *See, e.g., id.* at 52, 55-57.⁶⁹

We believe that Joint Intervenor's criticism of the staff is not deserved. It undoubtedly could be fairly argued that greater NRC staff oversight throughout the construction of Waterford might have prevented or lessened the QA problems that were later revealed. But once the allegations began to mount, the staff devoted rather substantial resources to assuring that the facility was constructed properly and will operate safely. *See* Staff Response to ALAB-801, Constable Affidavit at 10-11; *id.*, Constable Exh. 3, Attachment at 1.⁷⁰ The staff's efforts included, where necessary, walkdowns and actual inspections of plant systems, as well as extensive records reviews. *See, e.g., id.*, Harrison Affidavit at 36-38, 41-42. *See also* note 48, *supra*. Thus, even if contention C were litigable, Joint Intervenor has failed to show here that the staff's inspection efforts raise a significant safety issue.

As we have seen, many of Joint Intervenor's charges concerning failures in LP&L's construction QA program are substantiated by various NRC inspection reports and other documents. But the thousands of pages that make up the record for this one motion to reopen also show that LP&L eventually acted to assure that all significant deficiencies

⁶⁹ Joint Intervenor also fire other assorted and random shots at the staff. For example, they claim that the staff has put many of the individuals who originally made allegations about the quality of construction at Waterford on the NRC's payroll. Joint Intervenor suggest that this has compromised the alлегers' independence. Joint Intervenor's Motion at 56. Joint Intervenor offer no corroboration whatsoever for this charge. Moreover, the "continued independence" of the alлегers is beside the point. What is important is whether there is any basis to the allegations as made and, if so, whether proper corrective action has been taken.

⁷⁰ It is important to distinguish the staff's considerable inspection activity itself from its written presentations to us concerning that activity. Our rather harsh criticism of the staff in ALAB-801, 21 NRC at 482-87, was limited to the staff's failure, up to that point, to communicate effectively the reasons for its conclusions. As is evident from principally our discussion in part II.A.1, *supra*, this problem has been cured by the staff's supplementary filing in response to ALAB-801.

were corrected. It is also clear from the record that, after extensive reinspection and document review efforts, only minor hardware problems with no safety significance were discovered. The underlying causes of the identified deficiencies have been addressed as well, and there is therefore no reason to expect a recurrence in the future of these quality assurance failures.

Many of Joint Intervenors' other charges are unsubstantiated. Myriad accusations in their filings lack any corroboration whatsoever, or the support offered is of no value. We have addressed the most significant of the charges. Those remaining are so without merit as to warrant no discussion, or they have not been presented in a cogent enough fashion to permit a response. In conclusion, except for matters that may involve OI investigations, Joint Intervenors have failed to meet their burden of showing the existence of a significant safety issue warranting the reopening of the record.⁷¹

Joint Intervenors' November 8, 1984, motion to reopen on construction quality assurance and management character and competence is *denied*, except insofar as it raises issues that may relate to matters under investigation by the NRC's Office of Investigations; to that extent, the motion is *referred to the Commission*. Joint Intervenors' motion of the same date for a protective order is *denied as moot*.

It is so ORDERED.

FOR THE APPEAL BOARD

C. Jean Shoemaker
Secretary to the
Appeal Board

⁷¹ In light of this conclusion, we need not decide if Joint Intervenors have satisfied the other requirements for reopening. See pp. 13-14 and note 4, *supra*.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

Alan S. Rosenthal, Chairman
Thomas S. Moore
Howard A. Wilber

In the Matter of

Docket Nos. 50-413-OL
50-414-OL

DUKE POWER COMPANY, et al.
(Catawba Nuclear Station,
Units 1 and 2)

July 26, 1985

The Appeal Board affirms three Licensing Board partial initial decisions that together authorize full-power operation of the two-unit Catawba facility, but leaves for resolution in a separate decision all questions pertaining to that part of the Licensing Board's authorization permitting the receipt and storage at Catawba of spent fuel generated at the applicants' Oconee and McGuire facilities.

ATOMIC ENERGY ACT: SAFETY FINDINGS

Neither the Atomic Energy Act of 1954, as amended, nor the Commission's implementing regulations mandate a demonstration of error-free construction. What they require is simply a finding of reasonable assurance that, as built, the facility can and will be operated without endangering the public health and safety. 42 U.S.C. §§ 2133(d), 2232(a); 10 C.F.R. § 50.57(a)(3)(i). *See also Union Electric Co.* (Callaway Plant, Unit 1), ALAB-740, 18 NRC 343, 346 (1983).

ADJUDICATORY HEARINGS: SCOPE OF REVIEW

In examining claims of quality assurance deficiencies, one must look to the implication of those deficiencies in terms of safe plant operation. This inquiry necessitates careful consideration of whether all ascertained construction errors have been cured and whether there has been a breakdown in quality assurance procedures of sufficient dimensions to raise legitimate doubt as to the overall integrity of the facility and its safety-related structures and components. *Ibid.*

RULES OF PRACTICE: BRIEFS

The Commission's Rules of Practice require an appellant to identify clearly in its brief the errors of fact or law that are the subject of the appeal. For each issue appealed, the precise portion of the record relied upon in support of the assertion of error must also be provided. 10 C.F.R. 2.762(d)(1).

RULES OF PRACTICE: BRIEFS

A party's failure to submit a brief containing sufficient information and argument to allow the appellate tribunal to make an intelligent disposition of the issues presented by its appeal is tantamount to their abandonment. *Duke Power Co.* (Catawba Nuclear Station, Units 1 and 2), ALAB-355, 4 NRC 397, 413 (1976).

RULES OF PRACTICE: BRIEFS

A mere reference in a brief to previously filed proposed findings of fact and conclusions of law without further illumination as to why the proposed findings are correct will not suffice to show why a board's contrary determination is erroneous.

RULES OF PRACTICE: APPELLATE REVIEW (SCHEDULING DECISIONS)

Because licensing boards must be vested with considerable latitude in determining the course of the proceedings which they are called upon to conduct, an appeal board will review licensing board scheduling rulings only to the extent necessary to insure that no party has been denied a fair opportunity to advance its cause. *Southern California Edison Co.* (San Onofre Nuclear Generating Station, Units 2 and 3), ALAB-212, 7 AEC 986, 991 (1974). *See also Public Service Co. of Indiana* (Marble Hill

Nuclear Generating Station, Units 1 and 2), ALAB-459, 7 NRC 179, 188 (1978).

RULES OF PRACTICE: APPELLATE REVIEW (CROSS-EXAMINATION RULINGS)

A mere showing that a licensing board erred by curtailing cross-examination is not sufficient to warrant appellate relief. In addition, the complaining party must demonstrate actual prejudice — i.e., that the ruling had a substantial effect on the outcome of the proceeding. *Houston Lighting & Power Co.* (South Texas Project, Units 1 and 2), ALAB-799, 21 NRC 360, 376-77 (1985), *citing Long Island Lighting Co.* (Shoreham Nuclear Power Station, Unit 1), ALAB-788, 20 NRC 1102, 1151 (1984). *See also Louisiana Power and Light Co.* (Waterford Steam Electric Station, Unit 3), ALAB-732, 17 NRC 1076, 1096 (1983); *Southern California Edison Co.* (San Onofre Nuclear Generating Station, Units 2 and 3), ALAB-673, 15 NRC 688, 697 & n.14, *aff'd*, CLI-82-11, 15 NRC 1383 (1982).

EMERGENCY PLANNING: FEMA FINDING (NEED FOR FINAL FINDINGS)

It is now well-settled that the issuance of the Federal Emergency Management Agency's (FEMA) final findings on the adequacy of offsite emergency plans and preparedness is not a prerequisite to the authorization of a full-power operating license. Rather, preliminary FEMA reviews and interim findings are sufficient as long as such information permits the Licensing Board to conclude that offsite emergency preparedness provides reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency. *Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-775, 19 NRC 1361, 1379 (1984), *citing Southern California Edison Co.* (San Onofre Nuclear Generating Station, Units 2 and 3), ALAB-717, 17 NRC 346, 380 n.57 (1983); *Cincinnati Gas & Electric Co.* (Wm. H. Zimmer Nuclear Power Station, Unit No. 1), ALAB-727, 17 NRC 760, 775 n.20 (1983). *See also Detroit Edison Co.* (Enrico Fermi Atomic Power Plant, Unit 2), ALAB-730, 17 NRC 1057, 1066-67 (1983).

RULES OF PRACTICE: ADMISSIBILITY OF CONTENTIONS

A licensing board is required to consider all five factors specified in 10 C.F.R. 2.714(a)(1) before admitting a late contention, even if the contention is based on previously unavailable information. *Duke Power Co.* (Catawba Nuclear Station, Units 1 and 2), CLI-83-19, 17 NRC 1041, 1045 (1983).

ATOMIC ENERGY ACT: RIGHT TO A HEARING

Section 189a of the Atomic Energy Act does not provide members of the public with an unqualified right to a hearing. Rather, the Act permits the establishment of reasonable threshold requirements for the admission of contentions to NRC licensing proceedings. *Id.* at 1045-47.

RULES OF PRACTICE: LITIGABILITY OF ISSUES

The Commission has provided by rule that neither need-for-power nor financial qualifications questions are to be explored in certain operating license proceedings. See 10 C.F.R. 51.106(c) (need for power); 10 C.F.R. 2.104(c)(4), as amended effective October 12, 1984, 49 Fed. Reg. 35,747, 35,752, *as corrected*, 49 Fed. Reg. 36,631 (1984) (financial qualifications).

RULES OF PRACTICE: ADMISSIBILITY OF CONTENTIONS

In meeting factor three of 10 C.F.R. 2.714(a)(1) for late-filed contentions, a bare assertion of the past effectiveness of a party's participation in proceedings, unsupported by specific information from which a board could draw an informed inference that the party can and will make a valuable contribution on a particular issue in the proceeding, will not suffice. See *Washington Public Power Supply System* (WPPSS Nuclear Project No. 3), ALAB-747, 18 NRC 1167, 1181 (1983); *Mississippi Power & Light Co.* (Grand Gulf Nuclear Station, Units 1 and 2), ALAB-704, 16 NRC 1725, 1730 (1982).

RULEMAKING: EFFECT ON ADJUDICATION

An appeal board is required on appeal of a licensing board decision to apply the Commission's regulations in effect at the time of the appeal. *Potomac Electric Power Co.* (Douglas Point Nuclear Generating Station, Units 1 and 2), ALAB-218, 8 AEC 79, 82-83 (1974).

TECHNICAL ISSUE DISCUSSED:

Intergranular Stress Corrosion Cracking (IGSCC).

APPEARANCES

Robert Guild, Columbia, South Carolina, for the intervenor Palmetto Alliance (with whom **Jesse L. Riley**, Charlotte, North Carolina, was on the brief for the intervenor Carolina Environmental Study Group).

J. Michael McGarry, III, Washington, D.C. (with whom **Anne W. Cottingham** and **Mark S. Calvert**, Washington, D.C., and **Albert V. Carr, Jr.**, Charlotte, North Carolina, were on the brief), for the applicants Duke Power Company, *et al.*

George E. Johnson for the Nuclear Regulatory Commission staff.

DECISION

Before us are the consolidated appeals of intervenors Palmetto Alliance and Carolina Environmental Study Group from three Licensing Board partial initial decisions issued in this operating license proceeding involving the two-unit Catawba Nuclear Station located in York County, South Carolina. To the extent here pertinent, the first of these decisions resolved in the applicants' favor numerous quality assurance issues raised by the intervenors.¹ In the second decision, the Licensing Board approved the applicants' emergency response plans subject to the fulfillment of certain imposed conditions within a specified time.² Finally, the third decision focused upon a relatively narrow quality assurance issue over which the Licensing Board had retained jurisdiction in the first deci-

¹ LBP-84-24, 19 NRC 1418 (1984). As employed in our decision, the term "quality assurance" encompasses "quality control" as well. See 10 C.F.R. Part 50, Appendix B, Introduction.

² LBP-84-37, 20 NRC 933 (1984). While of no operative significance here, we note in passing that this decision was rendered by a different Licensing Board specially convened for the purpose of hearing and determining the emergency planning issues alone. The transcript of that hearing will be referred to in this opinion as "EP Tr.," to distinguish it from the separately numbered transcript of the hearing on all other issues ("Tr.").

sion.³ This issue also was resolved in the applicants' favor and the third decision concluded with an authorization for the Director of Nuclear Reactor Regulation (NRR) to allow full-power operation of the Catawba facility once the applicants satisfy the conditions previously imposed by the Board.⁴

In their brief and at oral argument, the intervenors advanced myriad claims of substantive and procedural error addressed to the three partial initial decisions and several interlocutory rulings as well.⁵ Upon full consideration of these claims, we conclude that there is no warrant for upsetting the authorization of full-power Catawba operation. We leave for resolution in a separate decision, however, all questions pertaining to that part of the Licensing Board's authorization to the NRR Director permitting the receipt and storage at Catawba of spent fuel generated at the applicant Duke Power Company's Oconee and McGuire nuclear power facilities.⁶

I. QUALITY ASSURANCE

A condition precedent to the issuance of an operating license for a nuclear power facility is a finding that there is reasonable assurance that the facility has been properly constructed and can be operated without endangering the public health and safety.⁷ To this end, a utility that is constructing such a facility must establish and carry out a quality assurance program designed to provide "adequate confidence" that those systems, structures and components having safety-related functions "will perform satisfactorily in service."⁸

Before the Licensing Board, the intervenors maintained that there were "systematic deficiencies in plant construction" and "company pressure to approve faulty workmanship," preventing a finding that the plant can safely operate.⁹ This contention brought under scrutiny the suf-

³ LBP-84-52, 20 NRC 1484 (1984). Characterized as "foreman override," the issue grew out of allegations that welders had been instructed by foremen to do their work in a manner contrary to prescribed procedures or sound welding practices.

⁴ *Id.* at 1507. In the first decision, the Board had authorized the NRR Director to issue a license permitting low-power testing (up to five percent of rated power) of Unit 1. LBP-84-24, 19 NRC at 1585.

⁵ A separate timely notice of appeal was filed from each partial initial decision. On the motion of intervenors, however, all briefing was held in abeyance to await the rendition of the last decision. Thus, the intervenors, applicants and NRC staff each filed a single brief.

⁶ These questions were the subject of supplemental memoranda and oral argument.

⁷ 10 C.F.R. 50.57(a).

⁸ 10 C.F.R. Part 50, Appendix B, Introduction. That Appendix contains the general quality assurance criteria for nuclear power plants.

⁹ See LBP-82-107A, 16 NRC 1791, 1795 (1982).

iciency of the applicants' quality assurance program. That scrutiny, in turn, was governed by our *Callaway* decision.¹⁰ As there observed,

[I]n any project even remotely approaching in magnitude and complexity the erection of a nuclear power plant, there inevitably will be some construction defects tied to quality assurance lapses. It would therefore be totally unreasonable to hinge the grant of an NRC operating license upon a demonstration of error-free construction. Nor is such a result mandated by either the Atomic Energy Act of 1954, as amended, or the Commission's implementing regulations. What they require is simply a finding of reasonable assurance that, as built, the facility can and will be operated without endangering the public health and safety. 42 U.S.C. §§ 2133(d), 2232(a); 10 C.F.R. § 50.57(a)(3)(i). Thus, in examining claims of quality assurance deficiencies, one must look to the implication of those deficiencies in terms of safe plant operation.

Obviously, this inquiry necessitates careful consideration of whether all ascertained construction errors have been cured. Even if this is established to be the case, however, there may remain a question whether there has been a breakdown in quality assurance procedures of sufficient dimensions to raise legitimate doubt as to the overall integrity of the facility and its safety-related structures and components. A demonstration of a pervasive failure to carry out the quality assurance program might well stand in the way of the requisite safety finding.¹¹

Applying those principles, the Licensing Board found that, although there were some quality assurance deficiencies, they did not amount to a pervasive breakdown in Catawba's quality assurance program.¹² Further, in its principal quality assurance decision, the Board found that, with very few exceptions, the applicants had taken "reasonably prompt action to correct confirmed deficiencies" and that all significant technical discrepancies had already been or were being corrected.¹³

On appeal, the intervenors attack the Licensing Board's substantive conclusions and also argue that, by virtue of various interlocutory rulings, they were unfairly denied the opportunity to develop fully their quality assurance claims.

A. In their brief, the intervenors maintain that "known, yet uncorrected construction defects" exist at Catawba and that there have been "systematic and willful circumventions" of quality assurance requirements.¹⁴ These are indeed serious claims. But that is all they are — claims. The brief does not refer us to any evidence of record that might

¹⁰ *Union Electric Co.* (Callaway Plant, Unit 1), ALAB-740, 18 NRC 343 (1983).

¹¹ *Id.* at 346 (footnote omitted).

¹² LBP-84-24, 19 NRC at 1433-34, 1440.

¹³ *Id.* at 1505. In its later decision on "foreman override," the Board at least implicitly determined that no ascertained safety-significant defects had gone uncorrected. LBP-84-52, 20 NRC at 1502-06, 1507.

¹⁴ Brief of Appellants Palmetto Alliance and Carolina Environmental Study Group (Jan. 9, 1985) [hereafter "Intervenors' Brief"] at 5, 6.

support these broad assertions.¹⁵ In the circumstances, we need not, and will not, pursue them further.¹⁶

As for their remaining substantive quality assurance claims, the intervenors assert that, because the quality assurance inspectors at Catawba lacked sufficient independence from production and cost pressures, they could not be relied upon to assure proper plant construction and may have overlooked certain construction deficiencies. We are told that this asserted lack of independence is reflected by (1) widespread harassment against quality assurance inspectors by production workers, and retaliatory acts by construction management against those inspectors for properly carrying out their inspection functions, and (2) the organizational relationship between the quality assurance personnel and the Construction Department management.¹⁷ Our examination of this line of argument persuades us that the intervenors have done no more than rehearse claims advanced before and rejected by the Board below, without directing our attention to supporting record evidence.

1. At the hearing, the Licensing Board explored averments that construction management personnel had retaliated against welding inspectors for voicing grievances, expressing concerns to this agency, and conducting strict inspections. The Board also examined allegations that welding inspectors were harassed by craftsmen and foremen whose work they were examining.

As to the first claim, the Board found that one welding inspector (Mr. Ross) had suffered retaliation at the hands of management. He had received a low job evaluation because he and his crew had adhered strictly to quality assurance procedures and had expressed safety concerns to management.¹⁸ But, according to the Board, this apparently was an isolated episode and Mr. Ross and his crew had not allowed it to affect their job performance.¹⁹ Similarly, the Board determined that, considering the

¹⁵ At oral argument, intervenors asserted that there may be uncorrected defects in piping and other components resulting from "arc striking" (the inadvertent striking of a welding electrode against an unintended part of a component) or "cold springing" (the practice of aligning by force pipes to be joined together). App. Tr. 14-18. Their counsel failed, however, to cite any specific defects that were not properly remedied. On the contrary, he conceded that he could not "state as a matter of fact that any of those [referring to welding defects not identified in the normal course of the applicants' quality assurance program] remain uncorrected as of this date." App. Tr. 19.

¹⁶ The Commission's Rules of Practice require an appellant to identify clearly in its brief "the errors of fact or law that are the subject of the appeal. For each issue appealed, the precise portion of the record relied upon in support of the assertion of error must also be provided." 10 C.F.R. 2.762(d)(1). Some time ago, in the construction permit proceeding involving this very facility, we pointed out that "a party's failure to submit a brief containing sufficient information and argument to allow the appellate tribunal to make an intelligent disposition of the issues [presented by its appeal] is tantamount to their abandonment." ALAB-355, 4 NRC 397, 413 (1976).

¹⁷ Intervenors' Brief at 9-13.

¹⁸ LBP-84-24, 19 NRC at 1441-42, 1513-20.

¹⁹ *Id.* at 1518 n.27, 1519-20.

size and duration of the construction project, the number of significant incidents of harassment against the welding inspectors was small. Additionally, none of the inspectors had been deterred from the fulfillment of their duties by such incidents.²⁰

If these findings have adequate record support, it follows that the Board below was justified in concluding that the carrying out of the quality assurance program for welding activities was not seriously affected by retaliation against or harassment of diligent inspectors.²¹ But in their brief, the intervenors point to no evidence demonstrating that there was a pattern of retaliation or harassment that had an intimidating effect upon the inspectors. They seemingly are content to leave it to us to conduct an independent examination of the testimony of the inspectors. Although we are under no obligation to do so,²² our examination of the record confirms that the Licensing Board accurately summarized the testimony, with the consequence that its determination on this matter must be upheld.²³

2. Historically, applicant Duke's Vice President for Engineering and Construction served also as the company's Quality Assurance Manager.²⁴ Some years ago, in the construction permit proceeding involving another Duke nuclear facility, we questioned whether this arrangement conformed to the requirements of Appendix B to 10 C.F.R. Part 50.²⁵ As a consequence, in 1974, prior to the issuance of a construction permit for Catawba, Duke appointed a separate quality assurance manager.²⁶ Since that time, Duke's Construction and Quality Assurance Departments have been headed by separate independent managers, who report to a single high-level executive.²⁷ Until 1981, however, the quality assurance inspectors still were located "administratively" in the Construction Department, albeit subject to the "functional" control of the Quality

²⁰ *Id.* at 1444, 1531.

²¹ *Id.* at 1520, 1531.

²² See *Louisiana Power & Light Co.* (Waterford Steam Electric Station, Unit 3), ALAB-812, 22 NRC 5, 54 (1985); *Philadelphia Electric Co.* (Limerick Generating Station, Units 1 and 2), ALAB-804, 21 NRC 587, 592 & n.6 (1985).

²³ See, e.g., with respect to retaliation, Tr. 5930-31 (Burr), 6343 (Rockholt); and, with respect to harassment, Tr. 5800 (Deaton), 6883-84 (Langley), 8307-08 (Godfrey), 8428 (Crisp), 8685-86 (Reep). It should be noted that several inspectors testified that they did not believe that any other welding inspectors had been deterred from performing adequately as a result of incidents of harassment. Tr. 6314-15 (Rockholt), 6965 (Ross), 8428 (Crisp), 8308 (Godfrey).

²⁴ LBP-84-24, 19 NRC at 1459.

²⁵ See *Duke Power Co.* (William B. McGuire Nuclear Station, Units 1 & 2), ALAB-128, 6 AEC 399, 410 (1973).

²⁶ LBP-84-24, 19 NRC at 1459.

²⁷ *Ibid.*

Assurance Manager.²⁸ In 1981, those inspectors were transferred to the Quality Assurance Department, which assumed control over them for all purposes.²⁹

The propriety of the quality assurance organizational structure in place between 1974 and 1981 was litigated and resolved in favor of the applicants in the construction permit proceeding for the Catawba facility.³⁰ Nonetheless, the intervenors argued below that the quality assurance personnel did not enjoy sufficient independence vis-a-vis the Construction Department — i.e., that the power to control the inspectors was inherent in the Construction Department's power to hire, fire, set schedules, etc. In response, the Licensing Board stated:

As a matter of practical experience, we think there is some merit in this claim. Furthermore, we believe that the QA function at Catawba would have been performed somewhat more independently if the present organizational structure had obtained throughout construction. We also believe, however, that the effect of the functional-administrative dichotomy on inspector performance cannot be quantified but probably was not very great. In any event, that very dichotomy had at least the implied blessing of this agency in the CP proceeding. LBP-75-34, *supra*, 1 NRC at 649, 650. In these circumstances, absent a showing that safety was compromised, a showing not made here, we can only regret that the dichotomy was not abolished earlier than it was.³¹

Although dissatisfied with this outcome, the intervenors call no specific record evidence to our attention that suggests that safety was compromised as a result of the historical position of the quality assurance personnel within Duke's overall organizational structure. This being so, we see no cause to disturb the Board's conclusion.

3. Criterion V in Appendix B to 10 C.F.R. Part 50 provides that "[a]ctivities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings." Criterion XVII specifies that "[s]ufficient records shall be maintained to furnish evidence of activities affecting quality."

To comply with these requirements, the applicants instituted a system of documentation that utilized, among others, a Deficiency Report

²⁸ *Ibid.* The "administrative" control by the Construction Department over the inspectors covered personnel matters such as timekeeping and payroll, the authority to hire and fire, and, apparently, at least indirect authority to schedule daily work. *Id.* at 1459-60. The "functional" control exercised by the Quality Assurance Manager included technical and policy direction, training and certification of inspectors, and establishment of quality assurance procedures. *Id.* at 1460.

²⁹ *Id.* at 1459.

³⁰ LBP-75-34, 1 NRC 626, 646-50 (1975). The intervenors did not include the quality assurance organizational issue in their appeal from that decision. *See* ALAB-355, 4 NRC 397 (1976).

³¹ LBP-84-24, 19 NRC at 1460.

Form (R-2A) and a Nonconforming Item Report (NCI). The R-2A is used to document minor discrepancies where technical construction personnel prescribe the corrective action to be taken but quality assurance personnel must approve the corrected work. For its part, the NCI is employed when the discrepancy is more significant and not readily resolved by an R-2A or other method.³²

At the hearing below, the Licensing Board considered the intervenors' charge that the practice of "verbal voiding" — i.e., the return of an NCI to the originator quality assurance inspector with an oral explanation rather than its incorporation into permanent records — was being utilized for the purpose of circumventing the critical document requirements reflected in the specific provisions of Duke's own quality assurance program.³³ The evidence on the matter persuaded the Board that, while there had been instances of verbal voiding, "[s]o few NCIs were handled in this manner in relation to the number originated that it could not have served to conceal faulty workmanship or significantly diminish the number of nonconformances that were documented."³⁴

Beyond a sweeping assertion that the Licensing Board manifested "a disturbing casualness for strict adherence to the Commission's clear quality assurance requirements," we are not told specifically what is wrong with that analysis.³⁵ Nor has our independent look at the evidence provided us with cause to upset the Licensing Board's rejection of the intervenors' position on the documentation question. In this connection, apart from the relative paucity of NCIs that were verbally voided (over 17,000 NCIs were prepared by quality assurance personnel), the evidence disclosed that the NCI procedure was but one of several available means of recording discrepancies. It also showed that Duke's Quality Assurance Department (in the estimation of an NRC Resident Inspector at Catawba) had documented "thousands" of quality assurance deficiencies on several other forms.³⁶

4. During the initial hearings below on quality assurance, a Board witness testified that there had been occasions where the foremen had ordered welders to perform work "in a manner contrary to prescribed

³² *Id.* at 1480.

³³ *Id.* at 1479-89.

³⁴ *Id.* at 1484-85.

³⁵ Intervenors' Brief at 24.

³⁶ Tr. 9777-79 (Van Doorn). In their appellate brief, the intervenors also mention the use by welding inspectors of "black books" (apparently a personal work diary) instead of quality assurance forms to document the surveillance of welding activities. On this score as well, the intervenors fail to explain adequately why this practice constituted a pervasive quality assurance breakdown. Such an explanation was plainly in order, given the NRC Resident Inspector's testimony that the failure to use the forms was not a serious violation. Tr. 9298.

procedures or to the welder's ideas of correct welding."³⁷ This testimony prompted investigations of the so-called "foreman override" practice by both the staff and (at the staff's request) the applicants. The fruits of the investigations, which in the applicants' case involved the receipt of affidavits from over 200 Duke employees, were considered in a separate hearing where a number of present and former Duke employees testified. In its November 1984 decision, the Board found that there had been only isolated instances of foreman override involving violations of quality assurance or construction procedures, and that these had not compromised plant safety.³⁸ In this connection, the Board pointed out that only eight of the hundreds of foremen at the site had engaged in the practice, and five of them were involved in a single incident. Moreover, the foreman involved in most of the override incidents as well as his superior had been relieved of supervisory responsibilities at the site.³⁹

We have examined the assigned bases for the intervenors' insistence that the foreman override practice was more pervasive and safety-significant than found by the Licensing Board. None of those bases is meritorious.

To begin with, the record does not support the intervenors' claim that twenty-three foremen were involved in the practice. On this score, we agree with the Licensing Board's analysis of the evidence on the matter,⁴⁰ which has not been shown by intervenors to be faulty.

Second, there is no substance to the intervenors' argument that the true extent and significance of foreman override will never be known because the staff delegated its inspection responsibility to the applicants. Prior to requesting the applicants to undertake an investigation of the foreman override concerns, the staff conducted its own extensive investigation.⁴¹ Moreover, the staff closely monitored the applicants' investigation. Such monitoring included visits to the site to make sure that the proper atmosphere was maintained, and staff interviews of both the applicants' interviewers and some of the individuals from whom the applicants had obtained affidavits.⁴² Staff witnesses also testified that, based on their own investigation as well as their review of the results of the applicants' investigation, foreman override was not a pervasive practice.⁴³

³⁷ LBP-84-24, 19 NRC at 1562.

³⁸ LBP-84-52, 20 NRC at 1507.

³⁹ *Id.* at 1502, 1507.

⁴⁰ *Id.* at 1501-02.

⁴¹ *See, e.g.*, Tr. 13,882-83, 13,911-12 (Uryc).

⁴² Tr. 13,848-50, 13,865-66 (Uryc, Blake).

⁴³ Tr. 13,883 (Uryc, Blake), 13,912-13 (Uryc).

Third, the intervenors also claim that there were serious methodological flaws in the applicants' investigation. Specifically, they allege that the applicants' interviews with only a small percentage of the power house mechanics, electricians and steel workers provide no basis for drawing any general conclusion that foreman override was not a problem. Further, according to the intervenors, the questions posed to the workers sought "high risk" information that, if supplied, might adversely affect them. For this reason, and because the questioners were employed by Duke,⁴⁴ the intervenors maintain that the reliability of the inquiry was compromised.

These arguments are not new; they were presented to and rejected by the Licensing Board.⁴⁵ The intervenors do not explicitly address the reasoning underlying that rejection. Rather, they merely refer us to the proposed findings of fact and conclusions of law submitted below.

This will not do. All that the reference tells us is that the intervenors disagree with the Licensing Board's findings; it provides no illumination as to why the proposed findings are correct, as claimed, and the Licensing Board's determination is wrong. Nonetheless, we have reviewed the record on our own initiative and are satisfied that the intervenors' attack upon the applicants' investigation is wide of the mark. Each of the intervenors' allegations was rebutted by applicants' expert witness, Dr. John E. Hunter. He testified that, based on the sample of nonwelders interviewed, the applicants properly inferred that instances of foreman override were rare outside of the welding area.⁴⁶ Dr. Hunter also stated that the questions asked were appropriately phrased so as to elicit the necessary information.⁴⁷ Further, he expressed the opinion that the reliability of the investigation was not affected by the fact that Duke personnel conducted the interviews and sought the disclosure of "high-risk" information. As he pointed out, the interviewers were not in a position of power relative to the interviewees, but were from an "external department" and in other situations had served in an "ombudsman role for worker grievances."⁴⁸ Moreover, Dr. Hunter stated that revealing an instance of foreman override would have had adverse implications only

⁴⁴ More particularly, it appears that they were employee relations personnel. Applicants' Exh. 116, Duke Power Company's Investigation of Issues Raised by the NRC Staff in Inspection Reports 50-413/84-31 and 50-414/84-17, (admitted at Tr. 13,144) at 10.

⁴⁵ LBP-84-52, 20 NRC at 1490-94.

⁴⁶ Tr. 14,340-49.

⁴⁷ Tr. 14,311-12, 14,327-32.

⁴⁸ Applicants' Exh. 120, Testimony of Dr. John E. Hunter (admitted at Tr. 14,295) at 4.

for the foreman, not the craftsman who had been simply following orders.⁴⁹

Finally, intervenors take issue with the Licensing Board's disposition of the matter of the welding of stainless steel piping in derogation of established procedures. In order to lessen the likelihood that the heat-affected zone of stainless steel welds would become sensitized and, thus, made potentially susceptible to intergranular stress corrosion cracking, Duke procedures specify that welds should cool to 350°F between welding passes.⁵⁰ Numerous welder allegations of interpass temperature violations surfaced during the staff's and the applicants' investigations of foreman override concerns. The applicants thereupon undertook laboratory and field tests to determine whether welds had become sensitized as a result of these alleged violations. Although the results of these tests were inconclusive, the Board concluded that violations of interpass temperature requirements had not significantly affected the quality of construction.⁵¹

We find that the evidence in the record supports this conclusion. Witnesses for the applicants and the staff testified without contradiction that, in order for intergranular stress corrosion cracking to occur, sensitization of the metal alone is insufficient. Rather, there must also be stress and a sufficiently aggressive environment.⁵² While sensitization and stress may be present at Catawba, these witnesses agreed that the safety-related welds that may have been exposed to high interpass temperatures are not associated with such an environment. This is because those welds are on components of the primary cooling system. That system normally handles only noncorrosive fluids and it is very unlikely that any contaminant will be introduced into the system.⁵³ Therefore, even if excess interpass temperatures occurred, intergranular stress corrosion cracking is not expected to result at Catawba, and there is reasonable assurance that the welds will remain safe in service.⁵⁴

B. We now turn to the intervenors' assertions of procedural error in connection with the quality assurance issues. They maintain that the

⁴⁹ *Ibid.* Dr. Hunter's testimony was corroborated by the testimony of several interviewees to the effect that they had not felt intimidated or pressured during the interviews. *See, e.g.*, Tr. 14,042, 14,222-23 (Carpenter), 14,142-43 (McCall), 14,187-88 (Braswell).

⁵⁰ Applicants' Exh. 116, Attachment A at 1-5.

⁵¹ LBP-84-52, 20 NRC at 1506.

⁵² *See, e.g.*, Tr. 13,606 (Ferdon), 13,907 (Czajkowski).

⁵³ Tr. 13,609-14 (Ferdon, Kruse), 13,907-09 (Czajkowski). These witnesses testified that pressurized water reactors, such as Catawba, tend not to have stress corrosion cracking in the primary system due to oxygen suppression. They also testified that strict controls at Catawba keep contaminant levels below that at which intergranular stress corrosion cracking would occur.

⁵⁴ Tr. 13,609-14 (Ferdon, Kruse), 13,873, 13,909 (Czajkowski).

Board was unduly influenced by the applicants' projected fuel loading dates and their plans for commencement of plant operation. As a consequence, according to the intervenors, the Board improperly limited (1) their right to conduct discovery, (2) the length of time that was allotted to them for the cross-examination of witnesses, and (3) the number of witnesses that could testify on their behalf.

It does appear that, in accordance with the Commission's 1981 Statement of Policy on Conduct of Licensing Proceedings,⁵⁵ the Licensing Board kept a watchful eye upon applicants' construction schedule.⁵⁶ At the same time, however, the intervenors have not established that, contrary to the further directive in that Policy Statement,⁵⁷ the Board "compromise[d] the Commission's fundamental commitment to a fair and thorough hearing process."

1. In a March 5, 1982 order, the Licensing Board conditionally admitted the intervenors' quality assurance contention and indicated that discovery on it could commence.⁵⁸ Two and one-half months later, because of a challenge to the admission of this contention (among others), the Board suspended discovery activities.⁵⁹ On December 1, 1982, the Board admitted a revised version of the quality assurance contention and reopened discovery.⁶⁰

Later that month, the Board announced its expectation that the evidentiary hearing on the various contentions before it would commence the following fall.⁶¹ In this connection, the parties were asked to submit "detailed proposed schedules leading to a hearing . . ."⁶² Both the applicants and the staff complied with that request; the intervenors did not (although, at a January 20, 1983 prehearing conference, they objected to looking to the applicants' anticipated plant completion date in determining the hearing schedule).⁶³ On February 2, 1983, the Board directed that discovery would end on May 20, 1983, and the hearing would be held that October.⁶⁴

⁵⁵ CLI-81-8, 13 NRC 452.

⁵⁶ See, e.g., Tr. 659-61, 701-02, 11,218; Memorandum and Order of June 13, 1983 (unpublished) at 4.

⁵⁷ 13 NRC at 453.

⁵⁸ LBP-82-16, 15 NRC 566, 577, 591.

⁵⁹ Memorandum and Order of May 25, 1982 (unpublished). See also LBP-82-51, 16 NRC 167, 178-79 (1982).

⁶⁰ LBP-82-107A, 16 NRC at 1795, 1810. In the interim, for reasons unimportant here, we reversed the conditional admission of the intervenors' initial quality assurance contention. ALAB-687, 16 NRC 460 (1982), *rev'd in part on other grounds*, CLI-83-19, 17 NRC 1041 (1983).

⁶¹ LBP-82-116, 16 NRC 1937, 1953 (1982).

⁶² *Ibid.*

⁶³ Memorandum and Order of February 2, 1983 (unpublished) at 6-7, 10.

⁶⁴ *Id.* at 11.

As thus seen, between March 1982 and May 1983, the intervenors had a total of over seven months to conduct discovery on their quality assurance concerns. Moreover, after the close of discovery in May 1983, the Board granted the intervenors an additional twenty-five day period in which to take the depositions of Duke and NRC employees on certain welding quality assurance matters that the intervenors maintained had first come to their attention late in discovery.⁶⁵ To be sure, the intervenors had desired a longer discovery period, as well as a later hearing date.⁶⁶ And it may be, as they suggest, that their requests for that relief would have fallen on more sympathetic ears had not construction of the facility seemingly been so close to completion. But of itself that consideration scarcely provides a sufficient basis for overturning the Board's discovery orders.

As we long ago observed, "licensing boards must be vested with considerable latitude in determining the course of the proceedings which they are called upon to conduct."⁶⁷ Consequently, "we are entirely disinclined to assume the role of a *post hoc* overseer of the discharge by licensing boards of their scheduling functions [and] will enter that arena only to the extent necessary to insure that no party has been denied a fair opportunity to advance its cause."⁶⁸ Accordingly, it was incumbent upon the intervenors to demonstrate that the discovery period accorded to them was so inadequate as to deprive them of procedural due process. This burden manifestly has not been met. In short, despite considerable rhetoric on the subject of deprivation of hearing rights, the intervenors do not explain why the eight months of allowed discovery (almost two-thirds of which followed the admission of the revised contention) was insufficient to obtain the information necessary to flesh out their quality assurance concerns.⁶⁹

⁶⁵ Memorandum and Order of June 13.

⁶⁶ See Palmetto Alliance Motion to Establish Discovery Schedule on Its Quality Assurance Contention 6 (May 25, 1983) at 15 and Attachment 1.

⁶⁷ *Southern California Edison Co.* (San Onofre Nuclear Generating Station, Units 2 and 3), ALAB-212, 7 AEC 986, 991 (1974).

⁶⁸ *Ibid.* See also *Public Service Co. of Indiana* (Marble Hill Nuclear Generating Station, Units 1 and 2), ALAB-459, 7 NRC 179, 188 (1978) ("[W]e enter the scheduling thicket . . . only to entertain a claim that a board abused its discretion by setting a hearing schedule that deprives a party of its right to procedural due process.").

⁶⁹ After the staff and the applicants submitted their reports on the foreman override issue (see pp. 69-70, *supra*), the intervenors moved for leave to conduct discovery on that issue. Motion by Palmetto Alliance and Carolina Environmental Study Group for the Conduct of Further Proceedings to Consider Evidence of Foreman Override (Sept. 17, 1984). The Board granted a limited period for such discovery, which was geared to the hearing schedule established at the same time. Tr. 12,840-53. Although intervenors complain to us that the allotted period was inadequate, they told the Licensing Board that, while they were not happy with it, the discovery/hearing schedule seemed "doable." Tr. 12,910-11. *(Having ac-*

Continued)

2. The quality assurance hearings commenced on October 4, 1983. The first of six panels of applicant witnesses took the stand the following day⁷⁰ and, after a short direct examination, was made available for cross-examination by the intervenors.⁷¹ That cross-examination consumed the balance of that day and all of October 6.

After the luncheon recess on October 7, the intervenors commenced cross-examination of the second panel, which consisted of the two members of the first panel and two additional individuals.⁷² When this cross-examination had extended for over two hearing days, the Board stepped in and advised the intervenors' counsel that his cross-examination had to be concluded by noon the following day.⁷³

Counsel observed this deadline. The Board then expressed its concern respecting the length of time the intervenors might take in examining the remaining witnesses (both those testifying in panels and those welding inspectors and supervisors testifying individually).⁷⁴ After hearing from the parties, the Board adopted a "flexible" schedule. Under that schedule, the intervenors were given approximately two days to interrogate each of the remaining panels, with the understanding that the deadlines would not necessarily be rigidly enforced.⁷⁵ As it turned out, the intervenors finished the questioning of those witnesses within the allotted time.⁷⁶

Insofar as the individual witnesses are concerned, the intervenors were permitted to cross-examine all fifteen of the welding inspectors and supervisors who testified. On appeal, they cite one specific instance in which that examination was cut short by the Board. They do not explain, however, why the Board was wrong in concluding that three and one-half hours was a reasonable period for the interrogation of the inspector in question.⁷⁷ Nor do they provide illumination on what might

quiesced in the schedule, they may not now claim the Board below erred in adopting it. In any event, we are satisfied that it did not offend due process.

We likewise conclude that the Board did not abuse its broad discretion in the conduct of the proceeding when it declined in December 1983 to reopen discovery in the wake of (1) the issuance of the Institute of Nuclear Power Operations report, which contained the results of the applicants' self-initiated evaluation of Catawba's construction program (in camera Tr. 948-51); and (2) the testimony of certain in camera Board witnesses (Tr. 11,217-21). Suffice it to say that we have examined the reasons assigned by the Licensing Board for its rulings in this regard and find them adequate.

The intervenors' other discovery complaints have been considered and found without merit.

⁷⁰ Tr. 1888.

⁷¹ Tr. 1917.

⁷² Tr. 2310.

⁷³ Tr. 2813-16.

⁷⁴ Tr. 2839-42.

⁷⁵ Tr. 3744-52.

⁷⁶ See Tr. 5715-16.

⁷⁷ Tr. 6086.

have been elicited from the inspector had they been allowed to examine him at still greater length.

These shortcomings are dispositive of intervenors' cross-examination claims. As we had occasion to reemphasize earlier this year, a showing that the Licensing Board erred by curtailing cross-examination "is not sufficient to warrant appellate relief." In addition, "[t]he complaining party must demonstrate actual prejudice — i.e., that the ruling had a substantial effect on the outcome of the proceeding."⁷⁸

3. The intervenors initially proposed to call sixty employee witnesses to testify at the hearing a year later on the foreman override issue. The Licensing Board ordered the list reduced to fifteen on the ground that the testimony of any larger number would be "cumulative."⁷⁹ Although the intervenors do not appear specifically to challenge that action, they do complain that only five of these witnesses actually testified. Contrary to the impression that they endeavor to leave, however, we find nothing in the record to indicate that the Board refused to allow them to present more than five witnesses. Nor does the record reflect the intervenors' required proffer of testimony setting forth the substance of each witness's proposed testimony.⁸⁰ If, in fact, they did offer a witness whom the Board declined to permit to testify, it was incumbent upon the intervenors — at bare minimum — to say so explicitly in their brief and to inform us respecting (1) which witness or witnesses were not allowed to testify; (2) the reasons assigned by the Board; and (3) the substance of the precluded testimony. Having been provided none of this information, we need not pursue the matter further.

II. EMERGENCY PLANNING

In LBP-84-37, the Licensing Board examined in considerable detail the numerous contentions advanced by the intervenors with respect to the sufficiency of the emergency response planning for the Catawba facility. On the basis of that examination, the Board concluded that the emergency response plans meet all regulatory requirements and provide "reasonable assurance that adequate protective measures can and will be

⁷⁸ *Houston Lighting & Power Co.* (South Texas Project, Units 1 and 2), ALAB-799, 21 NRC 360, 376-77 (1985), citing *Long Island Lighting Co.* (Shoreham Nuclear Power Station, Unit 1), ALAB-788, 20 NRC 1102, 1151 (1984). See also *Louisiana Power and Light Co.* (Waterford Steam Electric Station, Unit 3), ALAB-732, 17 NRC 1076, 1096 (1983); *Southern California Edison Co.* (San Onofre Nuclear Generating Station, Units 2 and 3), ALAB-673, 15 NRC 688, 697 & n.14, *aff'd*, CLI-82-11, 15 NRC 1383 (1982).

⁷⁹ Tr. 13,306-07.

⁸⁰ See note 78, *supra*.

taken in the event of a radiological emergency.”⁸¹ Before us, the intervenors challenge only the Licensing Board’s findings respecting the sirens that are a part of the applicants’ public alert and notification systems. On that score, the Licensing Board found that the alert system would prove adequate with the inclusion of ten additional sirens.⁸² The intervenors insist, however, that such a finding cannot be made in advance of the final review of the system by the Federal Emergency Management Agency (FEMA).⁸³

A. The applicants’ principal witness on the siren question was Dr. M. Reada Bassiouni, a mechanical engineer who has specialized in the field of acoustics and has conducted analyses of the sirens associated with the emergency response planning of several other nuclear power facilities.⁸⁴ He testified that, at the applicants’ behest, he first made acoustical measurements of selected sirens in operation. Then incorporating those measurements in an analytic model of the entire siren system, he ascertained that, with the addition of ten sirens at specified locations, the system would meet the FEMA criteria for alerting the public to a radiological emergency. The significance of that assessment is that FEMA will use these same criteria in making its final finding on the adequacy of the sirens.⁸⁵

The FEMA criteria do not require that the sirens reach every person in the plume EPZ — a practical impossibility.⁸⁶ (Similarly, and for the same reason, there is no NRC requirement along that line.)⁸⁷ To supplement the siren system, the applicants have provided tone alert radios for such institutions as schools, hospitals, nursing homes, day care centers

⁸¹ 20 NRC at 1007. The Board did, however, impose two additional emergency planning conditions upon the operating licenses. *Id.* at 1008.

⁸² *Id.* at 978.

⁸³ FEMA has given conditional approval to the system (in the form of interim findings) founded upon both its scrutiny of the portion of the emergency response plans relating to the sirens and its preliminary assessment of a field exercise conducted in February 1984. Staff Exh. EP-3, Memorandum from Major P. May to Richard W. Krimm (April 18, 1984) and Attachment at 2 (admitted at EP Tr. 1468). At some future point, however, FEMA will make certain acoustical measurements. Additionally, following another sounding of the sirens, FEMA will conduct a survey to confirm that the persons within the ten-mile plume emergency planning zone (EPZ) heard the siren and understood its significance. EP Tr. 1570-81.

⁸⁴ Applicants’ Exh. EP-17, Vita of Dr. M. Reada Bassiouni, attached to Applicants’ Testimony on Emergency Planning Contention 9 (April 16, 1984), admitted at EP Tr. 1825.

⁸⁵ EP Tr. 1571, 1834-35.

⁸⁶ See FEMA-43, “Standard Guide for the Evaluation of Alert and Notification Systems for Nuclear Power Plants,” (September 1983) at E-4 to E-5. The criteria set forth therein are in the nature of guidelines addressed to the fulfillment of the requirements of FEMA’s regulations regarding alert and notification systems (found in 44 C.F.R. Part 350). FEMA-43 at 1.

⁸⁷ NUREG-0654/FEMA-REP-1, Revision 1, “Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants” (November 1980) at 3-1. This joint NRC/FEMA document contains guidance for all aspects of emergency response planning. *Id.* at 1.

and industrial facilities with twenty or more employees.⁸⁸ Further, the emergency response plans call for “route alerting”; i.e., in the event of an emergency, assigned individuals will proceed on predetermined routes to alert persons by a variety of means.⁸⁹ We agree with the Licensing Board that these supplemental measures provide a satisfactory complement to the sirens.⁹⁰ Thus, there is an adequate foundation for the Board’s ultimate conclusion on the sufficiency of the entire alert and notification system.

B. Despite the evidence and the findings of fact based thereon, the intervenors claim the Licensing Board was required as a matter of law to await the final FEMA finding on sirens before approving the emergency response plans. This claim manifestly is without merit.

It is now well-settled that the issuance of FEMA’s final findings on the adequacy of offsite emergency plans and preparedness is not a prerequisite to the authorization of a full-power operating license. Rather, “preliminary FEMA reviews and interim findings presented by FEMA witnesses at licensing hearings are sufficient as long as such information permits the Licensing Board to conclude that offsite emergency preparedness provides ‘reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency.’”⁹¹ The recent decision of the Court of Appeals for the District of Columbia Circuit in *Union of Concerned Scientists v. NRC*,⁹² relied upon by the intervenors, is not to the contrary. That decision focused upon a Commission rule to the effect that licensing boards need not consider the results of emergency preparedness exercises in a licensing hearing before authorizing the issuance of a full power license. The Court of Appeals determined that the rule violated section 189a(1) of the Atomic Energy Act of 1954, as amended,⁹³ in that it denied “a right to a hearing on a material factor relied upon by the Commission in making its licensing decisions.”⁹⁴ In reaching this conclusion, however, the court neither held nor implied that a licensing board must invariably place in limbo an

⁸⁸ EP Tr. 1873. A tone alert radio will provide both an alert signal and the notification message over the Emergency Broadcast System. *Ibid.*

⁸⁹ EP Tr. 1885, 1888-89, 1911-12.

⁹⁰ LBP-84-37, 20 NRC at 974-75.

⁹¹ *Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-775, 19 NRC 1361, 1379 (1984), citing *Southern California Edison Co.* (San Onofre Nuclear Generating Station, Units 2 and 3), ALAB-717, 17 NRC 346, 380 n.57 (1983); *Cincinnati Gas & Electric Co.* (Wm. H. Zimmer Nuclear Power Station, Unit No. 1), ALAB-727, 17 NRC 760, 775 n.20 (1983). See also *Detroit Edison Co.* (Enrico Fermi Atomic Power Plant, Unit 2), ALAB-730, 17 NRC 1057, 1066-67 (1983).

⁹² 735 F.2d 1437 (1984).

⁹³ 42 U.S.C. 2239(a)(1).

⁹⁴ 735 F.2d at 1438.

operating license proceeding in which emergency preparedness issues are contested to await the final FEMA findings.⁹⁵

III. DIESEL GENERATORS

A. All nuclear power facilities are required to have an onsite electric power system to permit the “functioning of structures, systems, and components important to safety” in the event that the facility’s offsite electric power system is inoperative.⁹⁶ To fulfill this requirement at Catawba, the applicants, *inter alia*, installed diesel generators manufactured by Transamerica Delaval Incorporated (TDI). While the hearing was in progress on the intervenors’ quality assurance contention, the parties learned of the discovery of defects in TDI diesel generators at other nuclear power facilities through the board notification process.⁹⁷ Prompted by this information, the intervenors sought to litigate the adequacy of Catawba’s compliance with the onsite power system requirement by presenting a three-part contention challenging the reliability of its TDI diesel generators.⁹⁸

In determining whether to accept the intervenors’ late-filed contention, the Board below applied the five-factor test of 10 C.F.R. 2.714(a)(1).⁹⁹ On a balancing of those factors, it concluded that the first part of the contention dealing with crankshaft design should be admitted on the condition that the intervenors later demonstrate their ability to contribute to the resolution of the issue — the third lateness factor.¹⁰⁰

⁹⁵ As earlier noted, in this case an emergency preparedness field exercise took place in February 1984. The intervenors do not claim that they were precluded from exploring at the hearing the results of that exercise.

⁹⁶ 10 C.F.R. Part 50, Appendix A, General Design Criterion 17.

⁹⁷ Board Notification 83-160 (October 21, 1983). *See also* Board Notification 83-160A (November 17, 1983).

⁹⁸ Tr. 9659-75. As paraphrased by the Board, the contention stated:

The Applicants have not demonstrated a reasonable assurance that the TDI emergency diesel generators at the Catawba Nuclear Station can perform their safety function in service because of: (1) inadequate design of the crankshafts; (2) deficiencies in quality assurance at TDI; (3) operating performance history of TDI generators at other nuclear facilities.

Memorandum and Order of February 23, 1984 (unpublished) at 4.

⁹⁹ Tr. 9624-25, 9659-75; Memorandum and Order of February 23 at 3. Those factors are:

- (i) Good cause, if any, for failure to file on time.
- (ii) The availability of other means whereby the petitioner’s interest will be protected.
- (iii) The extent to which the petitioner’s participation may reasonably be expected to assist in developing a sound record.
- (iv) The extent to which the petitioner’s interest will be represented by existing parties.
- (v) The extent to which the petitioner’s participation will broaden the issues or delay the proceeding.

¹⁰⁰ Memorandum and Order of February 23 at 6.

The Board, however, rejected the other two parts of the contention.¹⁰¹ Thereafter, the Licensing Board dismissed the conditionally-accepted "crankshaft" contention because the intervenors had failed to establish (by supplying the Board with the name of a qualified expert who would assist them) that they could make a substantial contribution to the record on the issue.¹⁰²

In the interim, the applicants notified the Licensing Board of a number of problems encountered with the Catawba generators.¹⁰³ This disclosure prompted the Board, on its own motion pursuant to 10 C.F.R. 2.760a, to pose the problems as an issue in the proceeding.¹⁰⁴ Upon review, the Commission found that the matters raised by the Board *sua sponte* did not constitute a serious safety matter and it dismissed the issue.¹⁰⁵

Following this development, the intervenors then sought the admission of the same issue as a late-filed contention. Applying the five section 2.714(a)(1) factors to the contention, the Licensing Board determined that the "balancing process" clearly favored its admission, provided that the intervenors demonstrated that they could make a substantial contribution to its resolution.¹⁰⁶ In the words of the Licensing Board:

As we have made clear in the past, we do not believe the present Intervenors can make a substantial contribution to these technical issues unless they are prepared to present expert testimony or at least have expert assistance in their cross-examination. The Intervenors have repeatedly indicated that they will be able to produce experts; so far, however, they have not done so. Now that the Intervenors have in hand the Applicants' report on site-specific problems at Catawba, they should be in a position to move quickly to obtain the appropriate expert assistance. In these circumstances, our admission of this late contention is conditioned upon the Intervenors' serving by July 6, 1984 their designation of a named diesel generator expert or experts, along with a description of qualifications (resume). Failure to meet this condition will result in dismissal of this contention. Conversely, if this condition is met, Factor 3 will favor admission of the contention.¹⁰⁷

¹⁰¹ *Id.* at 6-7. The Licensing Board also referred a portion of its ruling to us, but we declined to accept the referral. See ALAB-768, 19 NRC 988 (1984).

¹⁰² Order of April 13, 1984 (unpublished).

¹⁰³ Letter from J. Michael McGarry, III, to Licensing Board (February 17, 1984). See also letter from J. Michael McGarry, III, to Licensing Board (March 29, 1984).

¹⁰⁴ Memorandum and Order of February 27, 1984 (unpublished).

¹⁰⁵ Order of June 8, 1984 (unpublished).

¹⁰⁶ LBP-84-24, 19 NRC at 1586 n.50. As conditionally admitted, the contention read:

Whether there is a reasonable assurance that the TDI emergency diesel generators at the Catawba Station can perform their function and provide reliable service because of the problems that have arisen in the course of testing and inspection of such generators, such as the problems reported in the Applicant's letter to the Board of February 17, 1984.

¹⁰⁷ *Ibid.*

In an attempt to meet the Board's condition, the intervenors designated Dr. Robert Anderson, a professor of metallurgy at San Jose State University, as their "source of expert assistance."¹⁰⁸ According to the intervenors, Dr. Anderson was then serving as a consultant on TDI diesel generator issues to intervenors in the *Shoreham* proceeding.¹⁰⁹ On the basis of a subsequent telephone conference, however, the Licensing Board concluded that serious doubt existed as to the level of assistance Dr. Anderson would provide the intervenors in this case. This was because the intervenors were unable to state whether Dr. Anderson would appear as their witness or even be present at the hearing to assist them with cross-examination of the staff's and applicants' expert witnesses.¹¹⁰ Thus, the Board ordered the intervenors to certify that their expert would review the principal documents and the other parties' prefiled direct testimony and be present at the hearing to assist in the intervenors' cross-examination on this issue. Alternatively, the Board gave the intervenors the option of taking additional time and submitting a detailed statement, prepared with the assistance of qualified experts, that outlined their disagreement with the other parties' technical reports and explained how the intervenors would substantiate their position.¹¹¹

The intervenors advised the Licensing Board that they were unable to certify that Dr. Anderson would be available to review the principal documents and prefiled testimony or be present at the hearing because of his conflicting obligations in the *Shoreham* proceeding.¹¹² Instead, they submitted a purported statement of their technical position and attached to it the prefiled direct testimony of a group of witnesses from the *Shoreham* proceeding.¹¹³ The Licensing Board then found, *inter alia*, that the intervenors' statement failed to reflect any review by a qualified expert of the applicants' and staff's reports on the Catawba diesels and contained no explanation from a qualified expert of how the proffered *Shoreham* testimony was relevant to the conditionally admitted contention. Thus, the Board concluded that the statement did not comply with its directive and that the intervenors had failed to demonstrate that they would be able to make a significant contribution to the record. Consequently, it dismissed the contention.¹¹⁴

¹⁰⁸ Letter from Robert Guild to Licensing Board (July 6, 1984) at 2.

¹⁰⁹ *Ibid.*

¹¹⁰ Tr. 12,749.

¹¹¹ Memorandum and Order of July 20, 1984 (unpublished) at 4-5.

¹¹² Letter from Robert Guild to Licensing Board (August 1, 1984).

¹¹³ Letter from Robert Guild to Licensing Board (August 16, 1984).

¹¹⁴ Order of August 22, 1984 (unpublished); Memorandum and Order of September 4, 1984 (unpublished).

B. Before us the intervenors assert that the dismissal of their contention improperly deprived them of the right to a hearing on the issue conferred by section 189a of the Atomic Energy Act of 1954, as amended.¹¹⁵ First, they argue that it was error for the Licensing Board to apply the five section 2.714(a)(1) factors in evaluating the admissibility of their diesel generator contention. Second, they claim that, even if the Licensing Board acted correctly in imposing those requirements, the Board's unjustified scheduling actions prevented the intervenors from obtaining the services of the necessary experts.

1. The intervenors bring their first claim to the wrong forum. As they themselves recognize,¹¹⁶ their argument has already been considered and rejected by the Commission in this very proceeding. In CLI-83-19, the Commission ruled that a licensing board is required to consider all five section 2.714(a)(1) factors before admitting a late contention, even if the contention is based on previously unavailable information.¹¹⁷ In this connection, the Commission ruled that, contrary to the intervenors' assertion, section 189a of the Atomic Energy Act does not provide members of the public with an unqualified right to a hearing. Rather, the Act permits the establishment of reasonable threshold requirements for the admission of contentions to NRC licensing proceedings and, in the Commission's view, the five-factor test represents a permissible exercise of that authority.¹¹⁸ Inasmuch as the adjudicatory boards must adhere to the Commission's mandates, the Licensing Board thus necessarily was correct in balancing all of the section 2.714(a)(1) factors in assessing the admissibility of the intervenors' diesel generator contention.

2. The intervenors' second argument likewise must fail. The intervenors do not explicitly challenge the rejection of their purported technical statement by the Licensing Board. Rather, they insist before us that the Board should have heeded their objections and postponed the hearing on the diesel generator contention until after the completion of the hearing on diesel generators in the *Shoreham* proceeding. According to the intervenors, "[s]uch scheduling . . . served to deprive us of Dr. Anderson's expert assistance, and ultimately, our right to a hearing on these serious diesel generator claims."¹¹⁹ But when the Licensing Board solicited the views of the parties on the hearing schedule before setting the final hearing dates, the intervenors did not object to the schedule on the

¹¹⁵ 42 U.S.C. 2239(a).

¹¹⁶ Intervenors' Brief at 55-56.

¹¹⁷ 17 NRC at 1045.

¹¹⁸ *Id.* at 1045-47.

¹¹⁹ Intervenors' Brief at 60.

grounds that their expert would be unavailable. Rather, they objected to the *Catawba* hearing preceding other hearings involving diesel generators on the general grounds that it would waste the parties' time, effort and energy when similar issues would be more thoroughly aired in the *Shoreham* case.¹²⁰ Without having explicitly linked the *Catawba* hearing schedule with the unavailability of their expert witness in their objection before the Licensing Board, the intervenors may not now claim for the first time on appeal that the Board below erred in establishing the hearing schedule.

Nor did the Licensing Board err by not postponing the hearing when the intervenors informed the Board of Dr. Anderson's unavailability because of his conflicting commitment in the *Shoreham* proceeding. Once again, the intervenors failed to move for a continuance and to place the issue properly before the Board. In any event, as earlier noted, we will overturn a scheduling decision only when we find that a licensing board set a schedule that deprives a party of its right of procedural due process.¹²¹ We do not find that here.

As the Board pointed out, the intervenors had not made any unequivocal commitments on the availability of Dr. Anderson. Thus, whether the intervenors could count on his assistance even after the termination of his services in connection with the *Shoreham* proceeding was uncertain at best. Beyond that, we subscribe to the Licensing Board's observation that the intervenors had ample time to prepare for the hearing and obtain the assistance of experts had they made diligent efforts to do so.¹²² As the Board also noted, given the Commission's policy on timely completion of operating license proceedings,¹²³ it would have required a much better reason than the intervenors supplied to justify a delay of this proceeding to await the conclusion of a hearing of uncertain duration being held in an entirely different proceeding.¹²⁴

¹²⁰ Tr. 12,730-33.

¹²¹ See p. 74, *supra*. See also *South Texas*, 21 NRC at 379.

¹²² Memorandum and Order of September 4 at 5-7.

¹²³ CLI-81-8, 13 NRC at 452.

¹²⁴ Memorandum and Order of September 4 at 6.

We need not dwell upon the intervenors' claim (Intervenors' Brief at 60) that they were entitled to "mak[e] out our case [on the diesel generator issue] entirely through cross-examination if we choose." Had the contention been accepted for litigation, that no doubt would have been so. But, as we have seen, the contention was not accepted because the intervenors did not satisfy the section 2.714(a) test.

IV. MISCELLANEOUS ISSUES

The intervenors also complain of the Licensing Board's rejection of a number of their other contentions. None of their protests in this regard has substance.

A. The Licensing Board was clearly correct in declining to accept the intervenors' contentions seeking to litigate both the need for the power to be generated by Catawba and the financial qualifications of the municipalities that are co-owners of the facility.¹²⁵ The Commission has provided by rule that neither need-for-power nor financial qualifications questions are to be explored in an operating license proceeding such as the one at bar.¹²⁶ Needless to say, in the absence of any endeavor by intervenors to seek a waiver of, or an exception to, the operation of these rules in this proceeding,¹²⁷ the Board below was obliged to apply them.¹²⁸

B. On April 12, 1984, the intervenors submitted a contention to the effect that the applicants had failed adequately to correct certain identified control room design deficiencies.¹²⁹ Applying the five section 2.714(a)(1) lateness factors, the Board rejected the contention because the intervenors had failed to establish either good cause for their tardiness or their ability to make a substantial contribution to the resolution of this issue.¹³⁰

We see no reason to overturn that result. Inasmuch as the information underlying their control room design claims had been made available in

¹²⁵ LBP-82-107A, 16 NRC at 1801 (need for power); LBP-84-24, 19 NRC at 1425 n.3 (financial qualifications).

¹²⁶ See 10 C.F.R. 51.106(c) (need for power); 10 C.F.R. 2.104(c)(4), as amended effective October 12, 1984, 49 Fed. Reg. 35,747, 35,752, as corrected, 49 Fed. Reg. 36,631 (1984) (financial qualifications).

The Licensing Board's action on the intervenors' financial qualifications contention had been based upon an earlier (1982) rule that, to the extent relevant here, was essentially identical to the 1984 rule. See 47 Fed. Reg. 13,750, 13,753 (1982). Although, upon judicial review, it was remanded to the Commission for further consideration, the 1982 rule remained in effect pending the completion of the remand and the publication of the 1984 rule. See 49 Fed. Reg. 24,111 (1984), *interpreting New England Coalition on Nuclear Pollution v. NRC*, 727 F.2d 1127 (D.C. Cir. 1984). The current rule has also been the subject of a judicial challenge, which is now pending in the District of Columbia Circuit. *New England Coalition on Nuclear Pollution v. NRC*, No. 84-1514 (D.C. Cir. filed Oct. 15, 1984), *consolidated with Coalition for the Environment v. NRC*, No. 84-1313 (D.C. Cir. filed July 12, 1984).

¹²⁷ See 10 C.F.R. 2.758(b).

¹²⁸ In connection with their need-for-power claims, intervenors asserted below that the staff's draft environmental impact statement should have included construction costs in its cost/benefit assessment. We have not been enlightened by intervenors respecting why the analysis underlying the Licensing Board's rejection of their assertion was faulty. See LBP-82-16, 15 NRC at 584; LBP-82-107A, 16 NRC at 1801. We thus are constrained to observe once again that it is not enough simply to declare flatly that a particular Board ruling was in error. Rather, it is incumbent upon the appellant to confront directly the reasons assigned for the challenged ruling and to identify with particularity the infirmities purportedly inherent in those reasons.

¹²⁹ See Palmetto Alliance and Carolina Environmental Study Group Motion to Readmit Contentions Regarding Severe Accidents, Control Room Design Deficiencies and Lack of Financial Qualifications (April 12, 1984) [hereafter "Intervenors' Motion to Readmit Contentions"].

¹³⁰ LBP-84-24, 19 NRC at 1425 n.3.

the applicants' Final Control Room Review sent to them on June 1, 1983,¹³¹ the intervenors were not entitled to await the issuance of the staff's Safety Evaluation Report on March 9, 1984 before filing the contention.¹³²

Moreover, intervenors did not establish that they would make a substantial contribution to development of the record. Their single assertion in this regard was that the past effectiveness of their participation (both on other issues in this proceeding and in other proceedings) provided a basis upon which the Board could and should conclude that they would assist in developing a sound record on the control room design matter.¹³³ Such a bare assertion, unsupported by specific information from which a Board could draw an informed inference that the intervenors can and will make a valuable contribution on a particular issue in this proceeding, will not suffice.¹³⁴

C. Among the intervenors' originally filed contentions were those concerned with the consequences of an explosive hydrogen-oxygen reaction within the Catawba ice condenser containment following a loss-of-coolant accident. Relying on the proposition that contentions that are the subject of general rulemaking by the Commission should not be accepted in individual licensing proceedings, the Licensing Board rejected the intervenors' contentions. It noted in this regard that hydrogen generation in ice condenser containments such as that at Catawba was being addressed in an ongoing rulemaking proceeding.¹³⁵ The Board also noted that, although the Commission previously had held that the hydrogen issue could be litigated in individual proceedings where a credible loss-of-coolant accident scenario entailing hydrogen generation and certain other consequences were pled, no such scenarios were set forth in the intervenors' contentions.¹³⁶

Subsequently, the intervenors filed four purported accident scenarios as contentions, in the guise of objections to the Board's order rejecting the contentions. Only three of these scenarios, however, concerned the generation of hydrogen and its consequences, and the Board again reject-

¹³¹ See letter from Albert V. Carr, Jr., to Licensing Board (June 8, 1983).

¹³² See CLI-83-19, 17 NRC at 1045.

¹³³ Intervenors' Motion to Readmit Contentions at 6.

¹³⁴ See *Washington Public Power Supply System* (WPPSS Nuclear Project No. 3), ALAB-747, 18 NRC 1167, 1181 (1983); *Mississippi Power & Light Co.* (Grand Gulf Nuclear Station, Units 1 and 2), ALAB-704, 16 NRC 1725, 1730 (1982).

¹³⁵ LBP-82-16, 15 NRC at 584. See *Potomac Electric Power Co.* (Douglas Point Nuclear Generating Station, Units 1 and 2), ALAB-218, 8 AEC 79, 85 (1974).

¹³⁶ LBP-82-16, 15 NRC at 584. See *Metropolitan Edison Co.* (Three Mile Island Nuclear Station, Unit No. 1), CLI-80-16, 11 NRC 674, 675 (1980).

ed them as barred by the pending rulemaking.¹³⁷ In doing so, the Board noted that the rulemaking directly addressed the intervenors' hydrogen concerns and would be completed before Catawba was licensed. It also observed that the intervenors were free to file comments on the proposed rule.¹³⁸

Over a year later and after the applicants sought authority to conduct low-power testing, the intervenors once more moved to have their hydrogen contentions admitted. They claimed that the premise for the Board's earlier ruling, i.e., that the rulemaking would be completed before Catawba was ready to be licensed, had proved wrong. Without addressing the criteria for late-filed contentions, the Board rejected the intervenors' contentions for a third time, finding that Commission action on a final rule dealing with the generic hydrogen generation issue was expected before full-power authorization of the applicants' facility.¹³⁹

We have examined the intervenors' hydrogen control contentions and find that, in the circumstances presented, the Licensing Board was correct in rejecting them because they were the subject of an ongoing rulemaking. Moreover, even if we disagreed with the Board, the result would not change. On appeal, we are required to apply the Commission's regulations in effect at the time of the appeal.¹⁴⁰ Because the Commission's hydrogen control rule is now final¹⁴¹ and sets forth specifically what measures are required in the case of Catawba, in all events we now would have to reject the intervenors' proffered contentions as an impermissible attack on the Commission's regulations.¹⁴²

For the foregoing reasons, the Licensing Board's authorization of the issuance of full-power operating licenses for the Catawba facility is *affirmed*, except insofar as those licenses permit the receipt and storage on the facility site of spent fuel generated at other nuclear facilities.¹⁴³ As earlier noted, the issues pertaining to such receipt and storage will be

¹³⁷ LBP-82-107A, 16 NRC at 1807-10. The Board found that the intervenors' fourth accident scenario, i.e., the scenario that did not involve the generation of hydrogen, had already been litigated in the construction permit proceeding and thus was barred from further litigation in the operating license proceeding. *Id.* at 1808.

¹³⁸ *Id.* at 1809-10.

¹³⁹ LBP-84-24, 19 NRC at 1425 n.3.

¹⁴⁰ *Douglas Point*, 8 AEC at 82-83.

¹⁴¹ 50 Fed. Reg. 3498 (1985), codified at 10 C.F.R. 50.44(c)(3).

¹⁴² 10 C.F.R. 2.758.

¹⁴³ In this connection, we have considered all of the intervenors' other claims and have found them insubstantial. Additionally, we have examined on our own initiative the portions of the Licensing Boards' decisions not embraced by the appeals. This examination disclosed no error warranting corrective action.

considered in a subsequent opinion. Pending the issuance of that opinion, the applicants shall not receive at Catawba spent fuel generated elsewhere without reasonable prior notice to this Board.

It is so ORDERED.

FOR THE APPEAL BOARD

C. Jean Shoemaker
Secretary to the
Appeal Board

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

**Hugh K. Clark, Chairman
Dr. George A. Ferguson
Dr. Oscar H. Paris**

In the Matter of

Docket No. 50-462-OL

**ILLINOIS POWER COMPANY, *et al.*
(Clinton Power Station, Unit 2)**

July 11, 1985

The Licensing Board grants Applicants' motion to terminate the proceeding for an operating license for Unit No. 2 of the Clinton Power Station, subject to certain conditions.

**MEMORANDUM AND ORDER
(Terminating Proceeding)**

INTRODUCTION

On May 17, 1985, Illinois Power Company (IPC) filed a Motion to Terminate Proceeding (Motion) on the grounds of mootness and requested this Board to authorize the Director, Office of Nuclear Reactor Regulation (NRR), to rescind the construction permit, CPPR-138, issued for Clinton Power Station (CPS) Unit 2. On May 29, 1985, the People of the State of Illinois (State) filed an answer to IPC's Motion (State Response), stating that it did not object to the termination of the proceeding, *per se*, but requesting the Board to order an environmental,

safety, and cost assessment of IPC's proposed method for remediation of the Unit 2 excavation area. On June 6, 1985, the NRC Staff (Staff) responded to IPC's Motion (Staff Response) stating that it had concluded, largely on the basis of photographs, that IPC need not fill the Unit 2 excavation at this time, but Staff set forth certain actions for environmental protection that it proposed to require of IPC as a condition to the licensing of CPS Unit 1.

On June 11, 1985, the Board issued a Memorandum and Order (Requesting Additional Information on Unit 2 Excavation) (unpublished) indicating that it wanted additional information about the Unit 2 excavation before rendering a decision on IPC's Motion and that it believed the information needed could be obtained from the photographs discussed in the Staff Response. The Board had concerns about possible safety matters associated with the unfilled excavation and noted that the Staff Response did not address safety matters. Therefore the Board ordered the Staff to provide it with copies of the photographs and indicated that copies should be made available, also, to any party that wished to examine them.

Subsequently, Staff advised the Board that the photographs were made with a Polaroid camera, and consequently negatives, from which copies could readily be made, were not available. Therefore the Board decided to examine the original photographs in a round-robin fashion. It issued a Memorandum and Order (Concerning Request for Photographs) on June 13, 1985 (unpublished), stating that it would make the photographs available for inspection by the parties upon request, provided that such request were filed with the Board by July 1, 1985. No request to inspect the photographs having been received, we shall now render our decision on IPC's Motion.

BACKGROUND

The U.S. Nuclear Regulatory Commission (NRC) received an application for operating licenses for CPS Units 1 and 2, two boiling water nuclear reactors located in Harp Township, DeWitt County, approximately 6 miles east of Clinton, Illinois, on September 8, 1980. The application for Unit 1 was filed by Illinois Power Company on behalf of itself and Soyland Power Cooperative, Inc., and Western Illinois Power Cooperative, Inc. (Applicants), but IPC is the sole owner and applicant of CPS Unit 2. Unit 1 was originally scheduled for completion in 1983, and Unit 2 was scheduled for completion in 1995.

Petitions requesting a hearing and the right to intervene were filed on October 27, 1980, by the Prairie Alliance and by the Illinois Attorney

General on behalf of the People of the State of Illinois. This Atomic Safety and Licensing Board was established by order issued November 7, 1980. On May 29, 1981, the Board issued an order admitting PA as an Intervenor and the State as an Interested State pursuant to 10 C.F.R. § 2.715(c).

On November 13, 1981, the Board granted an unopposed motion by the Applicants for Severance and Stay of proceeding as to Unit 2 (Docket No. 50-462-OL), and by unpublished order dated February 14, 1985, the proceeding for Unit 1 (Docket No. 50-461-OL) was terminated. On October 18, 1983, IPC notified the Board and parties by letter that CPS Unit 2 had been cancelled, and subsequently there was no further activity in that Docket. On April 9, 1985, IPC wrote to the Director, NRR, formally verifying the prior notice of cancellation of Unit 2, withdrawing its application for Unit 2, and requesting that the Director cancel the construction permit for Unit 2.

DISCUSSION

In the Staff Response to IPC's Motion, Staff indicated that it had conducted a review to determine whether any provisions for the protection of the environment should be required at the Unit 2 site and concluded that certain conditions for environmental redress of the site should be required by this Board as conditions for the dismissal of this proceeding. Staff did not, however, address the question of whether there were any safety concerns associated with the Unit 2 excavation, a matter of concern to the State and to this Board. In the discussion to follow, we deal first with the safety issue, and then return to consider environmental redress.

The Unit 2 site lies entirely within the CPS Unit 1 exclusion area on property owned by the Applicants and is not visible to persons located outside the exclusion area. The excavation is approximately 40 feet deep, 350 feet wide, and 1350 feet long at the top, and approximately 280 feet wide and 900 feet long at the bottom. One side of the excavation abuts the radwaste, control and diesel buildings for Unit 1. Portions of the north and south sides of the excavation are covered by a revetment composed of a grout intrusion blanket. The remaining portions of the north and south sides, and the east side of the excavation, are sloped and are stabilized by herbaceous vegetation. (See Affidavit of Germain Laroche (Laroche Affidavit) dated June 6, 1985, and attached to the Staff Response, at 2-3.)

The Board was concerned that a person might be injured by accidentally falling into the excavation. The photographs sent to us by the Staff,

however, clearly show that the slope of the excavation's sides is everywhere less than 45° and hence not steep enough to constitute a significant hazard. There is a road running along the east rim of the excavation, and presumably a vehicle accidentally going over the rim could turn over and perhaps roll on the slope, but Applicants have committed to construct a 3-foot-high berm on the three exposed sides of the excavation; this structure should prevent such a vehicular accident. On the basis of the foregoing, we conclude that the excavation, if left unfilled, will present no significant hazard to the health and safety of the public or of plant personnel.

We turn now to environmental considerations. The elevation of the bottom of the excavation is 695 feet above MSL. A drain at the bottom empties into the cooling pond, which has an elevation of 690 feet above MSL. A flap gate in the drain prevents backflow into the excavation from the cooling pond. Applicants plan to include provisions relating to effluent discharges from the excavation drain in their NPDES permit renewal before the end of 1985. (Laroche Affidavit, at 3.)

As we have mentioned, Applicants have committed to construct a 3-foot-high berm on the three exposed sides of the excavation to prevent flood waters from entering the excavation. At the time of the filing of the Staff Response, Staff did not yet know whether IPC was going to construct the berm of earth or of concrete. Staff indicated that if the berm is to be constructed in whole or in part of earth, Staff will require Applicants to stabilize the berm with vegetation in order to prevent soil erosion. (*Ibid.*)

Because of the cancellation of Unit 2, the Unit 2 excavation will be considered part of the Unit 1 site. As a licensing condition of Unit 1, the Applicants will be required to submit an Environmental Protection Plan (EPP) which, upon approval, will be appended as Appendix B to the Unit 1 operating license. The EPP will require the licensee to provide the Staff with a detailed analysis of data and proposed course of action to alleviate the problem should harmful effects or evidence of trends towards irreversible damage to the environment be observed. Additionally, the EPP will require the licensee to prepare an environmental evaluation before engaging in any additional construction or operational activities which may have measurable environmental effects that are not confined to onsite areas previously disturbed during site preparation and plant construction. If the evaluation indicates that the activity involves an unreviewed environmental question, prior approval of the activity must be obtained from the Director of NRR. If the activity involves a change in the EPP, the activity and change in the EPP will require an appropriate license amendment. (*Id.* at 4.)

The Unit 2 site is presently stabilized and presents no significant environmental impacts. The construction of the berm around the excavation will provide a satisfactory means of ensuring continued environmental acceptability and also will provide protection against a vehicular accident at the excavation. Staff sees no immediate need to fill the excavation and believes that the ultimate disposition of the excavation can be deferred for future consideration. Should the excavation later require further redress, such action can be required pursuant to the EPP for Unit 1. (*Id.* at 4-5.)

CONCLUSIONS

Considering the Applicants' commitment to construct a berm around the excavation and Staff's requirements with respect to the berm, we conclude that the Unit 2 excavation will present no significant safety risks. Further, we conclude that the measures already taken to stabilize the excavation plus the additional measures committed to by Applicants and those to be required by the Staff are adequate to ensure the continued environmental acceptability of the site.

ORDER

Upon consideration of the foregoing and the entire record in this matter, pursuant to 10 C.F.R. § 2.107(a) it is, this 11th day of July 1985,
ORDERED:

1. That IPC's Motion to Terminate Proceeding for an operating license of Clinton Power Station Unit 2 is granted, subject to the conditions that:

- (a) The Unit 2 excavation shall be considered a part of the Unit 1 site and subject to licensing conditions imposed by the NRC Staff;
- (b) The Staff shall require licensee to conform to the monitoring and reporting procedures described in ¶ 8 of the Affidavit of Germain Laroch dated June 6, 1985.

2. That the Director of Nuclear Reactor Regulation is authorized to rescind Construction Permit CPPR-138 issued for Clinton Power Station Unit 2.

**FOR THE ATOMIC SAFETY AND
LICENSING BOARD**

**Hugh K. Clark, Chairman (by OHP)
ADMINISTRATIVE JUDGE**

**George A. Ferguson
ADMINISTRATIVE JUDGE**

**Oscar H. Paris
ADMINISTRATIVE JUDGE**

Bethesda, Maryland

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

**Herbert Grossman, Chairman
Richard F. Cole
Ernest F. Hill**

In the Matter of

**Docket No. 50-223-SP
(ASLBP No. 85-509-02-SP)**

**UNIVERSITY OF LOWELL
(Training and Research Reactor)**

July 19, 1985

**MEMORANDUM AND ORDER
(Cancelling Prehearing Conference and Terminating Proceeding)**

Memorandum

On February 14, 1984, the University of Lowell (Licensee) timely filed an application for renewal of its Facility Operating License No.R-125 for an additional 30 years. The license is for the operation of a training and research reactor located on the campus of the university in Lowell, Massachusetts.

On March 29, 1985, the NRC published a notice in the *Federal Register* offering an opportunity to the Licensee and any other person whose interest might be affected by the renewal of the license to file a written petition for leave to intervene by April 29, 1985. 50 Fed. Reg. 12,668.

By petition for leave to intervene, dated April 29, 1985, filed with the NRC, John F. Doherty sought to intervene in this proceeding. No other petitions for leave to intervene have been received.

On May 6, 1985, this Atomic Safety and Licensing Board was established to rule on petitions for leave to intervene and to preside over the proceeding in the event that a hearing is ordered. 50 Fed. Reg. 19,827 (May 10, 1985).

We issued an Order on June 20, 1985, subsequently published in the *Federal Register*, setting a prehearing conference for August 1-2, 1985, to consider Mr. Doherty's petition. The public was invited to attend. 50 Fed. Reg. 26,423 (June 26, 1985).

Subsequently, by letter dated July 11, 1985, Mr. Doherty withdrew his petition for leave to intervene. His withdrawal leaves no petition before this Board and no issues to be heard. Consequently, there is no need or occasion for the previously scheduled prehearing conference or for subsequent evidentiary hearings.

Order

For all of the foregoing reasons, and based upon a consideration of the entire record in this matter, it is, this 19th day of July 1985,

ORDERED:

1. That the prehearing conference scheduled for August 1-2, 1985, is cancelled; and
2. That this proceeding, begun with establishment of this Board on May 6, 1985, is *terminated*.

Board members, Administrative Judges Richard F. Cole and Ernest F. Hill, join in this Order.

**FOR THE ATOMIC SAFETY AND
LICENSING BOARD**

**Herbert Grossman, Chairman
ADMINISTRATIVE JUDGE**

Bethesda, Maryland
July 19, 1985

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

**Peter B. Bloch, Chairman
Mr. Gustave A. Linenberger, Jr.
Dr. Jerry Harbour**

In the Matter of

**Docket No. 50-293-OLA
(ASLBP No. 85-510-01-LA)**

**BOSTON EDISON COMPANY
(Pilgrim Nuclear Power Station)**

July 19, 1985

In this Memorandum and Order, the Licensing Board dismisses a petition to intervene for failure to show good cause, untimeliness and lack of standing.

PETITION TO INTERVENE: TIMELINESS

A petition to intervene in a license amendment case that is late by 9 days and does not show good cause for late filing will be dismissed for untimeliness.

INTERVENORS: STANDING

Although residence 43 miles from a nuclear power plant may be adequate to establish standing with respect to applications for the construction or operation of a nuclear power plant, this same distance is not adequate, without a further showing, to establish standing in a case involving a change in allowable K-effective for a fuel pool.

MEMORANDUM AND ORDER (Petition to Intervene)

Memorandum

On June 21, 1985, Mr. John F. Doherty ("Petitioner") filed a "Request for Hearing and Petition for Leave to Intervene" ("Petition"). However, the Petition was filed 8 days after the last date for filing provided for in the notice that was published in the *Federal Register*.¹ Petitioner should have been aware of the need for timely filings because that need was explained in the *Federal Register* notice.²

The procedural regulations require that we dismiss the petition because Mr. Doherty has not shown good cause for his late filing.³ So we shall dismiss the petition.

Additionally, we note with approval the discussion of standing contained in "Licensee's Answer to John F. Doherty's Request for a Hearing and Petition for Leave to Intervene," July 12, 1985.⁴ Petitioner has not stated a valid ground for intervention.

There is clear precedent that status as a ratepayer of the utility that owns a nuclear plant does not confer standing to intervene.⁵ There is no precedent supporting standing based on the consumption of fish or cranberries (or other edibles), and such a claim is too sweeping as a basis for standing because it could be made by a vast army of consumers that might buy these products anywhere around the world.⁶

Furthermore, the fish-and-cranberry ground for standing shares a deficiency we also find in the claim for standing based on residence 43 miles from Pilgrim. Boston Edison Company is not applying for a construction permit or an operating license for the Pilgrim Nuclear Power Station. If it were doing so, residence 43 miles from the plant might provide grounds for standing because there are scenarios under which effects

¹ 50 Fed. Reg. 20,971 (May 21, 1985). The 30-day notice period is binding pursuant to 10 C.F.R. § 2.714.

² 50 Fed. Reg. at 20,970.

³ Nontimely filings may be entertained only upon a balancing of factors set forth in 10 C.F.R. § 2.714(a)(1).

⁴ The NRC Staff Response to John F. Doherty's Petition for Leave to Intervene, July 19, 1985, did not address Applicants' argument concerning the relationship between the specific amendment being requested and the distance required for standing. See Staff Response at 11-13.

⁵ E.g., *Portland General Electric Co.* (Pebble Springs Nuclear Plant, Units 1 and 2), CLI-76-27, 4 NRC 610, 614 (1976).

⁶ Standing requires a showing of injury from the challenged action and that the injury is within the zone of interests protected by the statutes governing the proceeding. See, e.g., *id.* at 614-15.

might be felt at that distance from the plant.⁷ However, Pilgrim already is licensed to operate. The license includes permission to operate the fuel pool. Under abnormal conditions, Boston Edison Company is already permitted to operate its fuel pool with a criticality constant (K_{eff} , i.e., effective reactivity) of 0.95. Hence, the only increased risk of which Petitioner complains is that the maximum permissible K_{eff} of the pool would be changed from 0.90 to 0.95 under normal operating conditions.⁸

This case concerns a request for a license amendment and it is not controlled by the same standing considerations that govern standing when an operating license is sought. Whatever the risk to the surrounding community from a reactor *and* its associated fuel pool, the risk from the fuel pool alone is less and the distance of residence from the pool for which standing would be appropriate would, accordingly, be less. Consequently, we do not consider residence 43 miles from this plant to be adequate for standing. We need not decide how close residence might be before standing would be established.

In making this ruling, we note that we know of no scenario under which radiation attributable to the fuel pool would affect a residence 43 miles distant from the fuel pool; and petitioner has not informed us of any such scenario. Even were there a risk of an accident that would disperse the contents of the fuel pool to such a great distance, we know of no way that permitting an increase of K_{eff} during normal operations of the plant (to an upper limit already approved for abnormal operation) would increase the risk to Petitioner from such an incident. Nor has Petitioner suggested any such scenario to us in support of his questionable claim to have standing.

Consequently, we conclude that the Petition must be denied both for lateness and for lack of standing.

Order

For all the foregoing reasons and based on consideration of the entire record in this matter, it is, this 19th day of July 1985,

ORDERED:

⁷ See *Tennessee Valley Authority* (Watts Bar Nuclear Plant, Units 1 and 2), ALAB-413, 5 NRC 1418, 1421 n.4 (1977) (standing based on the distance of a residence could be granted for a residence 50 miles from a plant) and *Cleveland Electric Illuminating Co.* (Perry Nuclear Power Plant, Units 1 and 2), LBP-81-24, 14 NRC 175, 179 (1981) (the strength of a claim for standing based on the location of a residence diminishes with the distance of the residence from the plant).

⁸ Petition at 2.

That the Request for Hearing and Petition for Leave to Intervene, filed by John F. Doherty on June 21, 1985, is dismissed.

Pursuant to 10 C.F.R. § 2.760 of the Commission's Rules of Practice, this decision will constitute the final decision of the Commission thirty (30) days from the date of its issuance, unless an appeal is taken in accordance with 10 C.F.R. § 2.762 or the Commission directs otherwise. *See also* 10 C.F.R. §§ 2.785 and 2.786.

**THE ATOMIC SAFETY AND
LICENSING BOARD**

**Peter B. Bloch, Chairman
ADMINISTRATIVE JUDGE**

**Mr. Gustave A. Linenberger, Jr.
ADMINISTRATIVE JUDGE**

**Dr. Jerry Harbour
ADMINISTRATIVE JUDGE**

Bethesda, Maryland

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

**Helen F. Hoyt, Chairperson
Dr. Richard F. Cole
Dr. Jerry Harbour**

In the Matter of

**Docket Nos. 50-352-OL
50-353-OL
(ASLBP No. 81-465-07-OL)**

**PHILADELPHIA ELECTRIC COMPANY
(Limerick Generating Station,
Units 1 and 2)**

July 22, 1985

In this Partial Initial Decision, the Board finds in favor of the Applicant with respect to issues concerning offsite emergency planning for the State Correctional Institution at Graterford, and authorizes the issuance of a full-power operating license.

EMERGENCY PLANNING: EVACUATION TIME ESTIMATES

Evacuation time estimates (ETE) need not include an analysis of worst-case scenarios. Such an analysis is not contemplated by either the NRC regulations or NUREG-0654. ETES are intended to be representative and reasonable so that any protective action decision based on them will reflect realistic conditions.

EMERGENCY PLANNING: EVACUATION TIME ESTIMATES

Neither NRC regulations nor NUREG-0654 establishes a standard for effectuating evacuations within a given time. An evacuation time estimate does not attempt to predict exact conditions during an evacuation. Rather, it attempts to indicate the sensitivity of the analysis to a number of commonly occurring events.

FOURTH PARTIAL INITIAL DECISION (On Offsite Emergency Planning Contentions Relating to Graterford)

I. INTRODUCTION

This is the Fourth Partial Initial Decision ("PID") issued by this Atomic Safety and Licensing Board ("Licensing Board" or "Board") in this proceeding. The First PID and Second PID decided all issues admitted for litigation before this Licensing Board, except offsite emergency planning contentions, and resolved them in favor of Applicant, Philadelphia Electric Company ("Applicant").¹ The Third PID disposed of those remaining issues in favor of Applicant except for a contention admitted on behalf of the inmates of the State Correctional Institution at Graterford ("Graterford" or "SCIG").² The Fourth PID now disposes of the two Graterford issues in favor of Applicant.

In an Order dated June 12, 1985, the Licensing Board ruled on the admissibility of the proposed contentions proffered by the Graterford inmates. One contention with two bases was admitted on behalf of the Graterford inmates.³ Following discovery, 2 days of evidentiary hearings

¹ The First PID was issued on March 8, 1983, and resolved the litigated issues in favor of Applicant, subject to certain conditions. LBP-83-11, 17 NRC 413 (1983), *aff'd in part, remanded in part*, ALAB-785, 20 NRC 848 (1984). The remanded issues relating to the appeal from the First PID were resolved in favor of Applicant without the need for an evidentiary hearing. Memorandum and Order on Delaware's Remanded and Revised Environmental Contentions V-14 and V-16 (November 8, 1984), *aff'd*, ALAB-804, 21 NRC 587 (1985). The Second PID was issued on August 29, 1984. LBP-84-31, 20 NRC 446 (1984), *appeal pending*. It decided all issues in controversy which were prerequisite for authorization of the low-power operating licenses requested by Applicant pursuant to 10 C.F.R. § 50.57(c). The Third PID decided all offsite emergency planning contentions in Applicant's favor, subject to two conditions which have now been met, as verified by the Federal Emergency Management Agency ("FEMA"). LBP-85-14, 21 NRC 1219 (1984).

² See ALAB-806, 21 NRC 1183 (1985).

³ Order Admitting Certain Revised Contentions of the Graterford Inmates and Denying Others (June 12, 1985) (unpublished).

on the contentions were held on July 15, 1985, and July 16, 1985, in Philadelphia, Pennsylvania.

Prior to the hearing, the Board and parties participated in a conference call regarding the hearing schedule and procedures to be followed. The parties identified their witnesses and agreed to make arrangements for their depositions. The parties further agreed that proposed findings would be made by way of oral argument, supplemented concurrently by written findings if the parties so desired. Memorandum and Order — Graterford Contentions and Hearing Schedule, slip op. at 3 (June 18, 1985). As agreed, the Board heard oral argument at 1:00 p.m. on July 17, 1985.

At the evidentiary hearing, the Board heard the testimony of seven witnesses and received into evidence the deposition transcript of Robert L. Morris. Except for Mr. Morris, all the witnesses appeared and were subject to cross-examination. Intervenor offered the deposition of Mr. Morris even though he was not present at the hearing. At the end of Mr. Morris' deposition on July 3, 1985, Intervenor proposed, for the first time, that the witness' deposition testimony be received into evidence in lieu of live testimony. Deposition of Robert L. Morris, ff. Tr. 21,013, at 73-74. The other parties did not agree to this procedure because there had been no proper notice given or legal basis stated for the proposal. After a discussion at the hearing on the admissibility of the Morris deposition, the parties agreed not to object to the admissibility of this testimony, even though the witness was not present for cross-examination, to avoid any potential claim of error (Tr. 21,009-13).

II. FINDINGS OF FACT

CONTENTION OF THE INMATES AT THE STATE CORRECTIONAL INSTITUTION AT GRATERFORD

There is no reasonable assurance that the Radiological Emergency Response Plan for the State Correctional Institute [*sic*] at Graterford will protect the inmates at said institution in the event of a nuclear emergency at the Limerick Generating Station.

A. Basis C-Training

There is no reasonable assurance the emergency response training will be offered to civilian personnel who will be involved in the emergency response plans, such as civilian bus and ambulance drivers.

The inmates contend that emergency response training be offered to civilian personnel who will be assisting the Bureau of Corrections, the state police, and the National Guard in the appropriate response to an accident at Limerick Generating Station. Pursuant to further discussions, held during the closed conference in Harrisburg, the Commonwealth of Pennsylvania has attempted to address the inmates' concern by the offering of said emergency response training to civilian bus drivers.

The method by which the Commonwealth has suggested to achieve this purpose is a letter to all bus providers which is attached to the Commonwealth's "Answer of the Commonwealth of Pennsylvania to Proposed Contentions of the Graterford Inmates with Regard to the Evacuation Plan" dated April 4, 1985 as Exhibit B. This letter, addressed to the employers of the bus drivers, offers a two hour course explaining the proper use of dosimetry by the Pennsylvania Emergency Management Agency ["PEMA"]. The inmates find this letter inadequate in several respects. Initially, there is no guarantee that the employees will ever receive any notice of the opportunity to avail themselves of this training program. Furthermore, the training envisioned by the inmates was a broader, more comprehensive program, such as the training offered to the school bus drivers. See the Third Partial Initial Decision on Offsite Emergency Planning by the Licensing Board, Section 333, page 155, which reads, "[t]he training program for bus drivers offers a general orientation and overview of radiation principles, emergency management principles, susceptibility of children to radiation and additional background information." The inmates contend that the two hour course offered by PEMA is not as comprehensive as the one offered to the bus drivers of school children and is therefore inadequate in this respect.

Training

1. Planning Standard O of NUREG-0654/FEMA-REP-1, Rev. 1 and 10 C.F.R. § 50.47(b)(15) call for radiological emergency response training to be "provided to those who may be called on to assist in an emergency." Furthermore, Criterion O.1 provides that "each organization shall assure the training of appropriate individuals." Asher/Kinard, ff. Tr. 20,995, at 1.

2. PEMA will be responsible for conducting the training of the civilian bus companies and ambulance companies (Taylor, ff. Tr. 20,856, at 3; Asher/Kinard, ff. Tr. 20,995, at 1).

Offer of Training

3. Donald Taylor, Director of Training and Education for PEMA, testified that "civilian personnel" within the meaning of this contention are those non-State employees identified in the Radiological Emergency Response Plan ("plan") for Graterford who would have a role in the emergency response in the event of a radiological emergency at Limerick. This includes drivers employed by civilian bus and ambulance companies which have agreed to furnish vehicles upon request to assist in an evacuation of Graterford. Taylor, ff. Tr. 20,856, at 2.

4. Reasonable efforts are being made to offer training to civilian personnel who would be involved in an evacuation of Graterford. For example, on April 4, 1985, Mr. Taylor wrote each of the six bus companies that would transport prisoners from Graterford in an evacuation and offered dosimetry and decontamination training at no expense for

drivers who would be involved. To date, no responses from those six companies have been received. Mr. Taylor has made plans to visit each of the bus companies personally to urge them to take advantage of this training (Taylor, ff. Tr. 20,856, at 3-4; Taylor, Tr. 20,863, 20,877). Ambulance providers will be offered training in the same manner as bus companies, i.e., by letter and personal visit (Taylor, ff. Tr. 20,856, at 4). Personal visits to the bus and ambulance companies will occur in late July or early August 1985 (Taylor, Tr. 20,879-80).

5. Any Training sessions that are conducted for bus and ambulance drivers will be scheduled in a place and at a time convenient to the drivers themselves (Taylor, ff. Tr. 20,856, at 4; Asher/Kinard, ff. Tr. 20,995, at 2).

6. The initial training and/or refresher training will be made available annually to the drivers of each bus and ambulance company having a responsibility for an evacuation of Graterford (Taylor, ff. Tr. 20,856, at 5).

Nature of Training

7. The training to be offered to the civilian bus drivers and ambulance drivers who would assist in evacuating the SCIG would include a general orientation and overview of radiation principles, emergency management principles, and additional background information, as well as instruction on the use of dosimeters and survey meters (Taylor, Tr. 20,860-61; Taylor, ff. Tr. 20,856, Plan of Instruction Number Seven at 1-4).

8. Bus and ambulance drivers will be provided self-reading dosimetry and thermoluminescent dosimeters, which would be read afterwards. Data will be recorded. Taylor, Tr. 20,872-73.

9. The training program offered by Pennsylvania Emergency Management Agency ("PEMA") is essentially identical to that offered by Energy Consultants ("EC") to other bus drivers who would participate in an evacuation of the plume exposure pathway emergency planning zone for Limerick ("EPZ"), which this Board previously found to be acceptable (Taylor, ff. Tr. 20,856, at 6; Taylor, Tr. 20,860-86; see Third PID, LBP-85-14, 21 NRC at 1318). Training on decontamination monitoring procedures is also included, however, on the remote possibility that bus and ambulance drivers might become involved in some manner with decontamination monitoring (Taylor, ff. Tr. 20,856, at 2).

10. The training program for school bus drivers provided by EC through the auspices of the Applicant was approved by Mr. Taylor, the

Director of Training and Education for PEMA, prior to its implementation in the various counties in the Limerick EPZ (Taylor, ff. Tr. 20,856, at 5-6). Further, PEMA certifies the EC instructors as qualified to give such instruction (*id.*; Taylor, Tr. 20,861). Consequently, the Board believes Mr. Taylor is in a position to compare the EC course to that being offered by PEMA in this instance (*id.*).

11. The plan of instruction for these bus and ambulance drivers covers a full spectrum of topics, including government response to disasters, levels of radiation during an incident at a fixed nuclear facility, proper use of dosimetry, and decontamination monitoring procedures (Taylor, ff. Tr. 20,856, at 6; and Plan of Instruction Number Seven, ff. Tr. 20,856). The only significant difference between this course and the EC program is that the latter provides for a "public relations" lesson, which explains how a nuclear generating plant operates and the safety of such a facility (Taylor, ff. Tr. 20,856, at 6).

12. It is the judgment of Federal Emergency Management Agency ("FEMA") that emergency response training should be tailored to the individual's expected duty in responding to an emergency (Kinard, Tr. 21,000).

13. The bus and ambulance driver's role is limited to driving the bus or ambulance during an evacuation of the SCIG (Kinard, Tr. 21,005; Taylor, Tr. 20,869).

14. Training in inmate custody and control is unnecessary. Drivers will only be required to drive their buses or ambulances. The Department of Corrections will provide the staff necessary to ensure control of the inmates. Taylor Tr. 20,860, 20,868-69; Asher, Tr. 20,999.

15. Any additional concerns raised by the drivers during training, such as security precautions for the protection of the drivers, will be addressed by PEMA during the training sessions (Taylor, ff. Tr. 20,856, at 6; Asher/Kinard, ff. Tr. 20,995, at 2; Asher/Kinard, Tr. 20,999-21,000).

16. Graterford inmates have also raised a concern about whether there is a "guarantee" that training will be offered to bus and ambulance drivers, since no financial inducement has been offered for participation in the training (Case, ff. Tr. 20,930, at 5).

17. In his testimony, Major John D. Case's main concern within the scope of this contention was whether bus drivers would have an incentive to attend the training session (Case, Tr. 20,938-39). He did not address in any way the adequacy of the training to be offered bus and ambulance drivers by PEMA.

18. Notwithstanding his belief that incentives should be offered to civilian bus drivers, Major Case expressed no basis for believing that

civilian bus drivers would not accept training (Case, ff. Tr. 20,930, at 5; Case, Tr. 20,939).

19. At the outset, the Board observes that our mandate does not include a standard that calls for a "guarantee" in the emergency planning area. Rather, the standard to be applied for emergency matters under the Commission's regulations is whether there is "reasonable assurance." See 10 C.F.R. § 50.47.

20. There is nothing in the emergency planning guidance (NUREG-0654/FEMA REP-1, Rev. 1) that requires the provision of financial incentives to anyone receiving training (Asher, Tr. 21,001). PEMA's Director of Training and Education does not believe that the bus and ambulance drivers will not accept training because of the lack of financial incentives (Taylor, Tr. 20,869).

21. Based upon training given to offsite emergency response personnel and volunteers for other nuclear power plant sites in Pennsylvania and information supplied by PEMA concerning Graterford and Limerick, FEMA concluded there is reasonable assurance that emergency response training will be offered to civilian personnel expected to be involved in the implementation of the Department of Correction's emergency plan for Limerick (Asher/Kinard, ff. Tr. 20,995, at 2).

22. Even if such training were not received by bus and ambulance drivers assisting in the evacuation of Graterford in the event of an emergency at Limerick, those drivers would not be expected to do more than what they would do in carrying out their routine work assignments, i.e., drive a bus or ambulance (Taylor, Tr. 20,866; see Third PID, LBP-85-14, 21 NRC at 1320). Thus, their ability to function during an emergency would not be impaired by not having received training (Taylor, Tr. 20,874). The FEMA witnesses agreed that drivers could perform their function without training (Asher, Tr. 20,998).

23. PEMA has determined that the training offered to the bus drivers and that will be offered to the ambulance drivers will adequately prepare the drivers to respond to the Graterford facility during a radiological emergency at the Limerick Generating Station (Taylor, ff. Tr. 20,856, at 6).

24. Based on (1) the fact that the offered training has been provided at other sites in Pennsylvania; (2) the information provided by PEMA to FEMA concerning how training will be offered to the drivers supporting the evacuation of the SCIG; and (3) the assurances of PEMA and Mr. Taylor that personal contact will be made with the bus and ambulance companies, FEMA has concluded that there is reasonable assurance that emergency response training will be offered to civilian bus and ambulance drivers supporting the SCIG radiological emergency response

plan (Asher/Kinard, ff. Tr. 20,995, at 2; Kinard, Tr. 20,997-98; Asher, Tr. 21,003-04).

25. Additionally, the Board finds that, based on this record, the PEMA's letter of April 4, 1985, to the bus providers and Mr. Taylor's commitment to personally visit each of the bus and ambulance companies assisting in the evacuation of the SCIG provides reasonable assurance that the drivers will receive notice of the emergency response training to be provided by PEMA.

26. The Board has reasonable assurance that training will be offered and accepted by bus and ambulance providers. The Board also finds that based on this record there is reasonable assurance that the training to be provided by PEMA is as comprehensive as the training offered to the school bus drivers. The Board is further satisfied that the limited responsibility which drivers would be called upon to perform in an actual emergency involves no more than the driving assignments they perform on a daily basis. Accordingly, even if drivers for Graterford inmate evacuation have not received training, overall bus and ambulance provider response and the ability to implement an evacuation at Graterford would not be impaired. Moreover, drivers could be quickly instructed in the use of dosimetry at the time of an actual emergency before carrying out their assignments. Taylor, Tr. 20,873.

B. Basis E-Estimate of Time of Evacuation

There is no reasonable assurance that the estimated time of evacuation of six-to-ten hours can be achieved.

Appendix 4 of NUREG-0654 provides details regarding evacuation time estimates within the plume exposure pathway. II.C. *Special Facility Populations* states, "An estimate for this special population group shall usually be done on an institution by institution basis. The means of transportation are also highly individualized and shall be described." Section IV.B. of Appendix 4 entitled *Methodology* states, "[t]he method for computing total evacuation time shall be specified. Two approaches are acceptable. The simplest approach is to assume that events are sequential. That is to say, for example, that no one begins to move until all persons are warned and prepared to leave before anyone starts moving. The time is estimated by simply adding the maximum time for each component. This approach tends to overestimate the evacuation time. The second approach, which is more complex and will be discussed further, is to combine the distribution functions for the various evacuation time components. This second approach may result in reduced time estimates due to a more realistic assumption." The inmates contend that the failure to specifically address this estimated time of evacuation in the plan and the mere mention in a footnote of the Applicant's request for an exemption fails to meet the criteria as suggested by Appendix 4. The inmates are concerned that the six-to-ten hours estimate does not include a breakdown of the various sequential events as prescribed in NUREG-0654, Appendix 4 4.IV.B. necessary to accomplish the task. The inmates contend that such a breakdown is necessary.

27. Appendix 4, NUREG-0654/FEMA-REP-1, Rev. 1 (November 1980) is the Commission's guidance which governs the preparation of evacuation time estimates for special facilities (Urbanik, Tr. 20,974-75). Section II.C of Appendix 4, NUREG-0654, provides under special facility population that "[a]n estimate for this special population group shall usually be done on an institution-by-institution basis" (NUREG-0654 at 4-3).

28. Dr. Thomas Urbanik one of the principal authors of Appendix 4, NUREG-0654, explained that Appendix 4, NUREG-0654, did not intend evacuation time estimates for special facilities to include analysis of worst-case scenarios (Urbanik, Tr. 20,976, 20,979-80). Rather Appendix 4, NUREG-0654, intended such estimates for special facilities to provide some data points from which decisionmakers can make decisions (*id.*). Further, the intent of Appendix 4, NUREG-0654, is for evacuation time estimates to present representative evacuation times for fair and adverse weather conditions which can be used by decisionmakers (Urbanik, Tr. 20,976-77, 20,979-80).

29. The primary purpose of evacuation time estimates is to serve as a tool in the protective action decisionmaking process by providing a framework within which decisionmakers can incorporate input on evacuation characteristics and traffic flows at the time of an actual emergency. As such, pursuant to NUREG-0654, time estimates are intended to be representative and reasonable so that any protective action decision based on those estimates would reflect realistic conditions. An overly conservative estimate could result in an inappropriate decision. Urbanik, Tr. 20,979-80. As explained by Dr. Urbanik, it was the intention of planners to rely upon the judgment of authorities responsible for particular special facilities in estimating evacuation times because of their specialized knowledge and expertise in operating those facilities (Urbanik, Tr. 20,975, 20,981).

30. Neither NRC regulations nor NUREG-0654 establishes a standard for effectuating evacuations within a given time. An evacuation time estimate study does not attempt to predict exact conditions during an evacuation. Rather, it attempts to indicate the sensitivity of the analysis to a number of commonly occurring events. *Id.*

Development of Evacuation Time Estimate

31. As part of its emergency planning effort for Graterford, the Department of Corrections undertook an evacuation time estimate analysis. In so doing, it worked with the Graterford staff and developed estimates based upon past experience as to how long it would take to secure

the prisoners, assemble them, load buses, and transport inmates from the institution. Zimmerman, ff. Tr. 20,763, at 3; Zimmerman, Tr. 20,771.

32. The Board finds that the issues of whether the estimated time of evacuation (ETE) of 6 to 10 hours developed by Commissioner Jeffes can be achieved and whether there is an adequate basis for that estimate's methodology are moot for several reasons. First, as we noted earlier (*see* Board Finding 30), neither the Commission's requirements nor guidance established a standard for effectuating evacuations within a given time. Second, the Bureau of Corrections for the Commonwealth subsequently undertook an independent analysis of the components and time needed to complete an evacuation of the SCIG. Zimmerman, ff. Tr. 20,763, at 2. This analysis resulted in a revised ETE for Graterford of 8 to 10 hours which is within the range of and consistent with the 6- to 10-hour ETE developed by Commissioner Jeffes (Zimmerman, ff. Tr. 20,763, at 1-2, 8; Tr. 20,768-69). The methodology for the revised ETE of 8 to 10 hours has been litigated and the record shows, as demonstrated below, that the methodology was based on reasonable assumptions regarding the evacuation of the SCIG. Accordingly, the Board does not find that the revised ETE for Graterford of 8 to 10 hours requires any changes in the SCIG's emergency planning or preparedness.

33. To illustrate the methodology it used to determine the evacuation time for Graterford, the Department of Corrections developed a "flow chart" based upon previous experience with other emergencies and the day-to-day operation of the prison. This flow chart details the actions to be taken in evacuating the prison (e.g., calling off-duty personnel, assigning vehicle loading teams) and the times necessary to carry out these actions. On this basis, the Department of Corrections determined that it would take approximately 8 to 10 hours to evacuate the prisoners. Zimmerman, ff. Tr. 20,763, at 3; Zimmerman Flow Chart. The Board finds this estimate reasonable and in accordance with the guidance of NUREG-0654, Appendix 4 (Zimmerman Flow Chart).

34. There are certain times where the inmates at Graterford would already be locked down, such as at night, before lunch and before dinner (Zimmerman, ff. Tr. 20,763, at 3-4).

35. In the event an evacuation of the SCIG were necessary, the inmates would be notified via the public address system, which is heard throughout the institution, that they should pack their personal effects in a pillowcase, that they would be permitted to take only that which would fit on that person and in the pillowcase, and only those health and comfort items deemed necessary for their trip and for their relocation (*id.*). Further, the inmates will be informed through an inmate handbook

provided to every inmate about what to do to assist in their evacuation (*id.*). Thus, the Board finds that Major Case's concern about the lock-down time being extended because the inmates will lack information about the evacuation (Case, ff. Tr. 20,930, at 3; Case, Tr. 20,946-47) is without merit. Major Case acknowledges that the inmates would be likely to cooperate if they are provided information about the evacuation (Case, Tr. 20,942, 20,946-47). Moreover, based on Superintendent Zimmerman's past experience at the SCIG, the inmates cooperate with SCIG staff when the inmates recognize it is for their benefit during emergency situations. This has been the case in the past with fire drills at the SCIG. Zimmerman, ff. Tr. 20,763, at 3.

Vehicle Arrival Time

36. The estimate for the vehicle arrival time portion of the revised ETE is 2 to 4 hours (Zimmerman, ff. Tr. 20,763, at 4). This estimate is based on routes travelled regularly by SCIG buses and vans when moving from one facility to another (*id.*). If the radiological emergency developed gradually, the SCIG officials would already have the buses on site at Graterford. On the other hand, if the radiological emergency developed more rapidly, it might take between 1 and 3 hours for the bus companies to get their vehicles to the support facilities and then to travel to Graterford. *Id.* This is based on the drivers having the buses at the support institutions (*id.* at 5).

37. On the time of arrival of the off-duty personnel, the SCIG officials developed an estimate of 1 to 2 hours maximum for their arrival under average conditions and 2 to 3 hours maximum under adverse conditions (*id.*). This estimate is based on the SCIG's experience over the past several years involving emergency situations where they have had to call in off-duty personnel (*id.*). Some of the personnel would begin to arrive almost immediately, but to get the teams needed to load the vehicles it will take 1 to 2 hours (*id.*). All of the off-duty personnel would not be necessary to implement the SCIG evacuation plans, only the number of personnel indicated in the SCIG plans would be necessary to move the inmates from their cells to the staging area for loading (*id.*).

Prisoner Assembly and Vehicle Loading

38. The SCIG officials have assigned designated personnel to be vehicle loading teams, that is, they would be at the staging areas. They have designated five of those areas in various places in the institution to which inmates would be funneled and boarded on the buses. Loading

team personnel are required to see that the inmates get on the proper vehicle. *Id.*

39. In developing the revised ETE for the SCIG, the SCIG officials designated different classes of inmates depending on the amount of security required (Zimmerman, ff. Tr. 20,763, at 6-7). For the revised ETE, Class 4 and 5 inmates are those inmates requiring the least amount of security at the institution. In fact, many of these inmates live outside the walls of the institution and work outside the walls. Some of them go home on furloughs periodically. Class 3 inmates are those inmates designated as the general population. They are free to move about the inside of the institution depending on their work assignments, where they live, and in which program they are involved. All of the SCIG staff who would be involved in moving these inmates have been trained in the use of security equipment and use it on a regular basis. The SCIG officials have designated special teams that go on the blocks, the numbers are determined by the size of the block and the amount of security needed. These teams would effectively remove the inmate from his cell, apply the appropriate security device and see him on his way to the appropriate staging areas. The teams can move from cell to cell because officers will be running a line from the block that is being evacuated onto the staging area. The inmate will be directed to go and follow that line of officers so that the inmates in effect would be walking to the staging areas for boarding the buses in a smooth, uninterrupted flow. *Id.* The amount of time allocated for these Class 3, 4 and 5 inmates indicates that more than one inmate at a time in each of these classes will be getting security restraints and being loaded. There will be teams of officers doing this simultaneously on several blocks and moving right down the block on all of the ranges and tiers. Ranges and tiers are the different parts of the cellblock. *Id.* More time was allocated for loading Class 1 and 2 inmates because these inmates are those requiring the highest degree of security. These are inmates in restricted housing units or in disciplinary lockup or administrative custody. The reason more time is allowed to restrain and load them is because of additional security devices that may be used and the additional security required in moving them from their cells to the vehicles. However, there are several teams working, depending upon the location and the physical plant, and the time estimate is based on the fact that the officers are familiar with using the restraints and moving the inmates. *Id.* at 7.

40. Past experience in emergency situations shows that off-duty personnel will arrive within 1 to 2 hours after notification. Superintendent Zimmerman testified that he had experience in the development of plans for all types of emergencies at the State Correctional Institutions at

Huntington and Camp Hill, as well as the State Regional Correctional Facility at Mercer. Zimmerman, Tr. 20,766. Additionally, Graterford's (nonradiological) emergency plan, which is tested at least twice a year, requires a demonstration of the call-in system. These tests also establish that off-duty personnel will arrive within 1 to 2 hours (Zimmerman, ff. Tr. 20,763, at 5; Tr. 20,808, 20,839). Not all off-duty personnel are required to implement the evacuation plan (Zimmerman, ff. Tr. 20,763, at 5; Zimmerman, Tr. 20,809, 20,840). Superintendent Zimmerman testified that, as a practical matter, only a maximum number of 300 staff would be called to assist in an evacuation (Zimmerman, Tr. 20,840-42).

41. If one of the cellblocks refuses to lock down or in some other way tries to impede the evacuation of the institution, the effect on the evacuation would be minimal to none. This is because the SCIG officials handle emergency situations on an almost regular basis, and the fact that Graterford is a maximum security correctional facility. Moreover, a team of trained personnel, the Emergency Response Team, would be on hand and would be ready to respond to any type of situation like this. Areas inside the institution can be isolated, and once isolated, the required personnel can be moved into that area, and then do whatever is necessary to restore order. *Id.* at 7. The other inmates could still be evacuated (*id.*).

42. Intervenor tried to discredit the use of a 30-minute inmate lockdown time estimate by citing various past incidents in which lockdowns had taken longer. The evidence showed, however, that those longer timeframes for lockdowns had occurred primarily during power outages before the installation and use of an emergency lighting system in 1984. Zimmerman, Tr. 20,782, 20,843, 20,849). Since that time, partial power losses have occurred, but have never interfered with prison operations, including lockdowns, which have never taken more than 30 minutes (Zimmerman, Tr. 20,849-50).

43. On the basis of this information, Intervenor's witness, Major Case, agreed that a 30-minute lockdown time is realistic (Case, Tr. 20,946-47). He felt that if there was a good educational program at Graterford for both the officers and prisoners explaining what should be done in the event of an emergency at Limerick and why those actions were being taken, the prisoners would cooperate and there would be no problem in completing lockdown within 30 minutes, or for that matter, completing any other action that would have to be taken within the timeframe calculated by the Department (Case, Tr. 20,947). Major Case raised no concern regarding the adequacy of information that would be available to inmates if an emergency occurred (Case, Tr. 20,938, 20,942, 20,946).

44. At the hearing on July 16, 1985, Major Case stated that a one-page addendum to the prisoners' handbook would be adequate (Case, Tr. 20,938). The Board finds that Major Case's concerns have been adequately addressed by plans to issue an addendum to the inmate handbook, which is given to every prisoner, telling them what to expect in an evacuation (Zimmerman, ff. Tr. 20,763, at 4; Zimmerman, Tr. 20,833-34). Moreover, given the travel time it will take most buses to reach Graterford from their respective depots, which is greater than 1 hour, the time required to lock down and count inmates, a total of 1 hour, is not a critical path item (Lieberman, ff. Tr. 20,956, at 4).

45. The numbers of the times of evacuation for the vans, ambulances and buses were arrived at by evaluating the actions that would take place during the evacuation. Certain actions will take place at the same time. The SCIG officials can begin lockdown, request the vehicles and call in off-duty personnel at the same time. *Id.* at 7-8. As noted earlier, inmates will be restrained, loaded into vehicles and removed as the vehicles arrive on site. To arrive at the total of 8 to 10 hours, the SCIG officials reviewed the buses that would be coming at what time and how many inmates would be loaded at what times. *Id.* They then added a short period of time for travel out of the evacuation area. Inmates will be sent out of the evacuation area in a reasonably direct route that will not take them past Limerick. *Id.*

46. Contrary to Graterford inmates' assertions, any ongoing evacuation of the general populace from the EPZ would not delay the arrival of buses and ambulances at Graterford. The Graterford Superintendent testified that the development of the Graterford plan was coordinated with PEMA to ensure that routes were selected such that evacuating traffic of the general public would not interfere with vehicles travelling to Graterford. Zimmerman, Tr. 20,803-05, 20,815-16, 20,844-45.

47. Buses would be loaded as they arrive and sent out to the support institutions, and the buses are expected to come in at varying times since they are travelling different distances (Zimmerman, ff. Tr. 20,763, at 8). It is unlikely that the evacuation could take longer than the 8 to 10 hours since the estimate used figures based on experience, including experience with emergency situations (*id.*). Moreover, the inmates will have been provided information with respect to an evacuation in the inmate handbook and will be kept abreast of developments during an incident (*id.* at 4; Zimmerman, Tr. 20,833-34).

Evaluation of Evacuation Time Estimates

48. Based on a careful analysis of the assumptions and methodology underlying the revised ETE for the SCIG by FEMA's expert in traffic engineering and transportation planning (Lieberman, ff. Tr. 20,956, at 1-11), FEMA's expert concluded that the revised ETE for the SCIG is certainly reasonable and conservative (*id.* at 8). Furthermore, the Graterford inmates' witness, Major John D. Case, acknowledges that it is possible to achieve the tasks identified in the revised ETE for the SCIG within the 8- to 10-hour timeframe (Case, ff. Tr. 20,930, at 4; Case, Tr. 20,934-37).

49. Any projected increase in the number of inmates at Graterford would have no effect on the evacuation time estimate of 8 to 10 hours. Any increase in the number of inmates would be met by a concomitant increase in staff and support resources (Zimmerman, Tr. 20,831).

50. Finally, Mr. Robert Morris, a witness for the inmates, cited his concerns that the ETE should include a combination of worst case situations such as traffic accident analysis, wind condition analysis, differences in gap acceptance times in a panic situation and various combinations of weather conditions (*see generally* Morris Deposition, ff. Tr. 21,013, at 41-55). Mr. Morris stated that he was not familiar with NUREG-0654 or any other emergency planning regulations for nuclear power plants, and he did not think it necessary (*id.* at 38-39, 49). Dr. Urbanik has adequately explained why worst-case scenarios are not appropriate under Appendix 4, NUREG-0654, for consideration in developing an ETE for a special facility (Urbanik, Tr. 20,976-77, 20,896). Therefore, the Board finds Mr. Morris' testimony on this matter lacking any probative value.

51. The Board finds that the evacuation from the EPZ should proceed rapidly. Graterford is approximately 8.3 miles from Limerick at the closest point. It is thus reasonable to conclude that the travel distance from Graterford to the EPZ boundary is only a very short distance because "a reasonably direct route" out of the EPZ will be taken. Accordingly, actual travel time of loaded buses out of the EPZ will be very brief. Zimmerman, ff. Tr. 20,763, at 8; Lieberman, ff. Tr. 20,956, at 5-6.

52. Based on this record, the Board finds there is nothing in the Commission's emergency planning requirements or guidance that requires the estimated time for evacuating a special facility, such as the SCIG, to be included in the radiological emergency response plan for that special facility (*see* 10 C.F.R. § 50.47; Appendix E, 10 C.F.R. Part 50; NUREG-0654/FEMA-REP-1, Rev. 1 (November 1980)).

53. The Board finds that the revised ETE for the SCIG has adequately identified the various sequential events necessary to accomplish an

evacuation of Graterford. Finally, the Board finds that based on this record the revised ETE of 8 to 10 hours is consistent with the Commission's guidance established in NUREG-0654, Appendix 4.

III. CONCLUSIONS OF LAW

In reaching this decision, the Board has considered all the evidence of the parties and the entire record of this proceeding on the admitted contention including all proposed findings of fact and conclusions of law presented by the parties and oral arguments of counsel. Based upon a review of that record and the foregoing Findings of Fact, which are supported by reliable, probative and substantial evidence, the Board, with respect to the issues in controversy before us, reaches the following conclusion pursuant to 10 C.F.R. § 2.760a:

The SCIG emergency response plan meets the requirements of 10 C.F.R. § 50.47, and Appendix E to 10 C.F.R. Part 50, as well as the criteria of NUREG-0654, and provides reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency.

IV. ORDER

In accordance with the Atomic Energy Act of 1954, as amended, and the Commission's regulations, and based on the findings and conclusions set forth in the Third Partial Initial Decision on Offsite Emergency Planning and in this Decision, the Director of Nuclear Reactor Regulation is authorized to issue a full-power operating license for the Limerick Generating Station, Units 1 and 2, consistent with the Board's decisions in this case and upon making requisite findings with respect to matters not embraced in the Third Partial Initial Decision on Offsite Emergency Planning or in this Decision.

Pursuant to 10 C.F.R. § 2.760(a) of the Commission's Rules of Practice, this Fourth Partial Initial Decision will constitute the final decision of the Commission forty-five (45) days from the date of issuance, unless an appeal is taken in accordance with 10 C.F.R. § 2.762 or the Commission directs otherwise. *See also* 10 C.F.R. §§ 2.764, 2.785 and 2.786.

Any party may take an appeal from this Decision by filing a Notice of Appeal within ten (10) days after service of this Decision. Each appellant must file a brief supporting its position on appeal within thirty (30) days

after filing its Notice of Appeal (forty (40) days if the Staff is the appellant). Within thirty (30) days after the period has expired for the filing and service of the briefs of all appellants (forty (40) days in the case of the Staff), a party who is not an appellant may file a brief in support of or in opposition to the appeal of any other party. A responding party shall file a single, responsive brief regardless of the number of appellant briefs filed. See 10 C.F.R. § 2.762(c).

IT IS SO ORDERED.

**THE ATOMIC SAFETY AND
LICENSING BOARD**

**Helen F. Hoyt, Chairperson
ADMINISTRATIVE JUDGE**

**Richard F. Cole
ADMINISTRATIVE JUDGE**

**Jerry Harbour
ADMINISTRATIVE JUDGE**

**Dated at Bethesda, Maryland,
this 22nd day of July 1985.**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Dr. Robert M. Lazo, Chairman
Dr. Richard F. Cole
Dr. A. Dixon Callihan

In the Matter of

Docket Nos. STN 50-529-OL
STN 50-530-OL
(ASLBP No. 80-447-01-OL)

ARIZONA PUBLIC SERVICE
COMPANY, et al.
(Palo Verde Nuclear Generating
Station, Units 2 and 3)

July 22, 1985

ORDER DISMISSING PROCEEDING

On July 25, 1980, the U.S. Nuclear Regulatory Commission published in the *Federal Register* a notice of receipt of an application for facility operating licenses for Palo Verde Nuclear Generating Station, Units 1, 2, and 3 and notice of opportunity for hearing (45 Fed. Reg. 49,732). The July 25, 1980 notice is a clarification of an earlier notice published in the *Federal Register* on July 11, 1980 (45 Fed. Reg. 46,941-43). Such licenses would authorize Arizona Public Service Company, Salt River Project Agricultural Improvement and Power District, Southern California Edison Company, El Paso Electric Company, Public Service Company of New Mexico, and the Southern California Public Power Authority ("Joint Applicants") to possess, use and operate Palo Verde Nuclear Generating Station, Units 1, 2 and 3, which are three pressurized water nuclear reactors (the "facilities") located on the Joint Applicants' site in

Maricopa County, Arizona, approximately 36 miles west of the City of Phoenix.

In response to that notice, Ms. Patricia Lee Hourihan (hereinafter "Intervenor"), submitted a timely Petition for Leave to Intervene and Request for Hearing. The petition was granted by this Atomic Safety and Licensing Board (hereinafter "Board") which ordered that a hearing be held. The Board approved the admission of five of the Intervenor's contentions and allowed the Intervenor the opportunity to file additional contentions respecting emergency planning at such time as the emergency plans were prepared. Two of the five admitted contentions were subsequently withdrawn by the Intervenor, and two of the remaining admitted contentions were disposed of by the Board's Memorandum and Order, March 17, 1982 (unpublished), granting the motions for summary disposition filed by the Joint Applicants and the Staff of the Nuclear Regulatory Commission (hereinafter "NRC Staff"). The Intervenor submitted no emergency planning contentions.

An evidentiary hearing was conducted in April, May and June 1982, by the Board on the remaining contention which placed in issue whether there is an assured supply of usable treated municipal effluent for all three Palo Verde units for the first 5 years of operation. At the onset of the hearing, the contention was expanded to include the questions of the effect on the supply of effluent of a lower quality than expected and the relationship of the supply of effluent to the safety of the operation of the Palo Verde units. The evidentiary hearing on the Intervenor's expanded contention was closed on June 25, 1982.

On October 14, 1982, the West Valley Agricultural Protection Council, Inc. (hereinafter "West Valley") filed an untimely petition for leave to intervene and request for hearing. Such petition placed in issue (1) the effect of foliar depositions of salt from the drift emitted from the Palo Verde cooling towers and other potential sources of drift from Palo Verde on the productivity of agricultural crops grown in the vicinity of Palo Verde, and (2) the need for the preparation and distribution of a supplementary environmental statement by the NRC Staff to address the foregoing issue.

On December 30, 1982, the Board issued its Memorandum and Order (see LBP-82-117B, 16 NRC 2024 (1982)) granting the untimely-petition and reopening the evidentiary record for the purpose of considering the environmental issue raised by West Valley — viz., the asserted adverse impact that the salt deposition associated with the operation of the Palo Verde facilities will have upon the productivity of nearby agricultural lands cultivated by West Valley members. For reasons stated in that opinion, the Licensing Board confined the record reopening to Units 2

and 3 of the Palo Verde facilities. In a contemporaneously issued decision, the Licensing Board resolved in the Joint Applicants' favor all issues previously raised by the Intervenor (Hourihan) with respect to all three Palo Verde units. Accordingly, the Licensing Board authorized the issuance of an operating license for Unit 1 alone. LBP-82-117A, 16 NRC 1964 (1982).

The issue of the impact of salt depositions on the productivity of nearby lands required consideration of five subsidiary questions:

1. The amount of drift which could reasonably be expected to be emitted from the Palo Verde cooling towers;
2. Predictions respecting the depositions from the drift in the area surrounding Palo Verde;
3. The effect of salt drift depositions on agricultural crops grown in the vicinity of Palo Verde;
4. Potential sources of drift emanating from Palo Verde in addition to the cooling towers; and
5. A suitable monitoring program to establish baseline data, to detect drift depositions and their effects on agricultural activities in the vicinity of Palo Verde.

To address the first three subsidiary questions the Joint Applicants undertook (1) to measure actual drift emissions from one of the Palo Verde Units 1 cooling towers operated during the hot functional test of such unit, (2) to validate the predictive computer model used to estimate the distribution of drift depositions in the area surrounding Palo Verde when all three units are in operation, and (3) to engage the University of Arizona to assess the effects of salt drift depositions on agricultural crops grown in the vicinity of Palo Verde. Results of these efforts were published in reports which were distributed to the parties and the Board and incorporated as exhibits in the prefiled testimony submitted by the Joint Applicants.

On May 1, 1985, the Licensing Board issued a "Notice of Public Hearing on Application for Operating Licenses for Palo Verde Units 2 and 3," which was published in the *Federal Register* on May 8, 1985 (50 Fed. Reg. 19,500). The Licensing Board then appointed Administrative Judge James H. Carpenter to be a Technical Interrogator and informal assistant to the Board pursuant to 10 C.F.R. §§ 2.722(a)(1) and (b) in an order issued May 2, 1985 (unpublished).

Thereafter, on May 20, 1985, the Joint Applicants and West Valley entered into a Settlement Agreement, and West Valley filed a request for the withdrawal of its Petition to Intervene, its contentions and its request for a hearing and consented to the entry of an order dismissing

this proceeding. Concurrently, the Joint Applicants requested that the Board dismiss the proceeding with prejudice.

In a conference call initiated by the Licensing Board on June 3, 1985, in which the NRC Staff, Joint Applicants and West Valley participated, the Board discussed the effect which a settlement reached between Joint Applicants and West Valley of the latter's concerns regarding salt deposition would have upon this operating license proceeding. While noting that West Valley had requested the withdrawal of its Petition to Intervene and all the contentions it had raised, the Licensing Board determined that it could not dismiss the proceeding at that time, but must hold a prehearing conference and preliminary hearing at which time the Board could question both the Joint Applicants' and the NRC Staff's witnesses concerning certain matters related to salt deposition from cooling tower drift and the agricultural monitoring plan that did not appear to have been resolved. The Licensing Board also indicated that it would inquire into five other matters: (1) Unresolved Safety Issue A-45 (shutdown decay heat removal requirements), (2) a petition filed pursuant to 10 C.F.R. § 2.206 relating to microbiologically induced weld corrosion in the spray pond, (3) the necessity of preparing a supplement to the Final Environmental Statement, (4) the status of certain allegations, and (5) whether any agencies of the State of Arizona had comments regarding the Settlement Agreement.

The prehearing conference and preliminary hearing was convened on June 11, 1985. After receiving limited appearance statements from members of the public, the Licensing Board questioned West Valley concerning the terms of the Settlement Agreement. West Valley described the additional agricultural monitoring which Joint Applicants are required to perform under that agreement. This additional monitoring program will include (1) cotton square, bloom and boll counts, (2) insect population counts, (3) measurement of site-specific temperature and humidity conditions, (4) yield determinations, and (5) analyses of the results of the additional monitoring on an annual basis. Such monitoring is in addition to the environmental monitoring program which Joint Applicants are required to conduct under the terms of the operating license for Palo Verde Unit 1.

With respect to the issue of the effects of salt deposition from cooling tower drift on agricultural crops in the vicinity of the facilities, the Licensing Board questioned, as a panel, the five witnesses who appeared on behalf of Joint Applicants, Drs. M. Goldman, C. Curtis, D. McCune, and K. Foster and Mr. K. Wilber, and the two witnesses for the NRC Staff, Drs. E.D. Pentecost and R. Samworth. Mr. Wilber testified regarding his measurements of the drift rates from the facilities' cooling

towers. Dr. Goldman testified concerning (1) the validation of the FOG computer model used to predict drift deposition, (2) the prediction of drift deposition, (3) possible sources of drift other than the cooling towers, and (4) the salt drift monitoring program that forms part of the Environmental Protection Plan which is a requirement of the operating license for Palo Verde Unit 1. Drs. Curtis and McCune were questioned with respect to their critique of the assessment of salt drift effects performed by the University of Arizona and sponsored by Joint Applicants. Dr. Foster of the University of Arizona, who participated in that assessment, was questioned on that subject.

The Licensing Board questioned Dr. Samworth regarding drift rates from the cooling towers and Dr. Pentecost concerning (1) the anticipated effect of salt drift on agricultural productivity, (2) predictions of salt deposition, and (3) the salt drift monitoring program. The prefiled written testimony, which had been submitted by all of the witnesses with the exception of Dr. Foster, was received into evidence, together with accompanying exhibits.

The testimony of the expert witnesses and other documentary materials made available to this Licensing Board establish that there is little likelihood that the amount of drift emitted from the Palo Verde facilities will adversely affect crops grown in the vicinity of the facilities. Moreover, the agricultural monitoring program to which the Joint Applicants have committed will provide a basis for determining whether agricultural crops will be damaged by salts emitted from the facilities. If crop damage is detected, then Joint Applicants are required to report such damage and take appropriate action pursuant to the provisions of § 5.4.1 of the Palo Verde Nuclear Generating Station, Unit 1, Environmental Protection Plan, which provides that “[i]f harmful effects or evidence of trends toward irreversible damage to the environment are observed, the licensees shall provide a detailed analysis of the data and a proposed course of action to alleviate the problem.”

During the hearing held on June 12, 1985, the NRC Staff and Joint Applicants reported to the Licensing Board concerning the status of the five remaining matters which the Board had previously raised. None of those matters requires any further action by this Board.

With regard to Unresolved Safety Issue, USI A-45, counsel for the Joint Applicants reported that the matter had been considered by the Commission during the May 30, 1985 meeting concerning full-power authorization for Palo Verde Unit 1. The transcript of that meeting records the fact that the Commission, the NRC Staff and the ACRS have agreed that the issue of installation of PORVs for Combustion Engineering plants will be dealt with through the resolution of Unresolved Safety

Issue, USI A-45. The NRC Staff is still planning to have the issue ready for submittal to the Committee to Review Generic Requirements by the end of this year.

During the Commission meeting on May 30th, the NRC Staff also reported that it had reviewed the matter of weld corrosion in the spray ponds and was satisfied with the status of the corrective actions taken by the Joint Applicants. Mr. E. Licitra, Project Manager for the NRC Staff, provided the Board with a detailed oral description of microbiologically induced corrosion and Mr. E.E. Van Brunt, Joint Applicants' Executive Vice-President, described the corrective actions taken. Such actions are detailed in a letter Mr. Van Brunt sent to the Commission on May 24, 1985.

With respect to the question of whether a supplement to the final environmental statement should be prepared, counsel for the NRC Staff and the Joint Applicants stated their position that, based upon the evidence received in the proceeding, there were no significant new circumstances or information regarding the possible effects from the deposition of salt drift from the cooling towers on agricultural crops grown in the vicinity of Palo Verde which necessitated the preparation and distribution of a supplement to the final environmental impact statement. The Board concurs in that position.

Counsel for the NRC Staff reviewed the status of investigations of various allegations that had come to the Board's attention and reported that of the 167 Palo Verde investigations which had been conducted, only 14 remain open. The Commission was apprised of these investigations during the May 30, 1985 meeting. Based upon assurances by NRC Staff members that the fourteen remaining investigations would not adversely impact upon full-power operation of Unit 1, the Commission permitted Unit 1 to be licensed.

In response to the Board's question regarding comments on the Settlement Agreement by any agencies of the State of Arizona, counsel for the NRC Staff reported that there were two agencies which would have an interest in the matter of salt deposition. These are the State Land Commissioner's Office and the State Agricultural and Horticultural Commission. These agencies manage State trust and sovereign lands some of which are located within 5 miles of the Palo Verde facilities and are rented out for farming. Three hundred acres of such lands abut the eastern boundary of the plant. Both State agencies were contacted by Staff counsel who was told by each that they were satisfied with the settlement in this proceeding and had no adverse comments.

Based upon the Licensing Board's interrogation of the witnesses, the written testimony which was received into evidence, the Board's ques-

tioning of West Valley and the reports of Joint Applicants and the NRC Staff, the Licensing Board accepts West Valley's withdrawal of its petition to intervene and approves the Settlement Agreement reached with Joint Applicants. After careful consideration, the Board has concluded that the proceeding should be terminated and dismissed with prejudice.

Order

For the foregoing reasons and in consideration of the entire record in this matter, it is, this 22nd day of July 1985,

ORDERED:

The request to withdraw its Petition to Intervene filed by Intervenor, West Valley Agricultural Protection Council, Inc., in connection with the Settlement Agreement dated May 20, 1985, is GRANTED and the intervention petition is withdrawn. Inasmuch as there are no other intervention petitions or requests for hearing in accordance with the Commission's notice of opportunity for hearing, the matter is uncontested, and the adjudicatory proceeding is therefore DISMISSED with prejudice.

As stated in our Initial Decision authorizing the issuance of an operating license for Palo Verde Unit 1, all of the findings of fact and conclusions of law set forth in that decision apply with full force and effect to all three Palo Verde units, LBP-82-117A, 16 NRC 1964, 2022 (1982). Therefore, this Board hereby adopts and incorporates by reference in this Order all of the findings of fact and conclusions of law set forth in Initial Decision LBP-82-117A as if set forth herein in full.

It is further noted that because this operating license proceeding is now uncontested, the Director, Office of Nuclear Reactor Regulation, is authorized upon making requisite findings with respect to matters not embraced in this Order in accordance with the Commission's regulations, to issue to Joint Applicants operating licenses for terms of not more than forty (40) years, authorizing operation of the Palo Verde Nuclear Generating Station, Units 2 and 3. Such licenses may be in such

form and content as is consistent with the conclusions of the Board herein.

**THE ATOMIC SAFETY AND
LICENSING BOARD**

**Robert M. Lazo, Chairman
ADMINISTRATIVE JUDGE**

**Richard F. Cole, Member
ADMINISTRATIVE JUDGE**

**A. Dixon Callihan, Member
ADMINISTRATIVE JUDGE**

**Dated at Bethesda, Maryland,
this 22nd day of July 1985.**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

**Lawrence Brenner, Chairman
Dr. A. Dixon Callihan
Dr. Richard F. Cole**

In the Matter of

**Docket Nos. 50-456
50-457**

**COMMONWEALTH EDISON COMPANY
(Braidwood Nuclear Power Station,
Units 1 and 2)**

July 30, 1985

The Licensing Board rules on a three-part contention alleging that the use of the Illinois Central Railroad to transport explosive materials from a federal ammunition plant creates a hazardous condition due to the proximity of the railroad tracks to the nuclear facility. The Board rules the subpart of the contention alleging sabotage or a purposefully induced explosion is precluded from the proceeding under 10 C.F.R. § 50.13(a). The other subsections of the contention, addressing the risk (probability and consequences) of an accidental railroad explosion, were found to be admissible. The Board ruled that those subparts do not involve "use or deployment of weapons incident to U.S. defense activities," consideration of which would be precluded under 10 C.F.R. § 50.13(b).

**LICENSING REQUIREMENTS: 10 C.F.R. § 50.13; ATTACKS
BY AN ENEMY OF THE U.S.**

Part of the rationale behind § 50.13 was the AEC's recognition of the practical necessity to exempt applicants from protecting their facilities

against military or paramilitary attacks threatening the national security, even if the attack is directed against a nuclear plant, because the country's security is intended to be left entirely to the nation's defense establishment and security agencies. *Florida Power and Light Co. (Turkey Point Nuclear Generating Units 3 and 4)*, 4 AEC 9, 13 (1967), *aff'd*, *Seigel v. AEC*, 400 F.2d 778 (D.C. Cir. 1968).

NRC: EXECUTIVE BRANCH POLICY

The AEC determined that requiring an applicant to demonstrate that its facility is protected against an enemy attack would "stifle utterly the peaceful utilization of atomic energy in the United States." *Seigel v. AEC*, 400 F.2d 778, 783-84 (1968).

LICENSING REQUIREMENTS: 10 C.F.R. § 50.13(a); SABOTAGE

Two inquiries must be made when determining if a contention is barred under 10 C.F.R. § 50.13(a). The first is whether the postulated sabotage is "directed against the facility" and the second is whether the saboteurs qualify as an "enemy of the United States."

LICENSING REQUIREMENTS: 10 C.F.R. § 50.13(a); ATTACKS BY AN ENEMY OF THE U.S.

In determining whether an attack is "directed against the facility," the subjective intent of the attackers is not material. The Board is not required to engage in an inquiry into the mind of an attacker to determine whether the attack was intended to damage the nuclear facility or whether the damage was merely incidental to some other hostile goal. See *Cleveland Electric Illuminating Co. (Perry Nuclear Power Plant, Units 1 and 2)*, LBP-81-42, 14 NRC 842, 844 (1981).

LICENSING REQUIREMENTS: 10 C.F.R. § 50.13; ATTACKS BY AN ENEMY OF THE U.S.

The Appeal Board in the *Indian Point* case determined that an applicant is not required to take affirmative measures against an attack by an armed group which is not an enemy of the United States. *Consolidated Edison Co. of New York (Indian Point Station, Unit No. 2)*, ALAB-202, 7 AEC 825, 829-30 (1974).

**LICENSING REQUIREMENTS: 10 C.F.R. § 50.13(a);
ATTACKS BY AN ENEMY OF THE U.S.**

A Board may determine whether an attacking force is an “enemy of the United States” by applying the objective test set out in the *Perry* decision. That test questions whether a hostile act was committed and whether the damaging result was caused by the hostile act. If the answers to both questions are affirmative, the group or nation perpetrating the hostile act qualifies as an enemy of the United States. *Cleveland Electric Illuminating Co.* (Perry Nuclear Power Plant, Units 1 and 2), LBP-81-42, 14 NRC 842, 844 (1981).

**PLANT DESIGN: APPLICANT’S RESPONSIBILITY FOR
PHYSICAL SECURITY**

When an enemy act is beyond the type of design basis security threat encompassed by 10 C.F.R. § 73.1(a), then an applicant is entitled to rely on the government’s military or law enforcement agencies to handle such an attack.

**NRC REGULATIONS: ENEMY ATTACKS ON NUCLEAR
PLANTS; 10 C.F.R. §§ 73.1(a) AND 50.13**

Section 73.1(a) of 10 C.F.R. is to be read *in pari materia* with § 50.13, *Carolina Power & Light Co.* (Shearon Harris Nuclear Power Plant, Units 1 and 2), LBP-82-119A, 16 NRC 2069, 2098 (1982), but Part 73 refers to sabotage accomplished with the use of small weapons carried out by small bands of saboteurs, while § 50.13 addresses military-style attacks, broader in nature and employing heavier weapons. Part 73 contemplates sabotage on the plant site, and the security measures mandated under Part 73 are not to be extended beyond the vicinity of the plant’s boundaries. See 10 C.F.R. §§ 73.45 and 73.46.

**RULES OF PRACTICE: ADMISSIBILITY OF
CONTENTIONS; 10 C.F.R. § 50.13(b)**

To determine whether a contention is barred under § 50.13(b), the Board must decide whether the contention postulates a scenario causing damage to the reactor’s integrity, which is the result of “use or deployment of weapons incident to U.S. defense activities.”

RULES OF PRACTICE: ADMISSIBILITY OF CONTENTIONS; DEPLOYMENT OF U.S. WEAPONS; 10 C.F.R. § 50.13(b)

When artillery shells or explosives are transported, their mere movement is not “deployment” within the context of § 50.13(b) because they are not being strategically arranged in locations appropriate for their use, unlike nuclear missiles in silos from which they can be launched, or conventional weapons being tactically placed in the field with a military unit. It stretches the rationale on which 10 C.F.R. § 50.13 is premised to accept mere movement of raw ingredients for the manufacture of ammunition, or the ammunition itself, to or from a local ammunition plant, as deployment of weapons.

LICENSING REQUIREMENTS: EMP CAUSED BY EXPLOSION OF NUCLEAR MISSILE OR OTHER WEAPONS

An explosion of a nuclear missile or other weapon would either be an enemy act, or, if a U.S. nuclear device, would arise from the deployment of weapons by the U.S. See *Philadelphia Electric Co.* (Limerick Generating Station, Units 1 and 2), LBP-82-43A, 15 NRC 1423, 1500 (1982) and *Cleveland Electric Illuminating Co.* (Perry Nuclear Power Plant, Units 1 and 2), LBP-81-42, 14 NRC 842, 845 (1981).

AIRCRAFT CRASH RISK

It is erroneous to view 10 C.F.R. § 50.13(b) as precluding the Board from considering anything related to the military that might impact a nuclear facility, on the theory that such military activity is necessarily “use or deployment of weapons incident to U.S. defense activities.” *I.e.*, past agency practice has allowed Boards to consider the possible risks to a nuclear plant from crashes of military airplanes. *Consumers Power Co.* (Big Rock Point Plant), LBP-84-32, 20 NRC 601, 639-52 (1984).

MEMORANDUM DETAILING RATIONALE IN SUPPORT OF JUNE 21, 1985 ORDER ON ADMISSIBILITY OF NEINER FARMS CONTENTION 4 (RAILROAD EXPLOSION)

BACKGROUND

On January 12, 1979, Bob Neiner Farms, Inc. submitted a petition to intervene in the Braidwood operating license proceeding. Among the contentions Neiner Farms wished to have litigated was one alleging that the use of the Illinois Central Railroad to transport explosive materials from the Joliet Army Ammunition Plant creates a hazardous condition due to the proximity of the railroad tracks to the Braidwood facility. This contention has been designated "Neiner Farms Contention 4." The admissibility of Neiner Contention 4 was addressed in the Licensing Board's Special Prehearing Conference Order ("SPCO"). LBP-85-11, 21 NRC 609, 617-24 (1985).

In earlier pleadings, both Applicant and Staff had urged the Board to bar the relitigation of Contention 4 under the legal theory of collateral estoppel.¹ The Applicant and Staff claimed that because issues associated with transporting explosive substances by rail were considered and ruled upon by the Licensing Board in the construction permit stage Braidwood site suitability determination, this Board is estopped from considering the issue in the operating license case. *See* LBP-75-1, 8 AEC 1197, 1226-27 (Findings 85-88) (1975); SPCO, 21 NRC at 619. For the reasons stated in the SPCO, the Board rejected the collateral estoppel argument and admitted the entire contention for litigation in the OL proceeding. SPCO, *supra*, 21 NRC at 617-24.

Applicant timely filed objections to the Board's SPCO. Applicant apparently reconsidered its earlier argument and eschewed challenging our determination that collateral estoppel would not be properly applied to Contention 4. Applicant's Objections to Board Order, at 2, dated April 29, 1985 ("Applicant's Objections"). In its Objections, Applicant instead propounded a different basis for excluding the contention and requested that the Board reconsider the contention's admission. Applicant's new argument rests on the claim that litigation of Contention 4 is barred be-

¹ Answer of Commonwealth Edison Company to the Contentions of Bob Neiner Farms, at 4-5 (August 22, 1979); Applicant's Supplemental Brief, September 17, 1979; Staff letter to Board, September 12, 1979.

cause it impermissibly challenges NRC regulation 10 C.F.R. § 50.13, which encompasses both U.S. defense activities and acts of sabotage.²

On April 30, 1985, the Board issued an unpublished Order directing the NRC Staff and Neiner Farms to respond to Applicant's new argument. We also directed the Staff and permitted Neiner Farms to address several Board questions. We find ourselves in basic agreement with the "NRC Staff Response to Applicant's Objections to Licensing Board's Special Prehearing Conference Order," dated May 20, 1985 ("Staff Response"). Neiner Farm's May 20, 1985 response was extremely brief and unhelpful. It did not discuss or challenge Applicant's argument that subsection (c) of the contention, relating to sabotage, is barred by § 50.13(a). It did challenge, with little discussion, Applicant's argument that the entire contention is barred by 10 C.F.R. § 50.13(b), by asserting, in agreement with the Staff and our holding below, that the railroad transportation of munitions from the ammunition plant is not a deployment of weapons.

Applicant's objections to the admission of Contention 4 were ruled on in the Board's unpublished June 21, 1985 Order Reconsidering Admission of Neiner Farms Contention 4. In summary fashion, the Board ruled that, as asserted by Applicant and the NRC Staff, Contention 4(c) is barred by § 50.13(a) (relating to sabotage). However, we rejected Applicant's other objection that the entire contention is barred by § 50.13(b) (relating to U.S. defense activities). On this point, we agreed with the NRC Staff and Neiner Farms. Accordingly, the Board ruled that subparts (a) and (b) of the contention are appropriate for litigation in this operating license proceeding. This memorandum serves to supplement the Board's June 21, 1985 Order, explaining more fully why the Board ruled as it did on reconsideration of Neiner Farms Contention 4.

² See 10 C.F.R. § 2.758a; *Metropolitan Edison Co.* (Three Mile Island Nuclear Station, Unit 2), ALAB-456, 7 NRC 63, 65 (1978); *Commonwealth Edison Co.* (Byron Nuclear Power Station, Units 1 and 2), LBP-80-30, 12 NRC 683, 692-93 (1980).

Applicant acknowledges that its new arguments based on 10 C.F.R. § 50.13 should have been raised at an earlier stage in the proceedings. Applicant's Objections, at 7. We agree. It should have been raised in this operating license proceeding six years ago, in its August 22, 1979 answer to contentions. Indeed, it arguably should have been raised over ten years ago, before a similar issue was considered by the Licensing Board in the uncontested site suitability hearing phase of the construction permit proceeding. However, we also agree with Applicant, at least in the circumstances of the regulation in question, that Applicant's objections to the subject matter jurisdiction of the Board should not be deemed to have been waived. *Cf.* Fed. R. Civ. P. 12(h). Applicant's Objections, at 8. There is no suggestion by anyone, nor do we perceive any possible basis for one, that Applicant for some strategic reason would have knowingly deferred making its subject matter jurisdiction objection. Any inconvenience to the other parties and the Board has been insubstantial (given the result we reach on the new objections), and is far outweighed by the goal of correctly defining, in advance of trial, the Board's jurisdiction over the issues advanced by Neiner Farms Contention 4. Indeed, prior to the filing of Applicant's new objections, the Board had been considering whether to ask the parties to address the admissibility of subpart (c) of Contention 4 in light of § 50.13(a).

RATIONALE FOR RULING

As accepted by the Board in the SPCO, Neiner Farms Contention 4 stated:³

Intervenors contend that the proximity of the Illinois Central Railroad to the plant site and the use of the rail system to transport explosive materials from the Joliet, Illinois arsenal and other plants or depositories creates an unacceptably hazardous condition not considered by the Atomic Safety and Licensing Board, which issued the partial initial decision on environmental and site suitability matters for the Braidwood Station (LBP-75-1, 8 AEC 1197 (January, 1975)). At the construction permit stage the analysis of the probability of an explosion was inadequate in that:

- a) the six-month period during 1974 for which the traffic from the Joliet arsenal was analyzed is not representative of other traffic periods in the past and may not be representative of the traffic to be expected in the future.
- b) the analysis of the traffic was based on peacetime traffic only.
- c) only the probability of accidental or inadvertent explosions were assessed and the probability of sabotage or purposefully caused explosions were not explored.

Applicant argues, as we have already noted, that litigation of Neiner Farms Contention 4 would be an impermissible challenge to § 50.13. That regulation 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 Pursuant to the Board's encouragement, the contention has now been reworded by agreement of the parties to better reflect the actual controversy. July 11, 1985 filing by NRC Staff; Tr. 155. The Board approves the rewording, which states:

4. Intervenors contend that the proximity of the Illinois Central Railroad line to the Braidwood Station site and the use of that rail line to transport munitions from the Joliet Army Ammunition Plant, including the potential transport of RDX and HMX explosives which may be manufactured at that facility in the future, create an unacceptably hazardous condition. The condition is hazardous in the following respects:

- a. The probability of an accident involving an explosion of munitions on the rail line is not so low as to preclude its consideration as a design basis accident; and
- b. The design of the Braidwood Station is such that the facility could not withstand the occurrence of an explosion of munitions on the rail line without endangering the public health and safety.

We begin our evaluation of Applicant's argument by reviewing the rationale behind § 50.13. We find that this provides the primary basis for our rulings on the contention.

Section 50.13 was adopted by the NRC's predecessor agency, the Atomic Energy Commission ("AEC"), in 1967 because there was an obvious, practical need to exempt applicants from being forced to protect against certain types of military or paramilitary attacks which the Commission recognized were beyond the sphere of an applicant's responsibility. This included situations in which the national security was threatened, even if the attack directed its force against a nuclear power facility. When the Commission developed the policy of excluding hostile attacks from litigation, it did so based on its determination that the country's national security is intended to be left entirely to the nation's defense establishment and security agencies. *Florida Power and Light Co. (Turkey Point Nuclear Generating Units 3 and 4)*, 4 AEC 9, 13 (1967), *aff'd*, *Seigel v. AEC*, 400 F.2d 778 (D.C. Cir. 1968).

Prior to the adoption of § 50.13, the Atomic Energy Commission had articulated the reasoning in support of the regulation in the Turkey Point facility construction permit case, which arose in the late 1960's. *Turkey Point*, *supra*.⁴ In the *Turkey Point* proceeding, the Commission addressed whether the Licensing Board was required to adjudicate intentional efforts to damage a facility when those efforts are carried out by an enemy of the United States, the same question this Board faces vis-a-vis Contention 4(c). *Id.* At the time the Commission issued its decision in *Turkey Point*, what is now § 50.13 was only a proposed rule. (See 32 Fed. Reg. 2821 (Feb. 11, 1967).) The Commission noted that the background information provided with the publication of the proposed rule "confirmed the Commission's past practice of not requiring applicants for facility licenses to provide for special design features or other measures for protection against the effects of attacks and destructive acts directed against the facility by an enemy of the United States." *Turkey Point*, *supra*, 4 AEC at 11.

We quote the Commission's language in the August 4, 1967 *Turkey Point* Memorandum and Order, which sets forth the rationale for excluding enemy sabotage from licensing considerations:

We believe that our practice of excluding [protection against enemy attacks or destructive acts] from licensing consideration is founded on compelling factors. It would appear manifest, as an initial proposition, that the protection of the United

⁴ See also the Statement of Consideration, issued with the final rule. 32 Fed. Reg. 13,445 (Sept. 26, 1967).

States against hostile enemy acts is a responsibility of the nation's defense establishment and of the various agencies of our Government having internal security functions. The power reactors which the Commission licenses are, of course, equipped with numerous features intended to assure the safety of plant employees and the public, as indicated by our earlier summary description of the proposed Turkey Point facility. These safeguards, while designed to protect against accidents and their consequences, do not have as their specific purpose protection against the effects of enemy attacks and destructive acts — although the massive containment and the procedures and systems for rapid shutdown of the facility could also serve a useful purpose in the latter regard. One factor underlying our practice in this connection has been a recognition that reactor design features to protect against the full range of the modern arsenal of weapons are simply not practicable and that the defense and internal security capabilities of this country constitute, of necessity, the basic "safeguards" as respects possible hostile acts by an enemy of the United States.

The circumstances which compel our recognition are not, of course, unique as regards a nuclear facility; they apply also to other structures which play vital roles within our complex industrial economy. The risk of enemy attack or sabotage against such structures, like the risk of all other hostile acts which might be directed against this country, is a risk that is shared by the nation as a whole. This principle, we believe, is rooted in our political history and we find no Congressional indication that nuclear facilities are to be treated differently in the subject regard.

4 AEC at 13.

The United States Court of Appeals for the District of Columbia reviewed the Commission's Memorandum & Order in the *Turkey Point* case. The Court of Appeals affirmed the Commission and basically aligned itself with the Commission's legal reasoning. *Seigel v. AEC*, 400 F.2d 778 (1968). The Court summarized the basis on which the Commission made its decision as:

(1) the impracticability, particularly in the case of civilian industry, of anticipating accurately the nature of enemy attack and of designing defenses against it, (2) the settled tradition of looking to the military to deal with this problem and the consequent sharing of its burdens by all citizens, and (3) the unavailability, through security classification and otherwise, of relevant information and the undesirability of ventilating what is available in public proceedings.

400 F.2d at 782.

The Court of Appeals understood and endorsed the Commission's determination that requiring an applicant to demonstrate that its nuclear facility is protected against various forms of enemy attack would "stifle utterly the peaceful utilization of atomic energy in the United States." *Seigel*, 400 F.2d at 783-84. The Court's conclusion clearly upholds § 50.13:

In short, Congress certainly can be taken to have expected that an applicant for a license should bear the burden of proving the security of his proposed facility as

against his own treachery, negligence, or incapacity. It did not expect him to demonstrate how his plant would be invulnerable to whatever destructive forces a foreign enemy might be able to direct against it in 1984.

400 F.2d at 784.

Contention 4(c) Is Barred by § 50.13(a)

We turn now to the two inquiries necessitated under § 50.13(a). The first is whether the sabotage postulated by Contention 4(c) is “directed against the facility.” Applicant argues that the postulated attack or sabotage against the Illinois railroad train transporting explosives from the ammunition plant would be “directed against” the Braidwood facility within the meaning of the regulation. We agree. The very premise of Neiner Contention 4(c) is that the attack or sabotage of the train will take place at a location in proximity to the Braidwood plant, consistent with the further apparent premise that it is the intent of the attackers (or saboteurs) to damage the nuclear power station. Any such attack would be a more localized attack and, therefore, one even more clearly directed against the nuclear facility than other postulated “indirect” attacks barred from consideration in other cases. In any event, the subjective intent of such attackers is not material.

In *Cleveland Electric Illuminating Co.* (Perry Nuclear Power Plant, Units 1 and 2), LBP-81-42, 14 NRC 842, 844-45 (1981), intervenors argued that their postulation of an act of detonating a nuclear explosion during an attack on a neighboring country which allegedly could damage the Perry nuclear plant, was not an attack “directed against” the facility. The *Perry* Board found, and we agree given the rationale of § 50.13 described above, that a Board is not required to engage in the absurdity of the subjective test of inquiring into the mind of an attacker (or saboteur) to decide whether the act was intended to damage the nuclear facility or whether such damage was merely incidental to some other hostile goal of the attacker. *Id.* at 844. Rather, as stated by another Licensing Board, the very nature of the act of detonating a nuclear device which could damage a nuclear power plant constitutes, *a priori*, a destructive act directed against the facility. *Washington Public Power Supply System* (WPPSS Nuclear Project No. 1), LBP-83-66, 18 NRC 780, 783 (1983).

Therefore, while the postulated attack or sabotage may be perpetrated on the train or its tracks, such activity satisfies the requirement that the sabotage be “directed against the facility.” This would be so whether or not the subjective intent of the perpetrators is to damage the nuclear facility.

The second inquiry is whether, in the words of § 50.13(a), the saboteurs qualify as “an enemy of the United States, whether a foreign government or other person.” We find it implausible to categorize any group of individuals who attempt to damage a trainload of munitions traveling from a federal arsenal as other than an enemy of the United States. Moreover, as Applicant discusses in its Objections, at 5-6, the Appeal Board has addressed an intervenor’s exception to a Licensing Board’s finding that an applicant need not protect against an armed band of saboteurs intent upon, and capable of, damaging the plant. *Consolidated Edison Co. of New York* (Indian Point Station, Unit No. 2), ALAB-202, 7 AEC 825 (1974). The Appeal Board in *Indian Point* characterized the intervenor’s exception as raising the issue of whether an applicant must take affirmative measures against an attack by an armed group which is not an enemy of the United States. *Id.* at 829-30. In denying the intervenor’s exception, the Appeal Board focused on whether it would be reasonable to require an Applicant to provide such protection. The *Indian Point* decision is unequivocal that it would not be a reasonable requirement.

This situation presents problems which, from an applicant’s standpoint, differ little in kind or degree from the problems presented if the armed band is in fact an enemy of the United States.¹⁹ From a practical standpoint, if there is an attack by a substantial force, those who have to decide whether to seek assistance, and whether to provide responsive capabilities, will probably not first ponder over the question of whether or not the force is an enemy of the United States.

¹⁹ See and compare *Seigel v. AEC*, 400 F.2d 778, 782 (D.C. Cir. 1968).

Id. at 830.

The logic of the Appeal Board’s reasoning is supported with its interpretation of the rationale behind § 50.13. The Appeal Board notes that the regulation does not require “an applicant to protect against the effects of enemy attacks and destructive acts” and that the same rationale “would also apply to an armed band of trained saboteurs.” 7 AEC at 830. The Appeal Board concluded:

As in the case of defending against the threat of an attack by an enemy of the United States, it seems that an applicant should be entitled to rely on settled and traditional governmental assistance in handling an attack by an armed band of trained saboteurs. Without such reliance, each facility could indeed become an armed camp.

Id.

The more recent *Perry* decision also provides legal reasoning from which we may conclude that the saboteur band postulated by Neiner

Contention 4(c) would be an enemy of the United States. *Perry, supra*, 14 NRC 842. The portion of the decision explaining the rejection of a subjective test to determine if a nuclear weapon-induced electromagnetic pulse is “directed against the facility” (consideration of which would be precluded under § 50.13(a)), also explains how the Board determines whether the attacking force is an “enemy of the United States.”

[I]f a nation fires a nuclear device which causes electromagnetic pulses over the United States, that nation is responsible for the result. By that hostile act, the nation becomes an enemy of the United States and is responsible for direct or indirect consequences resulting from its use of a nuclear weapon.

Perry, supra, 14 NRC at 844. We concur that where an act is hostile, and could damage a nuclear plant and thereby cause harm to the public health and safety resulting from radiation releases, then the perpetrator of that act is an enemy of the United States for purposes of application of § 50.13(a). Where, as here, such enemy act is beyond the type of design basis security threat encompassed by 10 C.F.R. § 73.1(a), then an applicant is entitled to rely on the government’s military or law enforcement agencies to handle such an attack.

The discussion of our rejection of Contention 4(c) would not be complete without some mention of the physical protection of nuclear power plants mandated under the NRC regulations. The *Seigel* Court, as quoted *supra* pp. 134-35, had alluded to the security responsibilities to be shouldered by an applicant. Those provisions in the regulations requiring an applicant to provide physical security measures as a prerequisite to obtaining an operating license are contained in 10 C.F.R. Part 73. It has been previously stated by a licensing board that § 50.13 is to be read *in pari materia* with the regulations of Part 73. *Carolina Power & Light Co.* (Shearon Harris Nuclear Power Plant, Units 1 and 2), LBP-82-119A, 16 NRC 2069, 2098 (1982). The distinctions between these two parts of the regulations serve to shore up our conclusion that Neiner Contention 4(c) may not be litigated in this proceeding.

The regulations encompassed by Part 73 require a nuclear facility to be secure against specific design basis threats. Such threats contemplate well-trained individuals (likely assisted by a knowledgeable insider), who carry hand-held weapons and/or other hand-carried equipment for destroying the reactor’s integrity. 10 C.F.R. § 73.1(a)(1). Part 73 refers to sabotage accomplished with the use of small weapons by small bands of saboteurs. In contrast, when read in the light of its own rationale (discussed above) and § 73.1, § 50.13 addresses military-style attacks which are broader in nature and carried out with heavier weapons. *Shearon Harris, supra*, 16 NRC at 2098.

The threat postulated in Contention 4(c) is an explosion of the railroad train and its cargo, even if it is argued that this explosion may stem from a chain reaction begun by a small band of attackers with hand-held equipment. Thus, the method and nature of sabotage contemplated by Contention 4(c) would be beyond the scope of the design basis threat contemplated under § 73.1(a)(1). We agree with the NRC Staff (Response, at 10) that a railroad carload of munitions clearly was not intended for litigation under a regulation related to "hand-held weapons."

Furthermore, the sabotage envisioned by Part 73 is perpetrated at the plant site or against nuclear fuel being shipped to or from the site. § 73.1(b). Thus, Applicant is required to take certain precautions to ensure the plant's security. In the scenario postulated by Contention 4(c), sabotage is committed outside the plant's security boundary along the railroad's route from the Joliet arsenal. For that reason alone, Contention 4(c) could not be litigated under 10 C.F.R. Part 73 because the security measures required by Part 73 do not extend beyond the vicinity of the plant's boundaries. See 10 C.F.R. §§ 73.45 and 73.46. (As noted, under Part 73, other measures must be taken to protect shipments of nuclear material to or from the plant. This subject is unrelated to the contention.)

Contention 4 Is Not Barred by § 50.13(b)

In our June 21, 1985 Memorandum and Order, the Board ruled that Neiner Contention 4(a) and 4(b) is admissible for litigation in this proceeding. We disagree with Applicant that the accidents postulated by Neiner Farms in subparts (a) and (b) of the contention would be the result of use or deployment of weapons incident to U.S. defense activities, consideration of which is barred by § 50.13(b). Rather, we are in essential agreement with the NRC Staff. The Staff has provided the Board with a well-reasoned explanation of those areas in which Applicant's arguments falter. NRC Staff Response, at 3-6.

We first examine the language of § 50.13(b) to determine whether the shipment of explosive materials and munitions from (or even to) the Joliet Army Ammunition Plant would be encompassed within the regulation's intended meaning of "deployment of weapons." Proceeding initially with the simplest of linguistic tools, we found that the definition of deployment contained in Webster's Third New International Dictionary (unabridged) is as follows:

de-ploy . . . v **1a:** to extend (a military or naval unit) in width or in both width and depth [he deployed his squad on both sides of the road] **b:** to place or arrange (armed forces) in battle disposition or formation or in locations appropriate

for their future employment [deploy forces to check aggressions] 2: to extend or place as if deploying troops [deploying the editors . . . in various phases of political reporting — *Newsweek*] [harried roadmasters deploying equipment and work gangs along the grade in military fashion — R.L. Neuberger] deploy *vi*: to move in or as if in deployment [the squad deployed and made a dash for the hill — Hanama Tasaki] [the staff deployed to their phones — *Time*].

The meaning of § 50.13(b) reasonably understood from the word “deploy” is that associated with the definitions set in a military context. The munitions (explosives or propellants for artillery shells) involved in this case, although they may be considered military munitions, are not being strategically arranged in locations appropriate for their use, unlike nuclear missiles being placed in silos from which they can be launched, or conventional weapons being tactically placed in the field with a military unit during war (or during a standby alert, or even engaged in a training exercise). Rather, the munitions in question are merely being transported from (or to) the Joliet ammunition plant, perhaps to storage locations, or to ammunition factories, or to military bases, such that in the event of a national security crisis or military exercise the munitions would *then* be deployed to a destination specified by the military for use in our national defense. Moreover, it stretches the rationale on which § 50.13 is premised, as discussed above, to label as “deployment of weapons” mere movement of raw ingredients for the manufacture of ammunition, or the ammunition itself, to or from a local ammunition plant.

The remaining subject of the contention (as set forth in the reworded Contention 4(a) and (b), note 3, *supra*), is the alleged public hazard from damage to the Braidwood plant by an accidental explosion close to the nuclear plant of a railroad train cargo of munitions being shipped from the nearby Joliet Army Ammunition Plant. Litigation of this issue should not intrude on national defense responsibilities and concerns of the country in general, which are the province of the military defense and security establishment. No strategic actions involving the use or deployment of weapons are affected by an analysis of the risk (consequences and probability) of the alleged railroad explosion. To be sure, if we find on the merits in favor of Neiner Farms, possible remedies by the Applicant may be limited by the U.S. Army’s prerogative, over which we exercise no jurisdiction, to operate the Joliet ammunition plant any way it desires to do so, including use of railroad shipments near the Braidwood plant. However, possible limitations on Applicant’s remedies, if any are necessary after our decision on the merits, do not affect the NRC’s subject matter jurisdiction to determine the merits of modified Neiner Farms Contention 4(a) and (b).

The Staff made the additional point that the cases cited by Applicant do not support Applicant's position that Neiner Contention 4(a) and (b) is not litigable. We agree that the cases are not factually close enough to the Braidwood circumstances to buttress Applicant's position. The cases Applicant relied upon were *Philadelphia Electric Co.* (Limerick Generating Station, Units 1 and 2), LBP-82-43A, 15 NRC 1423, 1500 (1982) and *Perry, supra*, 14 NRC at 844-45. In those cases, the weapon in issue was a nuclear missile (or other nuclear weapon) explosion postulated to cause an electromagnetic pulse (EMP) over a large area. *See also WPPSS, supra*, 18 NRC at 783. The EMP was postulated to disable the nuclear plant protection systems by electrical interference. Both Boards determined that explosion of a nuclear missile or other weapon would be either an enemy act, or, if a U.S. nuclear device, would arise from the deployment of weapons by the U.S. *Perry, supra*, 14 NRC at 845; *Limerick, supra*, 15 NRC at 1500. U.S. nuclear missiles (in silos or in the air), or other nuclear weapons in the air, are *deployed* weapons incident to U.S. defense activities. Stated another way, we find the widespread defense activity of the deployment of U.S. nuclear missiles in silos or in the air to be factually distinct from the localized nature of the transportation of weapons or explosives to or from the Joliet ammunition plant by railroad, particularly given the rationale behind § 50.13.⁵

We also note that if we accept Applicant's arguments, a Licensing Board would not be permitted to consider anything related to the military that might impact on a nuclear facility. That is, the Applicant would have the Board employ such an extremely broad reading of § 50.13(b) that almost *anything* military could be argued to be a use or deployment of weapons as an incidence of U.S. defense. For example, under the Applicant's reasoning, a Licensing Board would be forbidden from considering the air traffic of military planes taking off and landing at a military airfield located near a nuclear plant. This would conflict with what we understand to be long-standing AEC and NRC practice of considering the possible risks to a nuclear plant of crashes of military airplanes. *E.g., Consumers Power Co.* (Big Rock Point Plant), LBP-84-32, 20 NRC 601, 639-52 (1984) (a case with which Applicant's counsel before us is familiar). Similarly, we see no reason to bar our consideration of the shipment of ammunition or raw explosive materials for the sole reason that they may, at some later point, be deployed or used in national defense activities.

⁵ Given our view, we do not have to consider whether the contents of the shipments from the ammunition plant would constitute "weapons."

CONCLUSION

The above sets forth the Board's reasons for our rulings in the unpublished Order of June 21, 1985, that:

1. Neiner Farms Contention 4(c) is barred from litigation by 10 C.F.R. § 50.13(a); and
2. Neiner Farms Contention 4(a) and (b) (as now reworded) is not barred by 10 C.F.R. § 50.13(b), and is admitted as an issue in controversy in this proceeding.

FOR THE ATOMIC SAFETY AND
LICENSING BOARD

Lawrence Brenner, Chairman
ADMINISTRATIVE JUDGE

Bethesda, Maryland
July 30, 1985

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

OFFICE OF NUCLEAR REACTOR REGULATION

Harold R. Denton, Director

In the Matter of

Docket No. 50-295
(10 C.F.R. § 2.206)

COMMONWEALTH EDISON COMPANY
(Zion Station, Unit 1)
AND ALL LIGHT-WATER REACTORS

July 3, 1985

The Director of Nuclear Reactor Regulation denies a petition filed by Zinovy V. Reytblatt seeking an immediate postponement of all containment leak rate tests performed for light-water reactors based on alleged errors in containment leak rate measurement methodology. Petitioner also alleged errors in computer software used to determine containment leak rates. The Director concluded that the current leak rate methodology was adequate to determine containment leak rates. Furthermore, the NRC Staff has reviewed data sets from tests using the allegedly incorrect software and has found that the data have been correctly processed. In addition, NRC inspectors, as a matter of course, independently verify containment leak rate results.

TECHNICAL ISSUE DISCUSSED: CONTAINMENT LEAK RATE TESTING

The equation used to calculate containment air mass will produce adequate results if testing is done under stable conditions and test data are properly evaluated. Further, the likelihood that weighting coefficients are manipulated to produce an acceptable test result is small as NRC inspectors regularly observe the tests conducted by licensees and document the results in Inspection Reports.

DIRECTOR'S DECISION UNDER 10 C.F.R. § 2.206

INTRODUCTION

On March 6, 1985, Zinovy V. Reytblatt (Petitioner) submitted a letter pursuant to 10 C.F.R. § 2.206 to the Director of the Office of Nuclear Reactor Regulation seeking an immediate postponement of all containment leak rate tests performed for light-water reactors pursuant to the Commission's regulations in this area, specifically, 10 C.F.R. Part 50, Appendix J. The primary concern raised by the Petitioner was the alleged use of incorrect weighting coefficients in the air mass equation used for determining actual containment leak rates. Specifically, Petitioner alleges that incorrect weighting coefficients were utilized in determining the containment leak rate for the Zion Station, Unit 1.

On March 8, 1985, Petitioner submitted a second letter to the Director of the Office of Nuclear Reactor Regulation alleging that certain computer software developed by Volumetrics, Inc., and utilized at a number of nuclear facilities, including the Zion Unit 1, to determine containment leak rates, does not function correctly and consequently may lead to incorrect determinations of containment leak rates. Petitioner requested that actions be taken to ban the use of the software in question until it has been "debugged" and revalidated.

On April 22, 1985, I acknowledged receipt of both the March 6 and March 8, 1985 letters from the Petitioner and informed the Petitioner that both letters would be considered together as a Petition pursuant to 10 C.F.R. § 2.206 and that appropriate action would be taken on the issues raised in the Petition within a reasonable time. I also have considered a subsequent letter from the Petitioner dated April 30, 1985, in reaching my decision. My decision in this matter follows.

DISCUSSION

The Petitioner has been involved in the technical issues associated with containment leak rate testing methodologies for a number of years. Petitioner's activities have been focused upon (1) criticizing the current methods used to assure adequate containment leak rates and (2) suggesting what Petitioner would consider to be improved methods to perform containment leak rate tests. The NRC Staff has also been active in reviewing the adequacy of the Commission's regulations regarding containment leak rate testing. Leak rate testing of light-water reactor containments is a substantial undertaking. While the Commission's present

requirements for leak rate testing continue to provide reasonable assurance that the public health and safety is adequately protected, these requirements are now over 11 years old and a substantial base of experience exists to apply in seeking improvements to the regulations. In fact, one modification to 10 C.F.R. Part 50, Appendix J, in the area of Type B tests was made. See 45 Fed. Reg. 2330 (1980) and 45 Fed. Reg. 62,789 (1980). The NRC Staff has under way the review of leak rate testing requirements with a view to see whether other modifications to these requirements are appropriate. Petitioner is well aware of these activities and has participated in them over the years, including participation in the activities of Working Group ANS-56.8 of the Standards Committee of the American Nuclear Society, the entity carrying out a detailed review and examination of methodologies appropriate for adequate containment leak rate testing. The Petitioner has also presented his concerns with respect to containment leak rate testing directly to the NRC Staff on many occasions in the past in both written and oral form. Indeed, I have issued twice before Director's Decisions pursuant to 10 C.F.R. § 2.206 dealing with Petitioner's concerns in this area.¹ Consequently, both the nuclear industry and the NRC Staff have long had the benefit of Petitioner's views with respect to containment leak rate testing.²

The current Petition raises essentially three issues. First, the Petition alleges that the equation used to calculate containment air mass at any given time is wrong. This issue has been raised by the Petitioner in the past and, in fact, was the subject of an earlier Director's Decision issued by this office.³ As noted in my earlier decision, the equation used in the standard of the American Nuclear Society (ANS) and the American National Standards Institute (ANSI)⁴ for calculation of containment air mass is not "wrong" as alleged by the Petitioner. The manner in which the mean containment temperature is calculated for use in the equation, however, is important. In this regard, ANSI-ANS 56.8-1981 does not prescribe how to calculate the mean containment temperature. Either a mass-weighted mean temperature or a volume-weighted mean temperature would be acceptable if the leak rate testing is properly conducted to assure stable conditions and the test data are properly evaluated. In essence, the equation is correct, but inadequately defines the temperature

¹ *Commonwealth Edison Co.* (LaSalle County Station, Units 1 and 2), DD-84-6, 19 NRC 891 (1984); *Commonwealth Edison Co.* (Zion Station, Unit 1), DD-85-2, 21 NRC 270 (1985).

² It should be noted that the Commission has placed leak rate testing for water-cooled power reactors on its Regulatory Agenda, See 50 Fed. Reg. 18,154 *et seq.* (Apr. 29, 1985).

³ See DD-84-6, *supra*, 19 NRC at 894.

⁴ ANSI/ANS 56.8-1981, "Containment System Leakage Testing Requirements."

term by allowing the assumption of a uniform density throughout the containment. The density may not, however, be uniform because the temperature may not be uniform. Hence it is important to assure that the test is conducted under stable conditions. Within the range of temperature variations experienced at tests conducted at nuclear facilities, the difference in leak rates using the assumption of uniform density has no safety significance. Consequently, while this is an area where improvement may be made, such an improvement would be more correct technically but would produce no meaningful change in the conduct of containment leak rate tests.

The second issue raised by the Petitioner concerns the use of the so-called weighting coefficients in determining containment leak rates and the allegation that such weighting coefficients may be manipulated to reach an acceptable result. This issue is also the subject of my earlier decision.⁵ As noted in my earlier Decision, a properly conducted leak rate test would not contain the types of deficiencies alleged by the Petitioner such as the use of unjustified weighting coefficients. Such manipulation of data would be a violation of the Commission's regulations and would subject licensees to NRC enforcement action. In addition, to ensure compliance with the Commission's requirements regarding leak rate testing, NRC inspectors regularly observe the tests conducted by licensees and document the results of their observations in Inspection Reports.

The third issue raised by the Petitioner concerns alleged inadequacies in certain software used to conduct containment leak rate testing. The Petitioner alleges that the Volumetrics computer program for processing leak rate test data does not perform addition and/or division correctly which consequently may lead to underestimating leak rates to the degree that such leak rates would appear to be within normal limits. The Petitioner suggests that such may be the case with respect to Zion Unit 1 leak rate testing, and suggests that other facilities may be employing the same defective software. Petitioner further alleges that the Volumetrics computer program has a "fraudulent" option which permits doubling of the weighting coefficients and that this "fraudulent" option has been used during the November 1983 Zion test and possibly also in the July 1984 Zion test.

The Volumetrics computer program (software) was used in conducting the November/December 1984 containment integrated leak rate test (CILRT) at the Detroit Edison Company's Fermi Unit 2 plant. NRC inspectors, as a matter of course, independently verify CILRT results. In the case of the Fermi Unit 2 test, the NRC inspectors found that the

⁵ DD-84-6, *supra*, 19 NRC at 894-95.

Volumetrics computer program produced acceptable results. There was no evidence of any manipulation of subvolume weighting coefficients to bias the data. Specific data sets from this test have also been checked for alleged inadequacies in the Volumetrics software, and it has been determined that the Volumetrics computer program correctly processes the data. Consequently, the Staff has not found it necessary to review the Volumetric software itself. Also, contrary to statements made by the Petitioner, the Volumetrics software has never been used for the integrated leak rate testing of the Zion containments. Again, the Staff has independently verified that the computer program used in the Zion tests produced correct results.

While the Petition raises three general concerns, Petitioner makes a number of allegations which are specific to the Zion Unit 1 facility. Particularly, the Petitioner contends that the July 1984 containment leak rate test for Zion Unit 1 was performed in violation of regulatory requirements. The Petitioner argues that the July 1984 containment leak rate test at Zion Unit 1 may have used the Volumetrics software permitting doubling of weighting coefficients and incorrect addition and/or subtraction. Further, the Petitioner argues that meaningless "verification" tests were performed during the Zion Unit 1 test on July 29, 1984. The Petitioner alleges that a verification test failed and that, following the failure, the reasons for the failure were not analyzed. Instead, an "unlawfully short test" with the same incorrect weight coefficients used earlier was performed and "successfully" verified. Petitioner questions this approach as no repair was done between tests and containment conditions for both tests were identical. The Petitioner further argues that, based on his analysis of certain data sets for the Zion Unit 1 test of July 1984, and upon his use of supposedly more realistic weight coefficients, he has concluded that the Zion Unit 1 containment leak rates are in excess of regulatory limits.

As stated above, the Volumetrics software was not used in the Zion tests. Nevertheless, the Petitioner presented a data set of nine temperature readings for a particular subvolume to show that the Volumetrics computer program does not correctly calculate the average containment temperature. The Petitioner, however, mistakenly included the readings of two channels of temperature sensors (numbers 4 and 14) that had been declared "out-of-service" through the course of the test. In fact, the computer program in use (not the Volumetrics program) was averaging, correctly, the readings of the seven "in-service" channels.

With regard to the Petitioner's allegations concerning the validity of the verification test for the July 1984 Zion CILRT test, the Petitioner alleges that no attempt was made to analyze the cause of the inability to

initially meet the test acceptance criterion. In fact, after conducting the verification tests, the Licensee did speculate on the cause and proceeded to take corrective action. It was thought that the verification test equipment may have been leaking during the CILRT (which would not have occurred during the subsequent verification test with the equipment in use) since the imposed leak rate was almost identical to the measured (composite) leak rate. The Licensee made adjustments to the verification test equipment and proceeded to conduct a second CILRT. The test was discontinued after 10 hours since the results were substantially the same as those obtained during the first CILRT. A second verification test was then conducted using a larger imposed leak rate (1.1 L_r versus 0.82 L_r), which is permissible. This resulted in a composite leak rate greater than 0.1 weight percent per day (wt %/day). Since the accuracy of measuring leak rates much less than 0.1 wt %/day is considered poor, conducting a verification test having a composite leak rate greater than 0.1 wt %/day improves the accuracy of the test. The NRC's Inspection Report⁶ reviewed the circumstances of the verification test related above. The report concludes that the test did confirm the acceptability of the CILRT.

CONCLUSION

Petitioner sought immediate suspension of all containment leak rate testing and immediate initiation of actions to ban the use of Volumetrics software until it is debugged and revalidated. For the reasons stated in this Decision, the Petitioner's request for relief is denied. As provided by 10 C.F.R. § 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 3rd day of July 1985.

⁶ Letter to C. Reed, Vice President, Commonwealth Edison Company, from J. Keppler, Regional Administrator, Region III, U.S. Nuclear Regulatory Commission, dated September 7, 1984, transmitting Inspection Report No. 50-295/84-11; 50-304/84-11.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

OFFICE OF NUCLEAR REACTOR REGULATION

Harold R. Denton, Director

In the Matter of

Docket Nos. 50-352
50-353
(10 C.F.R. § 2.206)

PHILADELPHIA ELECTRIC COMPANY
(Limerick Generating Station,
Units 1 and 2)

July 29, 1985

The Director of the Office of Nuclear Reactor Regulation denies the Petition of Robert L. Anthony and Friends of the Earth (Petitioners) seeking the Directors' immediate initiation of show cause proceedings to revoke the operating license for the Limerick Generating Station Unit 1 of the Philadelphia Electric Company (Licensee). The Petitioners argued that certain exemptions granted to the Licensee were improperly granted and that Licensee Event Reports, Inspection Reports and certain correspondence demonstrate that licensed activities at the Limerick facility are being conducted in an unsafe fashion and warrant license revocation. Finally, Petitioners argue that the Independent Design Verification Program undertaken for the Limerick facility indicates that the design of the facility is inadequate. In his decision, the Director also considered the comments of Mr. Frank Romano submitted on March 11, 1985, and the comments of Mr. Marvin Lewis submitted on February 15, 1985, on issues related to the Limerick facility.

RULES OF PRACTICE: SHOW CAUSE PROCEEDINGS

Where no specific factual basis is provided by the Petitioners to support a claim that exemptions were improvidently granted, the Director

of the Office of Nuclear Reactor Regulation need take no further action under 10 C.F.R. § 2.206 with respect to Petitioners' claims.

RULES OF PRACTICE: SHOW CAUSE PROCEEDINGS

NRC inspection activities may discover violations of NRC requirements both in the construction and operation of facilities. Such violations are generally of minor significance. If truly major deficiencies on the part of a licensee are identified, the agency is authorized to issue orders, including stop-work orders, to assure appropriate remedial action.

RULES OF PRACTICE: SHOW CAUSE PROCEEDINGS

Isolated deficiencies in a licensee's program of construction or operation do not necessarily undermine the program to such an extent as to give rise to a significant safety concern. What is required is a careful assessment of the significance of the deficiencies, and the corrective action taken to preclude recurrence.

RULES OF PRACTICE: SHOW CAUSE PROCEEDINGS

A request pursuant to § 2.206 for institution of show cause proceedings shall set forth the facts that constitute the bases for the request. In the absence of the specific factual basis called for by the regulation, any inquiry must necessarily be limited.

RULES OF PRACTICE: SHOW CAUSE PROCEEDINGS

It is the NRC's policy to pursue all specific allegations with potential safety significance. However, vague and unspecified claims do not warrant further inquiry.

RULES OF PRACTICE: SHOW CAUSE PROCEEDINGS

The remedy afforded by § 2.206 should not be used as a means to reopen issues previously adjudicated. In the absence of any significant new information, neither a party to a Commission adjudicatory proceeding nor a nonparty may raise issues previously adjudicated for consideration under § 2.206.

DIRECTOR'S DECISION UNDER 10 C.F.R. § 2.206

INTRODUCTION

On December 23, 1984, Robert L. Anthony on behalf of himself and Friends of the Earth (Petitioners) filed with the Director of the Office of Inspection and Enforcement a Petition seeking that the Director immediately institute show cause proceedings to revoke License No. NPF-27 (operating license) issued to the Philadelphia Electric Company (PECo or the Licensee). The operating license was issued on October 26, 1984, authorizing fuel loading and other low-power activities at the Licensee's Limerick Generating Station, Unit 1 (Limerick facility). Although the Petition was directed to the Office of Inspection and Enforcement, the Office of Nuclear Reactor Regulation will respond to the Petition as it deals with matters related to a license issued by this Office. As a basis for their request, Petitioners argue that certain exemptions granted to the Licensee when License No. NPF-27 was issued were improperly granted and that the public health and safety was thereby endangered. The Petitioners further argue that Licensee Event Reports issued by the Licensee since the commencement of operation under the low-power license are further indication that activities under the license are being conducted in an unsafe fashion. Thirdly, the Petition makes reference to various Inspection Reports issued by the NRC and to correspondence between the Licensee and the NRC as identifying additional deficiencies warranting revocation of the license. Finally, the Petitioners argue that the Independent Design Verification Program (IDVP) undertaken for the Limerick facility indicates that the design of the Limerick facility is inadequate and that license revocation is called for.

On February 13, 1985, I acknowledged receipt of the Petition and informed the Petitioners that the Petition would be treated under 10 C.F.R. 2.206 of the Commission's regulations and that a formal decision with respect to it would be issued within a reasonable time. I further informed the Petitioners that, for the reasons set out in my letter, I saw no need to take any immediate actions with respect to the concerns raised by the Petition. I specifically noted in my letter that all of the matters raised by the Petition were ones of which the NRC Staff was well aware.

Mr. Anthony has provided the Nuclear Regulatory Commission with additional views subsequent to the filing of the Petition dated December 23, 1984. On February 25, 1985, Mr. Anthony provided additional comments with respect to the alleged unsafe operation of the Limerick facility and again urged that the Commission issue an order to the Licensee

to show cause why License No. NFP-27 should not be revoked. On April 5, 1985, Mr. Anthony reiterated his request with respect to the institution of show cause proceedings. On May 9, 1985, Mr. Anthony submitted additional comments mainly alleging violation by the Licensee of certain environmental conditions of License No. NPF-27.¹ I have taken Mr. Anthony's additional views into account in reaching my final decision with respect to the Petition.

On February 15, 1985, I received the comments of Mr. Marvin I. Lewis supporting the Petition of Mr. Anthony, *et al.* I acknowledged Mr. Lewis' letter on March 26, 1985, and informed him that his comments would be considered in reaching my final decision with respect to the Petition.

On March 11, 1985, I received the comments of Mr. Frank R. Romano who joined with Mr. Anthony, *et al.*, in calling for the institution of show cause proceedings. I acknowledged Mr. Romano's letter on May 23, 1985, and informed him that his comments would also be considered in reaching my final decision with respect to the Petition.

The Licensee has also submitted its comments with respect to Petition of Mr. Anthony, *et al.* These comments were submitted on February 6, and April 12, 1985, and I have considered them in reaching my decision. My decision in this matter follows.

DISCUSSION

Petitioners seek the institution of show cause proceedings pursuant to 10 C.F.R. § 2.202 to revoke License No. NPF-27. The issuance of a show cause order is appropriate only where substantial health or safety issues have been raised.² This is the standard which I have applied to the concerns discussed in this Decision to determine whether an enforcement proceeding pursuant to § 2.202 is warranted.

Petitioners' submittals raise essentially three general issues. First, the Petitioners question certain exemptions which have been issued for the Limerick facility. Secondly, Petitioners make reference to numerous pieces of correspondence between the NRC Staff and the Licensee, to a number of Licensee Event Reports (LERs) which have been submitted

¹ To the extent the May 9, 1985 filing by Petitioner Anthony raises concerns with respect to the use of cooling water for the Limerick facility, these concerns are very similar to concerns addressed in a Director's Decision Under 10 C.F.R. § 2.206 issued on May 17, 1985, and I consider that Decision responsive to these issues. See DD-85-8, 21 NRC 1561 (1985).

² *Consolidated Edison Co. of New York* (Indian Point, Units 1, 2, and 3), CLI-75-8, 2 NRC 173, 176 (1975); *Washington Public Power Supply System* (WPPSS Nuclear Project No. 2), DD-84-7, 19 NRC 89 9, 923 (1984).

by the Licensee to the NRC since License No. NPF-27 has been issued, and to a variety of NRC Inspection Report findings, apparently to support the proposition that the Limerick facility contains faulty design features and has experienced a poor level of performance by facility personnel since the facility commenced operation. Consequently, it is suggested that continued operation poses an undue risk to public health and safety. Finally, the Petitioners point to the IDVP performed for the Licensee by Torrey Pines Technology (Torrey Pines) as further support for the Petitioners' argument that the design of the Limerick facility is faulty or that the design features of the facility cannot be confirmed to operate as intended.

Prior to discussing each one of these areas, it is important to note that much of the content of Petitioners' submittals consists of references to correspondence, Inspection Reports, and LERs. On the basis of such references, Petitioners argue that the facility design is inadequate and that the facility is poorly operated. While I intend to discuss each of these issues generally, I do not intend to respond specifically to each item which has been referenced.

I view the references as supportive of the more general concerns raised by the Petitioners. I see no benefit and no need to address each reference on its merits. What is important is whether or not the items referred to by Petitioners taken together raise a substantial safety concern warranting institution of enforcement proceedings. This approach is particularly appropriate as the NRC has been well aware of the matters referred to by Petitioners. It is important to recognize that the Petition provides no new information but only restates information or references documentation of which the NRC was already aware. In this context, then, it is appropriate to respond to the principal concerns of the Petition rather than responding with a detailed discussion of each of the referenced items.³

A. Exemptions from Specific Regulations

The Petition argues that certain exemptions granted to the Licensee when License No. NPF-27 was issued were improvidently granted and that the public health and safety are thereby endangered. Specific exemptions identified are concerned with control room habitability, the standby gas treatment system, compliance with 10 C.F.R. Part 50, Appendix J, and the adequacy of isolation valves for certain systems. Petitioners' concerns with regard to certain exemptions issued for the Limerick facility

³ Cf. DD-84-7, *supra*, 19 NRC at 904-05.

may be categorized as simply disagreement with conclusions reached by the NRC Staff and the Licensee regarding the appropriateness of the exemption at issue. No specific factual basis is provided by the Petitioners to support the claim that the exemptions were improvidently granted. In the absence of such specific factual basis, I need take no further action with respect to Petitioners' claims. Section 2.206(a) requires that Petitioners "set forth the facts that constitute the basis for the request." Absent such a showing, I need take no action on the Petition.⁴ Although I decline to take action on the exemption concerns of the Petitioners in the absence of any factual basis, I have discussed the relevant portions of the Staff's evaluations to make clear that the Petitioners' concerns are unwarranted.

Remote Shutdown System Redundancy

On October 25, 1984, Licensee requested an exemption from certain requirements of General Design Criterion (GDC) 19 regarding the remote shutdown capability for the Limerick facility.

As discussed in § 7.4.0 of the Limerick Safety Evaluation Report (SER), NUREG-0991, issued in August 1983, the Limerick facility is provided with a remote shutdown system outside of the control room from which the reactor can be shut down in a safe and orderly fashion. The design basis for the remote shutdown system is to effect a safe shutdown under the following conditions: (1) Inaccessibility of the main control room with the plant operating at or less than design power conditions, (2) loss of offsite power and (3) loss of turbine control, feedwater control and steam bypass.

The SER noted that the design submitted by the Licensee did not include redundancy in the controls and indication provided for the remote shutdown system. The Licensee had committed to modify the design to achieve such redundancy prior to initial plant startup but subsequently requested an exemption from full compliance with GDC 19 for plant operation through the first fuel cycle. SER Supplement No. 3 provided the NRC Staff's evaluation supporting an exemption from the specific requirements of GDC 19 for the period of operation up to 5% of rated power. The Staff's evaluation was based on the fact that there would be minimal decay heat removal requirements prior to exceeding 5% power and that the likelihood of simultaneously losing the main control room safe shutdown capabilities and the existing single remote shutdown train

⁴ *Philadelphia Electric Co.* (Limerick Generating Station, Units 1 and 2), DD-82-13, 16 NRC 2115, 2121 (1982) and cases there cited. See also CLI-75-8, *supra*, which instructs at 2 NRC 175 that the Director in considering a request pursuant to § 2.206 must make an inquiry appropriate to the facts asserted.

was highly unlikely for the short period of time following initial criticality and prior to exceeding 5% power. On this basis, the Staff found that an exemption from full compliance with GDC 19 was justified for initial startup and operation up to 5% power.

Since the issuance of SER Supplement No. 3, the Staff has received additional information describing how redundancy will be achieved for operation beyond 5% power and is currently preparing a safety evaluation on this subject. The Staff will require that this issue be suitably resolved prior to authorizing operation beyond the 5% power level.

Refueling Area Connection to the Standby Gas Treatment System

On September 21, 1984, the Licensee requested an exemption from GDC 61 regarding the connection of the Standby Gas Treatment System (SGTS) to the refueling area. The Licensee requested an exemption to delay the connection of the SGTS until prior to the first movement of irradiated fuel into the refueling area.

The Staff evaluated this issue in SER Supplements No. 2 and 3. As noted therein, the Licensee has committed to completely isolate the refueling area from the Unit 1 secondary containment zone during the time the exemption is permitted. Furthermore, there will be no irradiated fuel permitted in the refueling area until the SGTS is operable. Thus, there will be no radioactivity in the refueling area to be released during the first fuel cycle and consequently no need to have the SGTS operational. The commitments made by the Licensee to ensure that this will be the case have been incorporated as a condition to the operating license. These actions preclude the introduction of radioactivity into the refueling area and virtually eliminate the risk of discharging radioactive gas to the atmosphere in case of an accident.

Containment Leakage Rate Testing Program

On September 24, 1984, the Licensee requested an exemption with regard to certain specific elements of the Limerick Containment Leakage Rate Testing Program which did not meet the explicit requirements of Appendix J to 10 C.F.R. Part 50. These exemptions requested: (1) seal testing instead of a containment airlock test whenever maintenance had not been performed on the airlock, (2) testing of the main steam isolation valve (MSIV) leakage at a pressure less than the containment pressure for design basis accidents (P_2) and exclusion of the measured leakage from the combined local leak rate test results, (3) no local leak rate testing of traversing in-core probe shear valves and (4) a one-time

exemption from the requirement to perform local leak rate testing on seven Residual Heat Removal System (RHRS) relief valves.

As stated in § 6.2.6.4 of Supplement No. 3 to the SER, the Licensee's requested exemption regarding the airlock testing was found acceptable by the NRC Staff. Appendix J, ¶ III.D.2(b)(ii) requires that "[a]ir locks opened during periods when containment integrity is not required by the plant's Technical Specifications shall be tested at the end of such periods at not less than P_a ."

In lieu of this requirement, the Licensee requested that the overall airlock leakage test at P_a be conducted only when maintenance has been performed on the airlock that could affect the airlock sealing capability. The Licensee stated that a full pressure test at P_a will require installing strongbacks on the inner door which is a cumbersome process requiring at least 12 hours. The Licensee further stated that the airlock leaktightness is assured if no maintenance which could affect the ability of the airlock to seal has been performed, by compliance with the 6-month periodic test requirements of ¶ III.D.2(b)(i) and the 3-day test requirements of ¶ III.D.2(b)(iii) of Appendix J.

Accordingly, the Staff concluded that the Licensee may substitute the seal leakage test for the full pressure test of ¶ III.D.2(b)(ii) when no maintenance has been performed on an airlock. Whenever maintenance has been performed on an airlock, the requirements of ¶ III.D.2(b)(ii) must still be met by the Licensee as reflected in the Plant's Technical Specifications.

As stated in § 6.2.6 of the SER and Supplement No. 3 to the SER, the Licensee requested an exemption regarding testing the main steam isolation valves (MSIV) at a pressure less than the containment peak pressure and excluding the measured leakage from the combined local leak rate test results.

Each main steam line is provided with two MSIVs that are positioned to provide better sealing in the direction of post-accident containment atmosphere leakage. In the event of a LOCA, the main steam leakage control system will maintain a negative pressure between the MSIVs. The effluent will be discharged into a volume where it will be processed by the Standby Gas Treatment System before being released to the environs. The design of the MSIVs is such that testing in the reverse direction tends to unseat the valve. Testing of the two valves simultaneously, between the valves, at design pressure, would lift the disc at the inboard valve. This would result in a meaningless test. The proposed test calls for a test pressure of 25 psig to avoid lifting the disc of the inboard valve. The total observed leakage through both valves (inboard and outboard) is then conservatively assigned to the penetration. The NRC

Staff concluded, based on the above rationale, that this test procedure is acceptable. Furthermore, the Staff concluded that excluding the leakage from the summation for the local leak rate tests is acceptable because the leakage has been accounted for separately in the radiological analysis of the site.

As stated in § 6.2.6 of the SER, the Licensee requested an exemption regarding the performance of local leak rate testing of traversing in-core probe (TIP) shear valves. The shear valve, by definition, if tested would be destroyed thus requiring replacement to permit the passage of the TIP during normal operations. Therefore the Staff found acceptable the replacement of the Appendix J leakage test requirement with selected bench tests and maintenance procedures that ensure that the valves will perform their function when called upon.

As stated in § 6.2.6 of the SER, the request for a one-time exemption from the requirement to perform local leak rate testing on seven Residual Heat Removal system valves was found acceptable. On the basis that these valves were exposed to the initial Integrated Leak Rate Test (ILRT) and that any leakage past these valves would have been included in the ILRT test results, the Staff believes that it is unlikely that degradation in the valves will occur during the period of the exemption in the first fuel cycle.

Containment Isolation

On September 21, 1984, the Licensee requested an exemption from GDC 56 regarding the containment isolation valves for the hydrogen recombiners and the Drywell Chilled Water and Reactor Enclosure Cooling Water systems.

The Licensee has provided a detailed technical basis for its conclusion that the probability of releases from the subject hydrogen recombiner lines penetrating containment is low. The NRC Staff addressed the issue in § 6.2.4 of the SER and SER Supplements No. 1 and 3. As discussed in SER Supplement No. 1, each of the two redundant hydrogen recombiner trains for post-accident hydrogen control has one automatic containment isolation valve in the line from the reaction chamber to the wet well. The second isolation barrier for each line penetrating containment is considered by the Licensee to be the closed piping system of the hydrogen recombiner trains. This represents a deviation from the explicit requirements of GDC 56 for penetrations of the primary containment that connect directly to the containment atmosphere. GDC 56 generally requires two isolation valves in each line penetrating reactor containment. The Licensee's evaluation that the system configuration, i.e., a closed

system outside containment, constitutes an acceptable isolation barrier was accepted by the NRC Staff as adequate for the first fuel cycle until the second isolation valve is installed.

The recombiner system was leak-tested in conjunction with the containment integrated leak rate test, so that the closed system rationale has been demonstrated and hence justified. Breach of the containment integrity would require a degradation of the recombiner system's components along with a failure of an existing isolation valve, which is judged by the Staff to be unlikely during the first cycle of operation.

As discussed in § 6.2.4 of the SER and SER Supplement No. 3, each of the lines associated with the Drywell Chilled Water (DCW) and the Reactor Enclosure Cooling Water (RECW) systems which penetrate primary containment have two isolation valves in them. The exemption request of the Licensee was with respect to the requirement that all containment isolation valves receive diverse containment automatic isolation signals. The Licensee requested that plant operation be permitted until the first refueling outage without having an automatic closure by diverse containment isolation signals for DCW outboard containment isolation valves and the RECW inboard and outboard containment isolation valves. The Licensee has committed to provide all of the containment isolation valves in these lines with diverse automatic isolation signals prior to startup after the first refueling outage. On the basis that (1) these lines do not open directly to the containment atmosphere or to the reactor coolant boundary, (2) these lines are designed to withstand a seismic event, and (3) the Licensee has committed to provide special interim operating instructions to isolate these lines should a LOCA occur, the Staff determined that operation of the plant during the first cycle without automatic isolation of these valves is acceptable.

B. Inadequate Design and Poor Plant Performance

The Petitioners appear to base their concerns with respect to plant performance principally upon the number and content of certain LERs which have been submitted by the Licensee regarding the Limerick facility, and the findings of a variety of NRC Inspection Reports, and the content of certain correspondence between the NRC Staff and the Licensee associated with the licensing of the Limerick facility.

The Petitioners have merely cited documents that have either been prepared by the NRC or submitted to the NRC. The Petitioners provide no new information or new analysis of the information in the documents and conclude, with no supporting evaluation, that the operating license should be revoked. In light of these conclusory arguments it might be

appropriate to rest upon the position that the Petitioners have provided no justification for the relief requested for each of the three categories of documents cited. I will, however, provide background and analysis to address the Petitioners' concerns that will: (1) explain how that documentation fits within the regulatory process; (2) summarize the Petitioners' apparent concerns; and (3) discuss and analyze the documentation in making an overall assessment as to the lack of significance in the cited documentation in the context of continued plant operation.

NRC Staff-Licensee Correspondence

In order to obtain a license from the NRC, a potential Licensee must submit an application for agency review. In the process of that review, the NRC Staff often finds the need for additional information from the Licensee to justify the adequacy of the Licensee's proposed design. There follows then a series of correspondence between the Licensee and the NRC Staff discussing and documenting a wide variety of design and operational issues related to the facility which is the subject of the licensing review. The correspondence may be extensive and extend over a lengthy period of time given the complexity of nuclear facilities. It is to this correspondence that the Petitioners point as a basis for alleged safety concerns at the Limerick facility. Indeed, just the opposite is true. With respect to the issues identified by the Staff, which are the subject of the correspondence referred to by Petitioners, the correspondence is evidence that the Staff is conducting a thorough and complete review of the issues of significance to assure that the facility will be properly designed and constructed.⁵

⁵ Petitioners' references to correspondence are generally unspecific. The Petitioners do, however, provide specificity with respect to one matter. The Petition states that several Licensee letters on tornado missiles and damage to the Ultimate Heat Sink "omit altogether the threat to safe shutdown from the design railway explosion which could simultaneously collapse the cooling towers and disable the water intake structure at the river." Petition of December 23, 1984, at 6. The Staff does not find it credible to require the assumption of a hazardous wind event, i.e., a tornado, severe enough to disable the Ultimate Heat Sink concurrent with a design basis transportation accident such as a railway boxcar explosion. The Petition provides no basis for such an assumption. Assuming a railroad boxcar explosion of sufficient severity to disable the nonsafety-related intake structure and the cooling towers, a highly unlikely event in itself, then the safety-related Ultimate Heat Sink spray pond remains to safely shut down the reactor. Most importantly, Petitioner FOE has already had a full opportunity to present this issue to the agency in the Limerick operating license proceeding. See Order (Concerning Proposed FOE Contentions on Hazards from Industrial Activities), issued by the Licensing Board sitting in the Limerick operating license proceeding on November 27, 1982 (unpublished), dismissing an FOE contention regarding propane railroad car explosions for want of an adequate basis. Having had an opportunity to present this issue in the operating licensee proceeding, Petitioner FOE may not now use the § 2.206 procedure to seek its reconsideration. See *General Public Utilities Nuclear Corp.* (Three Mile Island Nuclear Station, Units 1 and 2), (Oyster Creek Nuclear Generating Station), CLI-85-4, 21 NRC 561, 563-64 (1985).

Inspection Reports

The objectives of the NRC inspection program are to:

- (a) assess the safety status of the Licensee systems — both administrative and hardware;
- (b) verify Licensee compliance with NRC rules, regulations, orders and license conditions;
- (c) assure timely corrective actions are implemented to prevent recurrence of identified problems;
- (d) identify generic issues;
- (e) provide feedback to related NRC organizations such as program offices, hearing boards, and Staff offices on issues of concern.

The Regional Staff implements these objectives by performing inspections on nuclear power reactors while under construction and throughout the operational lifespan of the unit. Thus, as a reactor plant progresses through the phases of design, construction, preoperational readiness, startup, operation and decommissioning, the inspection program changes to meet the specific needs of each phase. An onsite Resident Inspector provides a continuous inspection-regulatory presence, as well as providing a direct contact between NRC management and the licensee. The inspection activity of the Resident Inspector is supplemented by professionals from the Regional Staff who perform specialized inspections in a wide variety of engineering and system disciplines, ranging from civil and structural to health physics and reactor core physics. The specialist inspectors provide a perspective that is different from, but complementary to, that of the Resident who by necessity is a generalist.

Regional inspection findings are documented in Inspection Reports. These inspection activities examine the licensee's performance in a wide variety of areas to assure that the licensee is conducting licensed activities safely. The activities undertaken are of an audit nature, spot checking licensee performance in order to form conclusions with respect to the licensee's overall performance.⁶

In addition to conducting its general inspection program through Resident and Regional personnel, a periodic Systematic Appraisal of Licensee Performance (SALP) is conducted by a review board of NRC Staff for the purpose of making an overall judgment as to the adequacy of the

⁶ The audit-type NRC inspection activities can be clearly understood with reference to a matter raised by the Petitioners dealing with certain surveillance tests required of the Licensee prior to initial criticality. Petitioners argue at page 5 of the February 25, 1985 submittal of the absence of any certification by the agency that all 120 surveillance tests required by License No. NPF-27 have been reviewed by the NRC. There is no requirement for any such certification nor does the NRC generally inspect 100% of the activities in a given area. In this instance, partial review of surveillance testing was conducted by the NRC and the testing conducted by the Licensee was found acceptable.

licensee's performance based upon a review of the inspections conducted over the assessment period, normally 1 year. A rating is given to the licensee in each of several functional areas (e.g., construction activities) based on the results of this SALP evaluation. It is important to stress that it is in the SALP report that the overall significance of inspection trends and findings is identified. For this reason, the latest SALP report, issued for the Limerick facility on April 26, 1985, will be extensively cited.

Inspections, in general, result in either acceptable findings, violations of NRC requirements, or unresolved issues. Violations are documented in a Notice of Violation issued to the licensee. Corrective action is required. *See* 10 C.F.R. § 2.201. The nature, extent and timing of corrective action is reviewed by the NRC to assure that it is adequate to resolve the problems found. Unresolved items are matters which do not necessarily rise to violations of NRC requirements but are of concern to NRC inspectors and warrant further review. After further review the inspector may determine the unresolved issue is acceptable, or may determine that it should be a violation.

It is important to note that while the Commission expects licensees to pay meticulous attention to detail and achieve a high standard of compliance with NRC requirements, errors may occur.⁷ NRC inspection activities discover violations of NRC requirements both in the construction and operation of facilities. Such violations are generally of minor significance. If major violations in construction or operational activities are identified, escalated enforcement action is considered by the agency including the issuance of civil penalties. If a truly major deficiency or deficiencies on the part of a licensee are identified through the inspection process, or otherwise, the agency is authorized to issue a variety of orders, including stop-work orders, to assure appropriate remedial action.

Isolated deficiencies in the licensee's program, however, do not necessarily undermine the program to such an extent as to give rise to a significant safety concern.⁸ What is required, when a violation is identi-

⁷ *Union Electric Co.* (Callaway Plant, Unit 1), ALAB-740, 18 NRC 343, 346 (1983); *Washington Public Power Supply System* (WPPSS Nuclear Project No. 2), DD-84-7, 19 NRC 899, 906 (1984). Although these cases refer to facility construction, the same principle applies to the facility operation. While licensees are expected to pay meticulous attention to detail and achieve a high standard of compliance with NRC requirements, *see* General Statement of Policy and Procedure for NRC Enforcement Actions, 10 C.F.R. Part 2, Appendix C, § 1, violations in the area of reactor operations at Severity Levels IV and V are not generally the subject of civil penalties. *Id.* § V.B.

⁸ *See, e.g., Wisconsin Electric Power Co.* (Point Beach Nuclear Plant, Units 1 and 2), DD-83-13, 18 NRC 721, 722 (1983) where escalated enforcement action including issuance of an order to show cause was considered inappropriate due to the limited safety significance of the violations involved at an
(Continued)

fied, is a careful assessment as to the significance of the violation, its cause, and the corrective action taken to preclude recurrence.

The Petitioners cite a number of Inspection Reports as identifying deficiencies in Limerick plant performance. *See*, for example, the letter of February 25, 1985, at 3. Petitioners also refer to the latest SALP report and a variety of other Inspection Reports as documenting numerous personnel errors by the Limerick Staff.⁹

The NRC inspection program at Limerick has been extensive. For the latest SALP period alone (December 1, 1983, through November 30, 1984) the NRC has expended nearly 9000 inspector-hours at Limerick, focusing in the areas of construction, preoperational and startup testing, operational readiness and plant operations. Based upon that inspection effort, I see no basis for the relief requested by Petitioners, as explained in more detail below.

Eleven inspections were conducted by Regional specialists in addition to continuing inspections by the Resident Inspectors in the area of construction during the latest SALP review period. These inspections included routine reviews of areas such as piping, electrical, instrumentation and controls, welding, preservice inspection and engineering/design for Unit 1, and storage maintenance for Unit 2. Special team inspections were conducted of the as-built configuration of the plant and of installation practices applied to the Power Generation Control Complex (PGCC). The NRC Nondestructive Examination (NDE) Van was used to independently evaluate the quality of welding and a special team inspection was conducted at the San Francisco office of the architect/engineer, Bechtel Power, to examine FSAR pipe break analyses and the use of certain computer codes. Further, a substantial amount of inspection

operating plant. *See also Petition for Emergency and Remedial Action*, CLI-78-6, 7 NRC 400, 405 (1978) where the Commission noted that not every regulatory violation mandated license suspension or facility shutdown.

⁹ The assertions made by the Petitioners with respect to Inspection Reports consist essentially of a restatement of Inspection Report findings. In one area, however, the Petition claims that an NRC Inspection Report was issued with willful deceptiveness. *See* Letter of December 23, 1984, at 5. Petitioners suggest that the incident of August 22, 1984, when a fuel bundle hit the spent fuel pool wall, constituted a violation of NRC requirements and consequently the finding in the Inspection Report, specifically Inspection Report No. 84-43, which concluded that no violations were identified, was willfully deceptive. In order to clarify the basis for the NRC finding, the following discussion is provided. During the course of the new fuel receipt and inspection process, NRC inspectors verified that adequate procedures had existed to perform each activity involved. Movement of new fuel into the spent fuel racks was an activity under the control of licensed operators who had been trained in this process. After the fuel bundle hit the pool wall, the Licensee was found to have implemented a conservative course of corrective actions. These actions included removal of the affected bundle from the pool, removal of the fuel bundle channel, and a reinspection of the bundle. Because the NRC determined that the Licensee's approach to this problem was adequate and that the event was isolated in nature, no violations of NRC requirements were identified.

effort was expended closing out open inspection items prior to issuance of the operating license.

The previous SALP assessment had found construction performance to be at a high level, concluding construction-related activities were well performed and managed, and that they exhibited good quality.

The Licensee maintained this good performance through the latest SALP assessment period. Significant amounts of NRC inspection effort bore out the conclusion that the quality of construction was maintained at a high level. The as-built team inspection performed a thorough review of the emergency service water system and the high pressure coolant injection system installation, including pipe supports and welding, electrical power and instrumentation associated with the two systems. The team compared the system configurations to the FSAR descriptions and performed independent measurements of piping and support details. Minor discrepancies were identified which were suitably addressed by Licensee management prior to licensing.

The NDE Van, along with an additional extensive structural welding inspection, independently verified the quality of ASME and AWS welding at Limerick. Included in these two inspections were independent checks of approximately 500 welds of various types and configurations. Further, these and additional inspections of welding and welder qualifications determined that both the Licensee and its constructor maintained good control over welding activities.

Fourteen inspections of preoperational testing activities and six inspections of startup testing activities were performed by Region-based inspectors during the latest SALP review period. In addition, the Resident Inspectors examined these areas on a daily basis. Based on an extensive review of tests and test results by the NRC, it appears that the test program has been adequately managed to assure satisfactory performance of those plant systems covered by it.

The Licensee's startup test program at Limerick used information obtained from other licensees with recent successful startup program experience. The Licensee utilized the program from Susquehanna Steam Electric Station as a basis to develop its own startup program.

The Licensee assigned General Electric (GE) as the lead organization to coordinate and implement the startup program with assistance from Bechtel. PECO personnel were responsible for the operation of the facility during the program in accordance with the operating license. Staffing levels of the Licensee and its contractors have been adequate.

Schedules developed correctly displayed the logic necessary to conduct all required startup tests. Procedures to support the startup test program have been reviewed by the NRC and were found to be comprehensive

and technically adequate with the exception of the procedure for the Loss of Offsite Power Test which is not yet issued.

The interface between the General Electric startup personnel and Licensee operations personnel was observed to be working well with good coordination. GE startup engineers have been assigned to operating shifts so that continuity between startup and operations personnel can be maintained.

QA/QC coverage of the startup program to date has been acceptable. QC was observed to provide surveillance coverage of the fuel load operation and control rod drive startup tests. Extensive QC coverage and QA audits for the remainder of the program are planned.

Region-based inspectors conducted ten inspections in the operational readiness area during the latest SALP review period. These included review of the Licensee's readiness for fuel receipt, storage, transfer and inspection; the operations Quality Assurance (QA) program; nonlicensed Staff training; maintenance and design control programs; and system acceptance by the station Staff. Additionally, a special team inspection was conducted to compare the facility's proposed technical specifications to as-built system conditions and to the implemented surveillance test procedures.

Approximately 1 month prior to receipt of the operating license, the station implemented the normal control room shift rotation. Since that time, the normal station operating and administrative procedures have been enforced for the control of plant activities. Thus, all system testing, maintenance and modifications are being controlled by these approved procedures. In general, these activities have been performed adequately.

Operator performance has been good; however, some weaknesses have been identified. Initial inspections indicated that shift turnover controls needed improvement to minimize noise levels and to limit the number of nonessential personnel in the control room. The Licensee has implemented acceptable corrective actions for these issues.

The control room operators displayed a professional attitude toward plant operations. Activities such as fuel loading have been performed well. However, shortly after license issuance, NRC noted that more operator vigilance and awareness toward control room annunciators were necessary. Improvements in this area were significant after Licensee management implemented corrective actions, but similar improvements for nonlicensed operators (e.g., radwaste operators) were also found to be necessary and have since been completed.

The Licensee's performance to date has not been error-free; however, as I have previously stated this is not the standard by which a license is issued. Based upon the Licensee's performance under its operating

license to date, the inspection of that performance, and the Licensee's response to identified problems and violations, the Licensee has demonstrated the ability to operate the facility safely and in conformance with NRC requirements.

It is important to note that the SALP process includes a review and analysis of Licensee violations occurring within the assessment period to evaluate overall significance and identify trends to be formally addressed by the Licensee. As depicted in Table 3 of the Limerick SALP report, dated April 26, 1985, the violations of license requirements total sixteen Severity Level IV, ten Severity Level V concerns and one deviation from license commitments. Appendix C of 10 C.F.R. Part 2, defines these categories of violations as minor and not cause for significant concern. The Licensee is required to formally address these concerns, and respond in writing to the NRC, detailing the corrective actions and results achieved, corrective actions to prevent recurrence, and provide the date when full compliance will be achieved.

Licensee Event Reports (LERs)

Commission regulations, specifically 10 C.F.R. § 50.73, require each licensee to make written reports of certain events to the NRC within certain prescribed timeframes. These are the LERs to which the Petitioners refer. LERs are submitted to both the NRC headquarters and the Regional offices for consideration. LERs are reviewed in headquarters for identification of any trend in events and the need to alert licensees to generic implications associated with such events. In the short term, LERs are reviewed by both Regional and Resident personnel to assess significance with respect to the particular facility.¹⁰

The Petitioners essentially argue that the Limerick facility has deficient equipment and procedures which, in interaction with poorly trained personnel and questionable supervision, have combined to produce an alarming series of LERs. Petitioners argue that the LERs give only "a hint of the true picture of equipment failures, construction deficiencies, procedural gaps, and maintenance and operator blunders by PECO at the Limerick plant." The Petitioners claim that the Licensee's own analysis of the various incidents that have occurred at the Limerick facility ascribes the causes to (1) personnel error, (2) design, manufacturing, construction and installation error, and (3) procedural defi-

¹⁰ See NUREG-1022, "Licensee Event Report System," September 1983, for a more complete discussion of the LER System. A Supplement to NUREG-1022 was also issued in February 1984.

ciencies and other causes. Based on this performance by the Limerick facility and its personnel, the Petition urges that the NRC immediately institute proceedings pursuant to 10 C.F.R. § 2.206 by issuance of an order to show cause why NRC License No. NFP-27 for the Limerick facility should not be revoked.

The apparent trend in operator and technician errors was formally transmitted to the Licensee as a Regional concern in a January 11, 1985 letter which forwarded an Inspection Report containing findings involving personnel errors and requested a response to this concern. Prior to the receipt of the Licensee's response, the Limerick SALP report for the period between December 1, 1983, and November 30, 1984, also noted the trend in personnel errors.

The Licensee's initial response to the Regional concern was provided by letter dated February 11, 1985, and a followup meeting was held with Licensee management regarding proposed corrective actions on February 22, 1985. A subsequent letter, dated April 2, 1985, provided a detailed discussion of the Licensee's corrective actions in this area.

The Licensee's corrective action program addressed three principal areas for improvement. The improvement areas were plant modifications to correct conditions which provided opportunity for personnel errors, actions to address personnel areas, and programmatic improvements. The improvement measures taken to address personnel errors included additional training, a stationwide Operator Excellence Program, and more direct management control of operations.

In addition to the above, Region I has conducted an independent review of reportable events at Limerick from the date of the Limerick fuel load license, October 26, 1984, through May 7, 1985.¹¹ The effort included telephone reports made under 10 C.F.R. § 50.72, and Licensee Event Reports (LERs) made under 10 C.F.R. § 50.73. Since 10 C.F.R. § 50.72 reports are based on preliminary information where the root cause of the event may not yet be clear, the Region I review primarily used the written LERs and, where additional details were needed, the Regional Inspection Reports concerning the events were used.

The Region I review reached the following conclusions. Of ninety-four LERs submitted on events through May 7, 1985, thirty-six were caused by direct personnel error. Additional licensee initiatives in this area include plant modifications which are in progress to prevent grounds and shorts during surveillance testing of various electronic instruments in restricted spaces, and to minimize spurious signals experienced during

¹¹ See Enclosures 1 and 2, R. Starostecki (NRC) Memorandum to H. Thompson (NRC), dated March 1, 1985, "Limerick Operating Experience," and updated LER Summary, "Limerick LERs."

venting and filling differential pressure instruments. Together these two problems contributed to eleven of the direct personnel error events. The corrective actions taken by the Licensee appear to have been effective as indicated by the recent decrease in the number of reportable events related to direct personnel error; only ten of the thirty-six LERs caused by direct personnel error occurred after February 1, 1985.

Equipment failures caused thirty-one of the ninety-four total events; seventeen of these events were due to the two separate repetitive problems for which plant modifications are being pursued. One of the problems involved ten control room ventilation isolations caused by the breaking of the sample tape for the control room chlorine analyzer. Another problem involved seven reactor water cleanup (RWCU) system isolations caused by a spurious high temperature signal generated while reading RWCU system temperatures.

In considering whether a personnel error trend exists, the volume of Limerick LERs was reviewed considering the changes in reporting requirements due to the 1984 revision to 10 C.F.R. § 50.73. Susquehanna 1, which was licensed to load fuel on July 17, 1982, was the most recent lead unit BWR to start up in Region I. During a comparable time period, about the first 2 months after receipt of an operating license, Susquehanna reported ten LERs which resulted from personnel error. Of Limerick's fourteen LERs caused by direct personnel error in 1984 only eight would have been reportable prior to January 1, 1984. As an example, the actuation of an Emergency Safety Feature (ESF) such as an inadvertent system isolation is now reportable, whereas prior to January 1, 1984, it was not. Of the forty-three LERs Limerick submitted in 1984, approximately twenty-five were ESF actuations. In total, these facts suggest that Limerick's reportable personnel errors and volume of LERs do not vary significantly from industry experience, when considering the changes in reporting requirements.

Further, Region I has considered the safety significance of the reported events and has determined that none of the events resulted in a serious degradation of safety barriers. In addition, the Staff believes that the Licensee has been conservative in reporting events and that no reportable events have occurred which were not reported.

Based upon the above, I conclude that the number and types of LERs from Limerick do not justify the relief requested but rather are consistent with a new plant startup and of a conservative threshold by the Licensee for reporting.

C. The Independent Design Verification Program

Petitioners make reference to the IDVP performed for the Limerick facility Unit 1 Core Spray System by Torrey Pines Technology. While acknowledging that the Torrey Pines report of November 1984 concludes that the system will probably function as planned, Petitioners note that there are two disturbing features which cast a cloud over the design work done by the General Electric Company (GE) and the planning and calculations for safety features performed by Bechtel Power Corp. The Petitioners' February 25, 1985 letter (at 5-6) stated that the GE design control program was missing ten items for the Core Spray System design needed to authenticate design adequacy. Petitioners question the after-the-fact justification for these ten items and argue that the Core Spray System is suspect. Far more reaching, however, in the view of the Petitioners, is the uncertainty raised concerning other GE design work for Limerick for the same period in which document unavailability was identified for the Core Spray System. Petitioners question the adequacy of the overall GE design control program in light of the incomplete nature of the documentation associated with the Core Spray System and argue that the license for the Limerick facility should be revoked until proper verification of this overall aspect of the GE design for equipment and systems has been completed.

As discussed in the Torrey Pines IDVP report and in Supplement No. 4 to the SER, Potential Finding Report No. 26 (PFR-026) identified that GE was unable to retrieve ten Engineering Review Memorandums (ERM) from its records. The ERM is required by GE procedures to document that technical design reviews have been performed on GE design documents. The requirement to have retrievability was only applicable to three of the subject ten ERMs (i.e., those that were generated during the period from June 12, 1972 to 1974). The seven remaining ERMs were applicable to documents issued prior to June 12, 1972, and hence the requirement for document retrievability was not applicable. To ensure that the technical design reviews had been adequately performed, the Licensee authorized GE to re-review the ten subject design documents. The results of this re-review produced no hardware changes to the original design and only resulted in a few minor editorial changes to the design documents. Based upon GE's re-review of all ten associated design documents, and the minor nature of the corrections, the Staff believes that the GE design and the design process are adequate and that this issue is reduced to an insignificant concern regarding the failure by GE to follow its in-house procedures. The Staff concludes that the corrective action taken by PECO is acceptable and the Staff has no further concerns in this area.

Petitioners further argue that the Torrey Pines study brought to light other serious flaws in the Limerick facility, specifically in the facility's safe shutdown capability following postulated breaks in the core spray line. Petitioners claim that the study found errors affecting the Automatic Depressurization System (ADS), specifically (a) taking credit for instruments which could also be lost as a consequence of a line break; (b) taking credit for instruments which were not identified on the instrument list and were not in the plant design; and (c) not assuming the worst-case single active failure with the line break. Petitioners argue that other errors apply to the Reactor Protection System (RPS) and the Primary Containment and Reactor Vessel Isolation Control System (PCR-VICS). Petitioners argue that the Torrey Pines study did not assess the impact of these errors beyond their effect on the Core Spray System and that because of the repetitive nature of the errors, other errors of a similar nature might be present in the Limerick facility design. Petitioners further argue that corrective action proposed by the Licensee, specifically safety evaluation calculations associated with jet impingement, does not address the concern identified. What is required, Petitioners argue, is a complete review of design and construction of all systems and components related to the plant's safe shutdown capability.

In this regard, the Staff notes that PFRs 023 and 024, both classified as findings, identified errors and inconsistencies in the analysis that was used to demonstrate safe shutdown capability following postulated breaks in core spray lines. Bechtel Power Corporation (BPC) agreed that there were specific areas in the analysis needing clarification or correction but did not agree that plant safe shutdown capability had not been demonstrated. Nevertheless, PECO proposed to take action to review and revise, as necessary, all safety evaluation calculations associated with jet impingement and to provide a description of the methodology of the analysis, including a discussion of how worst-case single failures are identified. At the meeting in Bethesda on January 10, 1985, PECO stated that the corrective action associated with this item had been completed and that no hardware changes were required but that minor changes in documentation had been incorporated. At the subsequent visit to BPC's offices on January 15, 1985, the Staff reviewed BPC's calculations. As a result of its review, the Staff concludes that the corrective action in this area is acceptable.

Comments of M.I. Lewis

As noted in the introduction to this Decision, I indicated to Mr. Lewis that I would consider his comments of February 15, 1985, in reaching

my decision with respect to the Petition. Mr. Lewis' comments are essentially argument regarding the propriety of the continued operation of the Limerick facility. Specific factual concerns are generally absent. In the absence of the specific factual basis called for by the regulations,¹² my inquiry must necessarily be limited. My responsibility is to conduct an inquiry appropriate to the facts asserted. And in the absence of a specific factual basis, my inquiry is a limited one.

Mr. Lewis alleges that the Limerick facility stands on concrete that is so porous that a man could sit in some of the voids. No further specificity is provided. In the absence of a more definite factual basis, I decline to pursue this matter further.

Mr. Lewis further alleges that a 13-inch jog is present in one of the Limerick cooling towers. Although somewhat specific, I decline to pursue this matter as the Limerick facility cooling towers are not safety-related structures and any deficiencies in them would therefore not affect public health and safety.

Mr. Lewis further alleges that labor unrest on the Limerick site has lead to allegations by subcontractors of alcohol consumption on site, poor welding, security violations and many other safety-related deficiencies. Violations and "open item" evaluations have followed some, but not all, of the allegations. Again, these claims by Mr. Lewis are unspecific in nature and do not form the basis for any further factual inquiry. To the extent that Mr. Lewis suggests that violations have been identified in these areas by the NRC and "open items" have been noted, this would indicate that the NRC inspection program has pursued specific allegations received in these areas to determine their significance to regulatory requirements. It is the NRC's policy to pursue all specific allegations with potential safety significance. However, the vague and unspecified claims made by Mr. Lewis in these areas do not warrant any further inquiry on my part.

Mr. Lewis' claims with respect to weld deficiencies are likewise vague and unspecified and thus unsuitable for further inquiry. I would note, however, that this concern of Mr. Lewis was the subject of inquiry by the Atomic Safety and Licensing Board reviewing the operating license for the Limerick facility.¹³ The Commission has most recently noted that the principle is now firmly established that the remedy afforded by

¹² See discussion at pp. 153-54, *supra*.

¹³ LBP-84-31, 20 NRC 446, 509 *et seq.* (1984).

§ 2.206 should not be used as a means to reopen issues previously adjudicated.¹⁴ On this basis, I decline to consider the issue further.

The remaining concerns raised by Mr. Lewis, i.e., NRC Staff bias and loyalty to the Licensee, NRC "nitpicking," and the claim that the operating history of the Limerick facility mimics that of the Three Mile Island, Unit 2 facility are fundamentally argumentative, devoid of any specific factual basis, and so do not warrant further inquiry.

Comments of F.R. Romano

As noted in the Introduction to this Decision, I informed Mr. Frank R. Romano that I would consider his comments dated March 11, 1985, in reaching my decision with respect to the Petition.

Mr. Romano's comments, in part, are generally supportive of the concerns raised by Petitioners, particularly with the respect to the issue of LERs. Mr. Romano provides no additional specific information in addition to that provided in the Petition on this issue. As noted in this decision at pp. 165-67, *supra*, the NRC's assessment of the LERs submitted by the Licensee with respect to the operation of the Limerick facility to date does not warrant the initiation of enforcement proceedings.

Mr. Romano raises essentially two other issues in his March 11, 1985 letter. Both of these issues have already received consideration by the Atomic Safety and Licensing Boards convened to consider the operating license application for the Limerick facility.

Mr. Romano discusses his concerns with respect to welding and notes that he had framed his concerns as proposed contentions to the Atomic Safety and Licensing Board sitting in the Limerick operating license proceeding. Mr. Romano has therefore had his opportunity to have the agency consider this matter.¹⁵

The other concern raised by Mr. Romano, namely the sheltering option with respect to emergency preparedness at the Limerick facility, has also been the subject of adjudication. The Atomic Safety and Licensing Board sitting in the operating license proceeding has considered

¹⁴ CLI-85-4, *supra* note 5. While the Commission recognized that this principle in the past has been applied to prevent *parties* to a proceeding from seeking reconsideration of issues previously decided, the Commission in its decision extended this principle to those not parties to a proceeding in the interest of finality to administrative decisionmaking. The principle thus becomes whether or not *an issue* offered for consideration under § 2.206 has been previously adjudicated in a Commission proceeding. If so, and in the absence of any significant new information, neither a party nor nonparty may raise this issue for consideration by an Office Director pursuant to § 2.206.

¹⁵ See notes 13 & 14, *supra*.

issues related to emergency planning and has rendered a decision with respect to them.¹⁶

With respect to both of these matters, i.e., welding and sheltering, Mr. Romano simply seeks to relitigate issues already decided by adjudicatory boards sitting in the Limerick operating license proceeding. As noted above, the Commission has expressly barred the use of § 2.206 procedures to relitigate issues previously adjudicated. In this instance, Mr. Romano was a party to the proceedings wherein these issues were considered. Because the Petitioners have had an opportunity to receive agency consideration of these questions, I decline to further pursue either of these issues.

CONCLUSION

For the reasons discussed above, none of the issues identified by Petitioners in their filings or in the comments of Mr. Lewis and Mr. Romano warrant the initiation of enforcement proceedings. Accordingly, Petitioners' request for action pursuant to § 2.206 is denied. As provided in 10 C.F.R. § 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 29th day of July 1985.

[The enclosures have been omitted from this publication but may be found in the NRC Public Document Room, 1717 H Street, NW, Washington, DC 20555.]

¹⁶ LBP-85-14, 21 NRC 1219 (1985). Sheltering issues are specifically addressed at 21 NRC 1303-05, 1344.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Nunzio J. Palladino, Chairman
Thomas M. Roberts
Frederick M. Bernthal
James K. Asselstine
Lando W. Zech, Jr.

In the Matter of

Docket No. PRM-50-35

JOHN L. NANTZ

July 26, 1985

The Nuclear Regulatory Commission denies a petition for rulemaking submitted by John L. Nantz. The Petitioner requested that the Commission adopt regulations to establish a formal procedure for Commission review of decisions to close advisory committee meetings or portions of those meetings. The petition is being denied on the grounds that current procedures are adequate to assure that advisory committees' use of exemptions from the requirement for open meetings are adequately justified and because Commission review would be an inefficient and unwarranted use of the Commission's resources.

ADVISORY COMMITTEES: MEETING CLOSURES

The Commission concludes that current procedures for rulings on closure determinations for advisory committee meetings are adequate.

ATOMIC ENERGY ACT: DELEGATION OF AUTHORITY

In the absence of any statutory prohibition, the Commission concludes that its delegation of authority to rule on closure determinations for advisory committee meetings is a proper exercise of its authority pursuant to § 161n of the Atomic Energy Act of 1954, as amended.

NRC: COMMISSION POLICY

Establishment of a formal procedure for Commission review of advisory committee closures would diverge from a strong policy of the Commission to extricate itself from nonessential procedural matters to conserve its resources for paramount responsibilities.

DENIAL OF PETITION FOR RULEMAKING

On October 26, 1984, the Commission published notice of receipt of a petition for rulemaking from John L. Nantz in which he requested that the Commission amend its regulations to establish a formal procedure to allow interested persons to petition the Commission for review of decisions to close advisory committee meetings or portions of those meetings (49 Fed. Reg. 43,070). That notice fully explicated the Petitioner's view on why a change was desirable and set forth the rule change that the Petitioner had proposed.

In brief, the Petitioner maintains that current Commission rules do not establish authority for ruling on appeals of closure determinations for meetings of advisory committees made, pursuant to the Commission's delegation and with the advice of the General Counsel,¹ by the Assistant Secretary as the Advisory Committee Management Officer.

The Commission sought public comment on the petition during a 2-month period.

The Commission received four comment letters on this proposal. Three commenters supported the petition in light of broad principles favoring open meetings and public participation; however, none of the three addressed specifically the appeal process proposed by the Petitioner or any problems related specifically to any unwarranted closing of advisory committee meetings.

The remaining commenter, Yankee Atomic Electric Co., asserted that under current practice there are adequate procedures to assure that advisory committees' use of exemptions from the requirement for open meetings are adequately justified. In particular, this commenter referred

¹ The petition also suggests that such a delegation may be improper, reasoning that because § 8(b) of the Federal Advisory Committee Act (FACA) permits delegation of certain specific functions to the Advisory Committee Management Officer (ACMO), it is implied that other functions may not be delegated; but the requirement of that section that the head of an agency "designate," not "delegate," an ACMO to perform certain functions does not speak to, let alone answer, the question whether the function of deciding meeting closings may be delegated by the agency head to another. In the absence of any prohibition, the Commission concludes that its delegation is a proper exercise of its authority pursuant to § 161n of the Atomic Energy Act of 1954, as amended.

to the Federal Advisory Committee Act's requirement that any determination to close an advisory committee meeting "shall be in writing and shall contain the reasons for such determination. [5 U.S.C., Appendix 1, § 10(d)]." The commenter properly deduced that the written basis for closing must be sufficient for a reviewing court to determine whether the meeting was properly closed. *See, e.g., Nader v. Dunlop*, 370 F. Supp. 177 (D.D.C. 1973). In sum, the commenter concluded that "it is not apparent that the Petitioner's recommended procedures are a necessary or preferred substitute for proper enforcement of current provisions in the Act."

The Commission agrees with Yankee Atomic Electric Co. that the current procedures are adequate for the reasons stated. Moreover, the practice whereby the Advisory Committee Management Officer reconsiders his own decisions on appeal parallels the procedure for appeal of closure of Commission meetings where it is the Commission itself that reconsiders its earlier decision. In addition, the Commission notes that the procedure Mr. Nantz supports would be impractical and would diverge from a strong policy of the Commission to extricate itself from nonessential procedural matters in order to conserve its resources for health and safety matters and matters of common defense and security which are its paramount responsibilities.

The Petitioner argued that because the Commission makes the ultimate decision with respect to its own meeting closure, it should be the final level of review for advisory committee closures as well. This ignores the practical distinction that for its own meetings the Commission is already thoroughly cognizant of what is expected to be discussed and the analysis underlying closure. In order to rule on advisory committee closures, the Commission would have to be thoroughly briefed on the specific purpose of the particular meeting in question, what discussion was anticipated, and what analysis supported the closure decision. In the Commission's view, the expenditure of its resources on this undertaking would be unwarranted. Absent any contrary statutory provision, the Commission believes that any necessary review would more reasonably be undertaken by its delegate, the Assistant Secretary, with the advice of the General Counsel. The Commission notes that the Assistant Secretary in his capacity as Advisory Committee Management Officer, would be informed already of the anticipated meeting content and could more

efficiently and more expeditiously conduct any review or reconsideration. Accordingly, the Commission determines that rulemaking is neither necessary nor desirable at this time and denies the petition.

For the Nuclear Regulatory
Commission

Samuel J. Chilk
Secretary of the Commission

Dated at Washington, D.C.,
this 26th day of July 1985.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Nunzio J. Palladino, Chairman
Thomas M. Roberts
James K. Asselstine
Frederick M. Bernthal
Lando W. Zech, Jr.

In the Matter of

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

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

August 1, 1985

The Commission authorizes the issuance of a full-power operating license for the Diablo Canyon Nuclear Power Plant Unit 2 upon finding that all matters have been adequately resolved and denies the Joint Intervenors' request to stay the effectiveness of such authorization for failure to meet the stay criteria in 10 C.F.R. § 2.788(e).

MEMORANDUM AND ORDER

INTRODUCTION

This Order concludes the Nuclear Regulatory Commission's ("NRC" or "Commission") consideration of whether to authorize the issuance to Pacific Gas and Electric Company ("PG&E") of a full-power operating license for the Diablo Canyon Nuclear Power Plant, Unit 2 ("Diablo Canyon Unit 2"). This consideration includes a conclusion of the formal

proceeding on contested issues regarding Diablo Canyon Unit 2 as well as affirmative findings on the successful resolution of uncontested issues. The Commission, for the reasons discussed below, finds that all matters have been resolved adequately to authorize the issuance of a full-power operating license for Diablo Canyon Unit 2.

DISCUSSION

ALAB-811

In ALAB-811 (21 NRC 1622 (1985)), the Appeal Board determined that no further hearings were necessary to resolve the design issues with respect to Unit 2 and found that the Unit 2 verification program was sufficient to establish that the design of Unit 2 was satisfactory and that therefore there was reasonable assurance that Unit 2 could be operated without endangering the health and safety of the public. A petition for Commission review of that decision was then filed. The Commission has reviewed this petition but finds it to be without merit. Accordingly, it is denied.

Stay Request

By letter dated July 24, 1985, the San Luis Obispo Mothers for Peace, *et al.* ("Joint Intervenors") applied to the Commission for an order staying the effectiveness of any authorization by the Commission of the issuance of a license for full-power operation of Diablo Canyon Unit 2. In attempting to meet the stay criteria,¹ the Joint Intervenors advance three arguments in support of their likelihood of prevailing on the merits: (1) the failure of the Commission to permit consideration of seismic effects on emergency planning; (2) the refusal of the Appeal Board, in ALAB-782 (20 NRC 838 (1984)), to reopen the record to consider new information which allegedly undermines the Appeal Board's findings in ALAB-644, 13 NRC 903 (1981); and (3) an allegation that the Appeal Board's decision in ALAB-811, approving the design adequacy of Unit 2, is not supported by substantial evidence.

The Commission has already fully considered the question of whether its regulations or special circumstances require consideration of the

¹ The factors prescribed by 10 C.F.R. § 2.788(e) to be considered in connection with a request for stay 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.

effect of seismic events on emergency planning at Diablo Canyon in the context of the full-power licensing of Unit 1. See CLI-84-12, 20 NRC 249 (1984). This matter was the subject of a petition for review to the United States Court of Appeals for the District of Columbia Circuit and is scheduled for rehearing *en banc*.² Under 28 U.S.C § 2347(c) the Commission should not, without judicial approval, reconsider a decision after the filing of a petition for judicial review.³ Moreover, the Court, in the same Order, explicitly declined to stay the operating license pending the rehearing *en banc*. Thus the full Court did not regard the reopening of this issue as warranting a stay of the license.

The Joint Intervenors assert that new seismic information calls into question the Appeal Board's conclusion, in ALAB-644, that the seismic design criteria for Diablo Canyon are adequate. The Joint Intervenors moved the Appeal Board to reopen the record to consider this information but a majority of the Board ruled in ALAB-782 that the motion could not be considered for lack of jurisdiction. The Commission has declined to review that decision. The fact that the adjudicatory record was not reopened does not mean that this information has been ignored by the Commission. On the contrary, the Commission, in its order authorizing a full-power license for Diablo Canyon Unit 1, CLI-84-13, 20 NRC 267, 275-78 (1984), itself reviewed the same new geological information presented in the reopening motion and found that it did not undermine ALAB-644. Consequently, had the Joint Intervenors submitted their motion to the Commission, the Commission would have found that the reopening standard was not met. Finally, the Commission has included a condition in the license for Unit 1 requiring that the Pacific Gas and Electric Company (PG&E) conduct a seismic reevaluation, thus assuring that the seismic design of Diablo Canyon will be subject to continued scrutiny.

Finally, the Joint Intervenors allege that the Appeal Board's decision in ALAB-811, approving the adequacy of design of Unit 2, is not based on substantial evidence and thus the Commission can have no reasonable assurance that Unit 2's design is consistent with Commission regulations. The scope of the Unit 2 verification program had been placed on the record at the hearings leading to the Board's decision in ALAB-763, 19 NRC 571 (1984). The results of that program, however, were not addressed because it was yet ongoing at that time. In ALAB-811, the Board rejected the Joint Intervenors' position that this reason alone necessitated further hearings. In addition to the evidence on the scope

² *San Luis Obispo Mothers for Peace v. NRC*, No. 84-1410 (May 1, 1985).

³ See, e.g., *American Farm Lines v. Black Ball Freight Service*, 397 U.S. 532, 540 (1970).

of the Unit 2 verification program, the record contained detailed evidence of the extent and the results of the Unit 1 verification program. Thus there was sufficient evidence in the record to make findings as to the adequacy of the design of Unit 2 given the virtual identity of design of the two units.

In sum, the Joint Intervenors have not established that they are likely to demonstrate a lack of reasonable assurance that the seismic design is adequate. With respect to the other factors of the stay criteria, Joint Intervenors assert that they will suffer irreparable injury because they are put at risk by full-power operation and because it may become more difficult or more costly to adopt any necessary modifications to the plant. Mere exposure to risk, however, does not constitute irreparable injury if the risk, as here, is so low as to be remote and speculative and any difficulty or expense in adopting necessary modifications is not an injury to Joint Intervenors. Moreover, the harm to others posed by even a short delay in permitting operation of a fully constructed and tested nuclear power plant is not *de minimis* in terms of its economic effect on the licensee and its ratepayers. The Commission has determined that there is reasonable assurance that the activities authorized by the operating license can be conducted without endangering the health and safety of the public, and that such activities will be conducted in compliance with Commission regulations and the license. In these circumstances, the public interest lies in the use of this plant and in the orderly functioning of the regulatory process. Accordingly, the request for a stay is denied.

Allegations

Since 1983, the Commission has received numerous allegations regarding alleged deficiencies in the design, construction and operation of both units of the Diablo Canyon facility and the licensee's management of those activities. All allegations have been handled by the Diablo Canyon Allegation Management Program ("DCAMP") which is described in Supplements 21 and 22 to the Safety Evaluation Report ("SSER" 21 and 22). See CLI-84-13, *supra*, 20 NRC at 273. The status of allegation resolution as of July 8, 1984, was reviewed in SSER 26 and considered by the Commission prior to its authorizing the issuance of a full-power operating license for Diablo Canyon Unit 1. 20 NRC at 273-74.

Since then DCAMP has made substantial additional progress in resolving allegations. In SSER 28, the Staff reported on the status of allegations received through March 1, 1985, and discussed the Staff's review of

these allegations through March 31, 1985.⁴ The Staff's preliminary ("screening") review of all of those allegations indicated that none of them is of sufficient safety significance to preclude the continued operation of Diablo Canyon Unit 1 or the full-power operation of Diablo Canyon Unit 2. The Staff has evaluated the allegations in sufficient detail to determine that even if they ultimately prove correct, failure to resolve them would not significantly affect public health and safety. SSER 28 at 4-1.⁵ Since making that report, the Staff, at the Commission meeting of August 1, 1985, has updated the status of the resolution of pending allegations and reaffirmed its previous conclusions. Under these circumstances, the Commission finds no reason to defer full-power operation of Diablo Canyon Unit 2 pending the formal resolution of the remaining outstanding allegations.

Internal Review Program

PG&E initiated an Internal Review Program (IRP) for Diablo Canyon Unit 2 to determine whether concerns raised regarding Diablo Canyon Unit 1 were applicable to Unit 2 and whether the concerns identified as being applicable to Unit 2 were resolved adequately. These concerns included all matters considered by the Independent Design Verification Program ("IDVP"), the PG&E Internal Technical Program ("ITP") and issues raised by the NRC Staff for Unit 1. The NRC Staff has evaluated the programmatic and technical aspects of the IRP. In addition, the Staff has independently audited and evaluated the seismic design of certain civil structures and systems for Diablo Canyon Unit 2.

The Staff reported the results of these evaluations in SSER 29. All but two items were found to have been satisfactorily completed for full-power operation. Those two items, analysis of the shear friction along a construction joint in the turbine building and the seismic analysis of the pipeway, have now been completed satisfactorily.

Piping Systems and Pipe Supports

The NRC has conducted a broad-based technical review and evaluation of the design and analysis of piping systems in Diablo Canyon Unit

⁴ DCAMP has been modified to include the referral of some allegations to PG&E for resolution. The Staff's allegation Review Board reviewed PG&E's responses and has audited PG&E's resolutions. They were found to be adequate. SSER 28 at 3-1.

⁵ Of the 1665 allegations reviewed, 1407 were found applicable to Unit 2. Of those, 1147 have been found resolved. Additional allegations submitted by letter dated March 14, 1985, are currently being screened in accordance with the criteria set out in the Commission's Policy Statement of March 19, 1985. 50 Fed. Reg. 11,030.

2. The review was conducted by a special Review Team composed of members of the NRC Staff and consultants from national laboratories and private companies. The purpose of this effort was: (1) to determine whether safety-related piping and supports in Unit 2 had been properly evaluated; and (2) whether the piping and support issues raised by Unit 1 found applicable to Unit 2 had been considered and resolved.

The NRC Staff has reported the results of the review and evaluation in SSER 30. Some concerns were identified during the evaluation. All have been resolved or determined not to be of safety significance. The Review Team determined that issues which pertained to Unit 1 piping and pipe supports and were applicable to Unit 2 have been satisfactorily addressed and resolved for Unit 2. Based on this evaluation, the Staff has concluded that Unit 2 meets all applicable licensing criteria in this area.

Miscellaneous Matters

In addition to the specific issues discussed above, the NRC Staff has addressed in SSER 31 twenty-one items or classes of items which were pertinent to the low-power licensing decision on Diablo Canyon Unit 2. As a result of that review, the Staff identified eleven items or classes of items requiring further action prior to a full-power operating license for Unit 2. The Staff now has reported that all of these items have been addressed satisfactorily for the purposes of full-power operation.

Operating Experience

The Staff has reported that Diablo Canyon Unit 2 for the first 2 months of operation at low power had a more favorable operating record than any other recently licensed plant operated at low power. In particular, there were no events reportable under 10 C.F.R. § 50.72 nor was any Licensee Event Report ("LER") issued. This is to be compared with an average of eight reports under § 50.72 and seven LERs for seven recently licensed pressurized water reactors. In the last month, only two minor reportable events occurred. While this may be explained, in part, by the fact that Unit 2 did not reach criticality during this period, and some improvement in attention to detail may be warranted, the experience to date is still excellent.

CONCLUSION

For the reasons set out above, the Commission has determined that the full-power license for Diablo Canyon Unit 2 may be issued by the Director, NRR. Joint Intervenors have requested a brief stay of the effectiveness of this Order to permit the orderly processing of a request for judicial review. However, PG&E has informed us by letter of July 26, 1985, that the low-power test program will not be completed until August 16, 1985. Thus, there is no need for a stay in order to assure orderly judicial review, and, accordingly, we decline to stay the effectiveness of this licensing decision.

It is so ORDERED.

For the Commission

SAMUEL J. CHILK
Secretary of the Commission

Dated at Washington, D.C.,
this 1st day of August 1985.

SEPARATE VIEWS OF COMMISSIONER ASSELSTINE

I dissent from this Order. I would not grant PG&E a license to operate Diablo Canyon Unit 2. My reasons for voting against issuance of the license are the same reasons I voted against the issuance of an operating license for Diablo Canyon Unit 1. Those reasons have been set out in detail in CLI-84-12 and CLI-84-13 so I will not repeat them here. *See Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), CLI-84-12, 20 NRC 249 (1984); CLI-84-13, 20 NRC 267 (1984).

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Nunzio J. Palladino, Chairman
Thomas M. Roberts
James K. Asselstine
Frederick M. Bernthal
Lando W. Zech, Jr.

In the Matter of

Docket Nos. 50-352-OL
50-353-OL

PHILADELPHIA ELECTRIC COMPANY
(Limerick Generating Station,
Units 1 and 2)

August 8, 1985

The Commission addressed all the comments raised by the Graterford inmates and found that neither these comments nor the Staff briefing raised any issues which warranted staying effectiveness of the Licensing Board's authorization for issuance of a full-power license for Limerick Generating Station, Unit 1. Accordingly, the Commission made the authorization immediately effective.

MEMORANDUM AND ORDER

On July 22, 1985, the Atomic Safety and Licensing Board ("Licensing Board") issued its Fourth Partial Initial Decision ("PID") which resolved all remaining contested issues in favor of the Licensee, Philadelphia Electric Company ("PECo"), and authorized the Director, Office of Nuclear Reactor Regulation ("Director") to issue PECo a full-power

operating license for the Limerick Generating Station ("Limerick").¹ Comments on that PID were submitted by the inmates of the State Correctional Institution at Graterford, Pennsylvania ("inmates"). The Commission has reviewed the PID and the inmates' comments on it in accordance with the criteria in 10 C.F.R. § 2.764(f)(2).² For the reasons stated below, the Commission finds no reason to stay the effectiveness of the PID.

The inmates raised both procedural and substantive concerns. First, the inmates contend that their hearing rights were infringed. They support this assertion with a recitation of previous procedural rulings by the Licensing Board. The inmates' concerns in these areas were addressed by the Commission in CLI-85-11, 21 NRC 1585 (1985), and by the Atomic Safety and Licensing Appeal Board in the course of appellate review, ALAB-809, 21 NRC 1605 (1985). Remedial actions were taken in these decisions to protect the inmates' rights. Accordingly, the actions complained of do not serve as a basis for delaying effectiveness.

The inmates also asserted that the expedited schedule for discovery and filing proposed findings of fact and conclusions of law in the recent hearing violated their rights under the NRC regulations. However, the record shows that the inmates agreed to this schedule in a telephone conference before commencement of discovery (Tr. 20,722-47) and did not express any objections until the hearings were under way (Tr. 20,902). Therefore, we believe they have waived any objection on this issue.³

The inmates also contended that the Licensing Board erred in rejecting several of the bases supporting their contention. The inmates submitted one general contention with eight bases. The Licensing Board admitted the contention but limited the hearing to two of the stated bases. The

¹ By a previous Memorandum, CLI-85-13, 22 NRC 1 (1985), the Commission addressed the Licensing Board's Second and Third PIDs and determined that nothing in the decisions or the comments of Limerick Ecology Action warranted staying the effectiveness of those decisions. Nothing in this Order modifies those conclusions.

² The criteria in § 2.764(f)(2)(i) are:

- a. the gravity of the substantive issue;
- b. the likelihood that it was decided incorrectly below;
- c. the degree to which correct resolution of the issue would be prejudiced by operation pending review; and
- d. other relevant public interest factors.

³ Inmates also alleged that these rulings, taken as a group, demonstrate that the Licensing Board was inherently prejudiced and, therefore, denied the inmates a fair and impartial hearing pursuant to 10 C.F.R. § 2.718. If a party deems a member of a licensing board to be disqualified, the party may move that member to disqualify himself. 10 C.F.R. § 2.704(c). Such a motion must be supported by affidavits setting forth the alleged grounds for disqualification. *Ibid.* These requirements are necessary because of the seriousness of such allegations. The inmates have not indicated which member or members they believe are prejudiced, have not moved the member or members to disqualify themselves and have not supported their allegations with affidavits. Therefore, this issue is not properly before the Commission.

other bases were rejected during the prehearing process for failure to satisfy the requirements in 10 C.F.R. § 2.714.⁴ We have reviewed the Licensing Board's decision on these matters and, for the reasons stated below, find no reason to stay effectiveness.

The inmates contended that the commercial telephone system might be overloaded during an emergency, and, therefore, would be unavailable to call up off-duty guards needed to effect evacuation of the prison. Accordingly, the inmates asserted that a backup system was required. This argument was rejected during the prehearing process as not raising a material safety issue suitable for evidentiary hearing. Our review of the RERP indicates that the Pennsylvania Bureau of Corrections (Bureau) has the capability of sending guards to Graterford from other correctional institutions. Such guards could be transported in the same buses which will be used to effect evacuation. It therefore appears that even if the off-duty guards from Graterford cannot be mobilized, other guards will be available to aid in any evacuation. Therefore, while we express no opinion regarding the suitability of this issue for hearing, the issue is not sufficiently grave to warrant delay in effectiveness.

The inmates also asserted that the medical arrangements in the event of an accident were inadequate. The Board provided an extensive explanation to indicate why the inmates' assertion lacked basis. Under the Commission's Emergency Planning Policy Statement, 50 Fed. Reg. 20,892 (1985) the Commission can find that it was sufficient for the Licensee to prepare a list of area hospitals capable of treating contaminated injured individuals, and for the Licensee to commit itself to comply with the Commission's upcoming response to the decision in *Guard v. NRC*, 753 F.2d 1144 (D.C. Cir. 1985). The Commission so finds. The Bureau has a list of hospitals and has agreements with a number of hospitals which are accredited. Such accreditation requires a capability of treating contaminated injured individuals. Under these circumstances, the Board's treatment of this issue does not raise a substantive issue of sufficient gravity to warrant a delay in effectiveness.

The inmates contended that the Licensing Board applied the wrong burden of proof in rejecting several issues for hearing. In particular, the inmates cite the handling of their contention that there is no reasonable

⁴ These bases were: (1) the telephone system would be overburdened during an emergency, impairing the ability to recall off-duty guards to effect evacuation; (2) the Correctional Officers Union did not provide input into the Radiological Emergency Response Plan (RERP); (3) the medical arrangements were deficient; (4) the laboratories which will assist in monitoring the plume were not identified in the RERP; (5) the exercise of the Graterford RERP did not test required scenarios and did not identify the Graterford officials by name; and (6) the RERP will not prevent the spontaneous evacuation of the guards or inmates.

assurance that the emergency plan for Graterford will prevent a spontaneous evacuation of the guards or inmates. The inmates object to the Board's assumption that the guards would do their duty and that the inmates would be restrained from evacuating spontaneously. However, we do not read this "assumption" as necessarily the sole reason for the Board's rejecting the issue for hearing. The basis proffered by the inmates for hearing this issue consisted of a list of past incidents at Graterford prison. However, none of the incidents contained any indication that the guards deserted or the inmates spontaneously evacuated. Accordingly, in our preliminary view, the inmates did not appear to offer adequate support for the issue that they sought to litigate. Under our rules, intervenors have the burden of providing reasonably specific issues and bases for litigating those issues. 10 C.F.R. § 2.714(b). Based on our preliminary review we cannot conclude that the Licensing Board erred in rejecting this issue.

We have also reviewed the Licensing Board's decision on the two bases which were admitted for adjudication. These were claims that: (1) there was not reasonable assurance that civilian bus and ambulance drivers would be offered training; and (2) the estimated time for evacuation of the Graterford Institution is unrealistically low. For the reasons discussed below, we find that the Licensing Board's decision on these matters does not present issues which warrant a stay of effectiveness.

In their effectiveness comments, the inmates do not challenge the adequacy of the offer of training, but now state that because no bus companies have responded to the Pennsylvania Emergency Management Authority's ("PEMA") April 4, 1985 letter offering to train their employees, the Licensing Board was wrong in finding reasonable assurance that such training will, in fact, occur. Inmates could have raised this issue in a timely manner before the Licensing Board. Having failed to do so, we also consider whether this information would warrant reopening the record. It would not. As the inmates note in their comments, PEMA has committed to visit personally all the bus and ambulance companies to encourage their drivers to accept the training. In addition, the RERP states that there will be trained Bureau personnel on each bus, so the sole function of the civilian drivers is to drive, which is their normal occupation. Accordingly, this matter does not warrant a stay of effectiveness.

As for the estimated time for evacuation, the inmates contend that methodology used in compiling the estimate was inaccurate. In support of this assertion the inmates' expert, Major John Case, testified that the evacuation could just as easily be 12 to 20 hours instead of the 8 to 10 hours derived by the Bureau of Corrections, but that if the Bureau

included a description of the events during a radiological emergency in the inmate handbook, the Bureau's estimate was as good as any. Tr. 20,936. The Bureau has committed itself to providing this description.⁵

The inmates' other major basis for asserting that the ETE is inaccurate is that it does not consider a combination of the effects of a general panic, severe weather conditions and radiological contamination due to adverse wind direction, and instead assumes ideal conditions. An NRC Staff consultant who participated in preparation of NUREG-0654 testified as a Staff witness that no such worst-case estimate was intended to be met for the ETE. He further explained that the ETE is used to assist decisionmakers in choosing appropriate action. Therefore, an estimate based on a rare combination of conditions would not accomplish this purpose and, in fact, could lead to an erroneous protective action decision. The record also reflects that the ETE was derived from the actual time it took transportation vehicles to travel the same routes in a variety of conditions, including rain and snow. Therefore, based on our preliminary review we cannot conclude that the Licensing Board erred as to approval of the 8- to 10-hour estimate. However, the NRC Staff should ensure that the ETE is inserted in the emergency plan.

For the foregoing reasons, the Commission believes that a stay of the effectiveness of the Licensing Board's Fourth PID is not warranted. This conclusion is based on a preliminary review, and is without prejudice to the Appeal Board's review of any of the issues pending before it, or to any further review by the Commission itself.

The Commission has also been briefed by the NRC Staff on the review of the uncontested issues for Unit 1 and is satisfied that the activities to be authorized by the operating license for Unit 1 can be conducted without endangering the health and safety of the public and that the activities will be conducted in compliance with NRC regulations and the terms of the license. Accordingly, the Commission authorizes the Director to issue to PECO a full-power operating license for the Limerick Generating Station, Unit 1.

At the Commission's meeting today, August 8, 1985, Limerick Ecology Action, an intervenor in this proceeding, orally requested the Commission to stay the issuance of the operating license for 14 days to allow time for judicial review. PECO has had a low-power license to operate up to 5% of rated power since October 1984. To increase operation to the

⁵ The inmates have asserted that this description would not be adequate because 60% of the population is illiterate and another 10% only speaks Spanish. The inmates did not raise this issue before the Licensing Board despite the opportunity to do so. Therefore, raising this new assertion at this time invokes the NRC's reopening criteria. They do not appear to be met here. Moreover, there is nothing offered to suggest why the inmates cannot get someone to read the information to them or receive the information in the event of an emergency via the Institution's public address system and closed-circuit television.

rate of full power authorized by today's Order will entail a gradual process of power ascension and testing over a period of months, and the expectation is that to complete the testing to exceed 20% of rated power will take approximately 11 days. The public health and safety risks of these low levels of power are far less than the theoretical risks of full-power operation. Nor is the level of contamination which results from such levels of operation significantly different than those associated with, and already reached as a result of, Limerick's low-power operation. Moreover, in the event that a stay is sought and ordered by a court, the utility can reverse this process and reduce power levels to below the 5% level.

LEA has offered nothing to balance against these facts. Moreover, LEA has not provided any legal arguments which would support a stay or made us aware of any significant legal issues that a reviewing court might have to resolve with regard to any judicially requested stay.

Accordingly, this Order is being made immediately effective by the Commission.

Commissioner Asselstine's separate views, concurring in the result, are attached.

It is so ORDERED.

For the Commission⁶

SAMUEL J. CHILK
Secretary of the Commission

Dated at Washington, D.C.,
this 8th day of August 1985.

SEPARATE VIEWS OF COMMISSIONER ASSELSTINE

I concur in the result of the Commission's order, but not in the substance. I do not agree with some of the Commission's reasoning which is intended to bolster a less than perfect Licensing Board decision. However, none of the issues is significant enough that I would vote to prevent the issuance of a license pending completion of the merits review

⁶ Chairman Palladino was not present to vote on this Memorandum and Order.

of the initial decision. Further, I would have included in the order a brief “housekeeping” stay to permit an orderly application for judicial review of the Commission’s decision.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

Christine N. Kohl, Chairman
Gary J. Edles
Dr. Reginald L. Gotchy

In the Matter of

Docket Nos. 50-352-OL
50-353-OL

PHILADELPHIA ELECTRIC COMPANY
(Limerick Generating Station,
Units 1 and 2)

August 13, 1985

The Appeal Board denies intervenors' motion for a stay of the Licensing Board's partial initial decision resolving the last contested issues in this operating license proceeding and authorizing the Director of Nuclear Reactor Regulation to issue a full power license for the Limerick facility.

RULES OF PRACTICE: STAY OF AGENCY ACTION
(CRITERIA)

The first criterion for a stay is a strong showing that the moving party is likely to prevail on the merits. A stay motion must also address three other factors: whether the movant will be irreparably harmed in the absence of a stay; whether the grant of a stay would harm any other party; and where the public interest lies. 10 C.F.R. § 2.788(e).

**RULES OF PRACTICE: STAY OF AGENCY ACTION
(CRITERIA)**

A party's failure to address the stay criteria set out in 10 C.F.R. § 2.788(e) may result in summary denial of a stay motion. *See Public Service Co. of Indiana* (Marble Hill Nuclear Generating Station, Units 1 and 2), ALAB-493, 8 NRC 253, 270-71 (1978).

**RULES OF PRACTICE: IMMEDIATE EFFECTIVENESS OF
DECISION DIRECTING ISSUANCE OF OPERATING LICENSE**

Under the "immediate effectiveness" rule, unless the Commission otherwise directs, an immediate effectiveness determination by the Commission is without prejudice to the Appeal Board's determination of a stay motion pursuant to 10 C.F.R. § 2.788(e), or an appeal on the merits pursuant to §§ 2.762 and 2.785, or in any subsequent proceeding. 10 C.F.R. § 2.764(g).

**RULES OF PRACTICE: STAY OF AGENCY ACTION
(TIMELINESS OF REQUEST)**

An application for a stay must be filed within ten days of service of the decision for which a stay is requested. 10 C.F.R. § 2.788(a).

**RULES OF PRACTICE: STAY OF AGENCY ACTION
(CRITERIA)**

In a motion for a stay, when attempting to show likelihood of prevailing on the merits, it is not sufficient simply to state confidence or an expectation of ultimate success. *Metropolitan Edison Co.* (Three Mile Island Nuclear Station, Unit 1), CLI-84-17, 20 NRC 801, 804-05 (1984).

**RULES OF PRACTICE: STAY OF AGENCY ACTION
(CRITERIA)**

Irreparable harm is often the most important factor in determining the need for a stay; a party must reasonably demonstrate, not merely allege, such harm. *Duke Power Co.* (Catawba Nuclear Station, Units 1 and 2), ALAB-794, 20 NRC 1630, 1633-35 (1984).

APPEARANCES

Robert L. Anthony, Moylan, Pennsylvania, intervenor pro se and for intervenor Friends of the Earth.

Frank R. Romano, Ambler, Pennsylvania, for intervenor Air and Water Pollution Patrol.

Troy B. Conner, Jr., and **Robert M. Rader**, Washington, D.C., for applicant Philadelphia Electric Company.

Benjamin H. Vogler for the Nuclear Regulatory Commission staff.

MEMORANDUM AND ORDER

By petition filed August 1, 1985, intervenors Robert L. Anthony/Friends of the Earth (Anthony/FOE) seek a stay of the Licensing Board's fourth partial initial decision (PID), LBP-85-25, 22 NRC 101 (1985). That decision, which addresses the last two contested issues in this proceeding (relating to the emergency plan for the State Correctional Institution at Graterford, Pennsylvania), authorizes the Director of Nuclear Reactor Regulation (NRR) to issue a full-power operating license for the Limerick facility to applicant Philadelphia Electric Company (PECo). Intervenor Air and Water Pollution Patrol supports the stay request, while PECo and the NRC staff oppose it. As explained below, we deny the stay.¹

A.

The first criterion for a stay is a strong showing that the moving party is likely to prevail on the merits. 10 C.F.R. § 2.788(e)(1). In an attempt to show this, Anthony/FOE claim that the Licensing Board could not properly authorize the Director of NRR to issue an operating license for Limerick because several matters that require Board findings prior to

¹ The Graterford inmates, also intervenors in this proceeding, previously sought a stay of the Board's fourth PID. Because they failed to address the stay criteria set forth in the Commission's Rules of Practice, 10 C.F.R. § 2.788(e), we summarily denied that motion in an unpublished order issued August 1, 1985. See *Public Service Co. of Indiana* (Marble Hill Nuclear Generating Station, Units 1 and 2), ALAB-493, 8 NRC 253, 270-71 (1978).

license issuance remain outstanding. In this regard, intervenors identify four matters.

First, they argue that both the fourth (LBP-85-25) and third (LBP-85-14, 21 NRC 1219 (1985)) PIDs are legally flawed because they do not consider 44 C.F.R. § 350.7(b). The pertinent portion of this regulation, promulgated by the Federal Emergency Management Agency (FEMA), requires the exact size and configuration of the emergency planning zone (EPZ) around a nuclear power plant to be determined by state and local governments in consultation with FEMA and the NRC. Second, Anthony/FOE direct our attention to an appeal they now have pending before FEMA. They express confidence that FEMA will agree with their arguments and withdraw its previous approval of the entire emergency plan for Limerick, including the portion involving the Graterford facility. They contend that the withdrawal of FEMA's approval would significantly undercut the Licensing Board's fourth PID. Third, Anthony/FOE believe that they will also succeed on another appeal pending before us — that involving the Licensing Board's June 4, 1985, denial of Anthony/FOE's motion to reopen the record on a recent PECO effluent release report. Fourth, intervenors refer to three appeals they assertedly have pending before the Commission concerning a variety of topics. Again, they are confident about their likelihood of prevailing on these matters and contend that no license can issue until they are resolved.

A stay motion must also address three other factors: whether the movant will be irreparably harmed in the absence of a stay; whether the grant of a stay would harm any other party; and where the public interest lies. 10 C.F.R. § 2.788(e)(2), (3), (4). Anthony/FOE argue generally that they will be harmed by the danger of accidents, routine releases, radioactive waste, and economic losses if Limerick is licensed. They also claim that PECO's stockholders would be harmed in the short run by a stay, but would benefit eventually. Lastly, they assert that a stay would serve the public interest by avoiding rate increases that allegedly would result from the licensing of the facility.

B.

1. As a threshold argument, PECO contends that we do not have the authority even to consider Anthony/FOE's petition for stay, in light of the Commission's recent decision to make effective immediately the fourth PID and to issue the full-power license for Limerick Unit 1. Licensee's Opposition to Petition by Friends of the Earth (August 9, 1985) at 2, 5. *See* CLI-85-15, 22 NRC 184 (1985). PECO's argument is

without merit. The Commission's action in CLI-85-15 was explicitly pursuant to its so-called "immediate effectiveness" rule, 10 C.F.R. § 2.764(f)(2). See CLI-85-15, 22 NRC at 185. Under this regulation,

[u]nless the Commission otherwise explicitly so directs in its immediate effectiveness determination, no comment made in the course of the opinion or statement reflecting that determination is to be given any weight by the . . . Appeal Board in its consideration of either a stay motion pursuant to § 2.788(e) or an appeal on the merits pursuant to §§ 2.762 and 2.785, or in any subsequent formal adjudication. The Commission's effectiveness determination is entirely without prejudice to such consideration in subsequent proceedings.

10 C.F.R. § 2.764(g). The Commission reiterates this mandate in CLI-85-15 itself, 22 NRC at 186.

The particular cases upon which PECO relies to support its view are inapposite. Indeed, several months ago in one of the proceedings cited (*Shoreham*), the Commission authorized a Licensing Board decision to become immediately effective, but nine days later the Appeal Board — reviewing an appeal from the same Licensing Board decision on the merits — reversed and vacated that decision in part, as well as the corresponding license authorization. See *Long Island Lighting Co.* (Shoreham Nuclear Power Station), CLI-85-1, 21 NRC 275 (1985); *Long Island Lighting Co.* (Shoreham Nuclear Power Station, Unit 1), ALAB-800, 21 NRC 386, 392-98 (1985). Thus, there is no impediment to our consideration of Anthony/FOE's petition for stay.

2. None of the reasons Anthony/FOE advance in support of their stay request has merit. In the first place, arguments concerning the Licensing Board's third PID (for example, those relating to FEMA's compliance with 44 C.F.R. § 350.7(b)²) and June 4 denial of reopening on the effluent release report are far too late. Under 10 C.F.R. § 2.788(a), an application for a stay must be filed within 10 days of service of the decision for which a stay is requested. Anthony/FOE have provided no good cause for their tardiness and no compelling reason for our scrutiny of either decision in connection with this request to stay the Board's fourth PID.³

² As explained at p. 196, *infra*, the fourth PID concerns only limited emergency planning issues involving the Graterford facility. Thus, Anthony/FOE's argument about FEMA regulation section 350.7(b) can logically be raised only in conjunction with the Licensing Board's more comprehensive offsite emergency planning decision, its third PID. And indeed, Anthony/FOE's brief on appeal from the third PID is devoted principally to this issue. See Anthony/FOE Brief (June 6, 1985), *passim*.

³ Another party, Limerick Ecology Action, did timely seek a stay of the Board's third PID, which was issued May 2, 1985. We denied this motion in ALAB-808, 21 NRC 1595 (1985).

As for the three matters Anthony/FOE claim to have pending before the Commission and on which they expect to prevail, none concerns any matter now before us on appeal. We are only generally aware of their content and cannot properly speculate as to how they might ultimately be decided.⁴ Anthony/FOE's argument that an operating license for Limerick cannot be issued until these matters are disposed of is thus more properly directed to either the Commission itself or the Director of NRR.

Anthony/FOE's remaining argument is only peripherally related to the discrete emergency planning issues addressed in the Licensing Board's fourth PID (i.e., the training for Graterford's civilian emergency evacuation personnel and the evacuation time estimate for the Graterford facility).⁵ This claim — that FEMA will withdraw its approval of the entire Limerick offsite emergency plan — is highly speculative and thus cannot serve as a basis for a stay. If FEMA were to take such action, however, this would be a significant new development that would likely warrant further action by the appropriate NRC officials at that time.

Anthony/FOE have therefore failed to make the required strong showing that they are likely to prevail on the merits of their appeal. *See also* note 5, *supra*. It is not enough simply to state confidence or an expectation of success before this or any other forum. *Metropolitan Edison Co.* (Three Mile Island Nuclear Station, Unit 1), CLI-84-17, 20 NRC 801, 804-05 (1984). Intervenors' arguments on the other three stay factors are similarly generalized and unconvincing. Especially insofar as irreparable harm — often the factor accorded the greatest weight — is concerned, a party must reasonably *demonstrate*, not merely allege, such harm. *See Duke Power Co.* (Catawba Nuclear Station, Units 1 and 2), ALAB-794, 20 NRC 1630, 1633-35 (1984). Anthony/FOE have failed to meet their burden of proving that a stay of the Board's fourth PID is warranted.

⁴ The Commission has referred two of these matters (concerning PECO's request for various exemptions) to NRR for initial disposition. *See* Order of July 24, 1985 (unpublished); Order of August 8, 1985 (unpublished). The third item, relating to Anthony/FOE's request for revocation of PECO's low-power operating license, was recently denied in a lengthy decision by the Director of NRR and is pending Commission review. *See* DD-85-11, 22 NRC 149 (1985).

⁵ It does not appear that Anthony/FOE were participants in this part of the proceeding. Thus, there is a question as to Anthony/FOE's right to appeal and to seek a stay of the fourth PID. We need not decide that issue now, however, but we expect all the parties concerned to address this matter in their briefs on the merits.

Anthony/FOE's motion for a stay of LBP-85-25 is *denied*.
It is so ORDERED.

FOR THE APPEAL BOARD

C. Jean Shoemaker
Secretary to the
Appeal Board

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

**Gary J. Edles, Chairman
Dr. W. Reed Johnson
Christine N. Kohl**

In the Matter of

**Docket No. 50-289-SP
(Management Phase)**

**METROPOLITAN EDISON COMPANY,
*et al.***

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

August 29, 1985

The Appeal Board denies intervenor's motion to reopen the record for further hearing in the management phase of this restart proceeding, concluding that the motion is not timely and does not demonstrate that a different result might have been reached had the newly proffered material been considered initially.

RULES OF PRACTICE: REOPENING OF RECORD

In order to succeed, a motion to reopen a record must be timely and address a significant safety or environmental issue. It must also show that a different result might have been reached had the newly proffered material been considered initially. *Louisiana Power & Light Co. (Waterford Steam Electric Station, Unit 3)*, ALAB-786, 20 NRC 1087, 1089 (1984).

RULES OF PRACTICE: REOPENING OF RECORD

A year delay between the time information was made available to the parties and the time of filing a motion to reopen ordinarily renders such a motion untimely. *See, e.g., Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-775, 19 NRC 1361, 1369, *aff'd sub nom. San Luis Obispo Mothers for Peace v. NRC*, 751 F.2d 1287 (D.C. Cir. 1984), *vacated in part and reh'g en banc granted on other grounds*, 760 F.2d 1320 (1985); *Louisiana Power and Light Co.* (Waterford Steam Electric Station, Unit 3), ALAB-753, 18 NRC 1321, 1325 n.3 (1983).

RULES OF PRACTICE: REOPENING OF RECORD

In assessing the timeliness requirement of a motion to reopen the record, the question is not whether a licensing board is still receiving evidence on an issue to which the new information relates at the time the information comes to the movant's attention, but rather, whether the information could have been submitted earlier. *Metropolitan Edison Co.* (Three Mile Island Nuclear Station, Unit No. 1), CLI-85-8, 21 NRC 1111, 1114 & n.3 (1985); *Vermont Yankee Nuclear Power Corp.* (Vermont Yankee Nuclear Power Station), ALAB-138, 6 AEC 520, 523 n.12 (1973).

APPEARANCES

Louise Bradford, Harrisburg, Pennsylvania, for intervenor Three Mile Island Alert, Inc.

Deborah B. Bauser, Washington, D.C., for licensee Metropolitan Edison Company.

Lois R. Finkelstein and Mary E. Wagner for the Nuclear Regulatory Commission staff.

MEMORANDUM AND ORDER

We have before us a motion filed by intervenor Three Mile Island Alert, Inc. (TMIA), to reopen the record for further hearing in the

management phase of this restart proceeding.¹ The motion relies on several pieces of assertedly new information said to bear on the central issue of management competence and integrity.²

First, TMIA cites to both a draft and the final version of an August 1979 letter to the NRC from former Three Mile Island (TMI) Station Manager Gary Miller, certifying that a licensee employee, James R. Floyd (designated "VV"), had successfully completed the requalification program; the draft letter is accompanied by a memorandum from Miller asking the licensee's counsel to review the draft. TMIA also presents a copy of a November 1979 application filed by VV for renewal of his senior reactor operator's license, with an accompanying certificate of competence signed by Miller. VV's completion of the requalification program and subsequent certification to the NRC were the subject of considerable attention before the Licensing Board.³ TMIA asserts that VV's November 1979 application for license renewal and the letter and memorandum relating to the requalification were released to the parties for the first time in March of this year as attachments to an Office of Investigations (OI) report. It argues that this information shows that the licensee failed to take appropriate action insofar as VV was concerned.

Second, TMIA provides copies of an emergency procedures review examination taken by VV and another employee designated "O" in May 1979. These purportedly reveal an additional instance of cheating, not made public until June 1984, when the licensee released the tests to a grand jury. TMIA contends that the licensee's earlier "withholding" of this information is evidence of the licensee's lack of integrity.

Under the oft stated test for reopening a record, a motion

must be timely and address a significant safety or environmental issue. It must also show that a different result might have been reached had the newly proffered material been considered initially.⁴

¹ This motion was initially filed with the Commission, which has referred it to us for disposition. CLI-85-9, 21 NRC 1118, 1145 n.59 (1985), *aff'd sub nom. Three Mile Island Alert, Inc. v. NRC*, Nos. 85-3301, etc. (3d Cir. Aug. 27, 1985). See note 5, *infra*.

TMIA's submittal includes two principal documents, plus appendices. The first is entitled "TMIA's Motion to Reopen the Record for the Purpose of Receiving Additional Information"; the second is entitled "TMIA's Brief in Support of its Motion to Reopen the Record for the Purpose of Receiving Additional Information." Both are dated and were served May 22, 1985, and neither is paginated. For convenience, we refer to the documents as "TMIA's Motion" and "TMIA's Brief" and supply the missing page numbers.

² For the background of the management phase of this special proceeding, see generally CLI-85-9, 21 NRC 1118; ALAB-772, 19 NRC 1193 (1984), *rev'd in part*, CLI-85-2, 21 NRC 282 (1985); LBP-82-56, 16 NRC 281 (1982); LBP-81-32, 14 NRC 381 (1981).

³ See ALAB-772, 19 NRC at 1230.

⁴ See *Louisiana Power & Light Co. (Waterford Steam Electric Station, Unit 3)*, ALAB-786, 20 NRC 1087, 1089 (1984).

We conclude that the motion is not timely and, in addition, does not demonstrate that a different result might have been reached had the proffered material been considered initially. That being so, we deny the request to reopen the record.⁵

A. TMIA's motion is substantially out of time. As the licensee points out, the documents (or, in one case, a handwritten version) included in the OI Report and relied upon here by TMIA were part of the so-called Speaker Report, which the licensee released to the parties over two years ago in March 1983.⁶ Indeed, drafts of the August 1979 letter to the NRC from Gary Miller and the memorandum from Miller to licensee's counsel, far from being newly revealed information, were actually introduced into evidence in November 1981 by TMIA as its Exhibit 73 and were the subject of TMIA's cross-examination during the course of the earlier proceeding.⁷ Thus, the material contained in the OI Report could easily have been submitted — and, in one instance, was actually submitted — during the course of the hearing.

With respect to the 1979 emergency procedures tests, TMIA concedes that they were made available to the parties by the licensee in June 1984, almost a year before this motion was filed.⁸ Such delay in tendering new information ordinarily renders a motion to reopen untimely.⁹ TMIA attempts to justify its tardiness in submitting this information by noting simply that the Licensing Board was no longer receiving evidence

⁵ As noted above, the motion rests in part on information surrounding Miller's August 1979 letter to the Commission regarding VV's completion of the requalification program. In examining this matter initially, the Licensing Board concluded that Miller — and, hence, the licensee — had made a material false statement to the Commission. It conditioned any restart on a requirement that Miller's participation in the licensee's operations be under the direct supervision of an "appropriately qualified" licensee official. It also recommended that the Commission institute a broader investigation into the matter. See LBP-82-56, 16 NRC at 292-93, 344-55. The Commission fairly promptly agreed with the Board's recommendation and turned the matter over to OI. At the same time it directed us not to consider this matter as part of our then-forthcoming appellate review of the Board's decisions. CLI-82-31, 16 NRC 1236, 1237, 1239-40 (1982). In compliance with the Commission's directive, we thus did not scrutinize the certification incident. In response to TMIA's general arguments about the licensee's management capability, however, we acknowledged that the episode was additional evidence that serious management problems had existed throughout the licensee's training organization. ALAB-772, 19 NRC at 1230-31.

⁶ Licensee's Answer to TMIA's Motion to Reopen the Record for the Purpose of Receiving Additional Information (May 29, 1985) (hereafter, "Licensee's Answer") at 7 n.7. See letter to Appeal Board from Ernest L. Blake, Jr. (March 14, 1983) and Enclosure (hereafter, "Speaker Report"). The Speaker Report was prepared by Fred Speaker, an attorney with the Harrisburg, Pennsylvania office of the law firm of Pepper, Hamilton & Scheetz. He conducted a review of the August 1979 certification of VV at the request of the licensee. See also Board Notification No. BN-83-28 (March 4, 1983).

⁷ See Tr. 24,412-15.

⁸ TMIA's Motion at 2. See Notice to the Commission, Appeal Board, Licensing Board and Parties (June 1, 1984) and Supplement to June 1, 1984 Notice to the Commission, Appeal Board, Licensing Board and Parties (June 5, 1984).

⁹ See, e.g., *Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-775, 19 NRC 1361, 1369, *aff'd sub nom. San Luis Obispo Mothers for Peace v. NRC*, 751 F.2d 1287 (D.C. Cir. 1984), *vacated in part and reh'g en banc granted on other grounds*, 760 F.2d 1320 (1985); *Louisiana Power & Light Co.* (Waterford Steam Electric Station, Unit 3), ALAB-753, 18 NRC 1321, 1325 n.3 (1983).

on cheating at the time TMIA obtained the information.¹⁰ But TMIA misconceives the timeliness requirement. The question is not whether a board is still receiving evidence on an issue to which the new information relates at the time the information comes to the movant's attention. (Indeed, motions to reopen the record will invariably involve the proffer of information that would have been considered at an earlier stage of a proceeding.) The critical question is whether the information could have been submitted earlier.¹¹ In this case the answer is yes. TMIA's justification for having failed to tender the O and VV emergency procedures tests for almost a year is thus insufficient.¹²

B. The Licensing Board and the Special Master reviewed scores of allegations as part of a wide-ranging examination of management competence and integrity. Among the matters expressly considered during the course of the proceeding were Miller's August 1979 certification of VV's successful completion of the requalification program;¹³ cheating on licensee-administered examinations, including the collaboration of O and VV (although not their collaboration on the particular examination attached to TMIA's motion);¹⁴ and management's response to the cheating incidents, including its response to VV's cheating.¹⁵ We are fully satisfied that the information tendered by TMIA, even if timely presented, would not have produced a different result in the Board's resolution of these matters.

1. TMIA asserts that, despite its earlier request for all documents related to cheating, the licensee withheld the 1979 emergency procedures review examinations until forced to release them to a grand jury.¹⁶ It argues that the tests were graded in 1979, so the training department

¹⁰ TMIA's Motion at 2. TMIA also states that OI was investigating a later cheating incident involving O and VV. The relevance of that fact to TMIA's delay in submitting the instant information is not apparent.

¹¹ *Metropolitan Edison Co. (Three Mile Island Nuclear Station, Unit No. 1)*, CLI-85-8, 21 NRC 1111, 1114 & n.3 (1985); *Vermont Yankee Nuclear Power Corp. (Vermont Yankee Nuclear Power Station)*, ALAB-138, 6 AEC 520, 523 n.12 (1973).

¹² We note, in addition, that in June 1984 and again in September 1984, as part of its deliberations looking toward a final restart decision, the Commission explicitly invited the parties to bring to its attention any unresolved matters that needed to be explored before a final decision could be made. See CLI-84-18, 20 NRC 808 (1984); Order of June 1, 1984 (unpublished) at 2. TMIA submitted comments in response to both of the Commission's orders but did not refer to the matters now included in its motion. TMIA Response to June 1 Order (July 26, 1984); TMIA Response to Commission Order of September 11, 1984 (October 9, 1984). Given the Commission's express solicitation of views as to what matters remained for resolution, TMIA had a heightened obligation to canvass its files and present any new matters that might bear on the restart question.

¹³ LBP-82-56, 16 NRC at 292-93, 348-55.

¹⁴ *Id.* at 325; LBP-82-34B, 15 NRC 918, 969, 1006-13 (1982).

¹⁵ LBP-82-56, 16 NRC at 293-95, 344-48.

¹⁶ TMIA's Motion at 1-2.

must have known about this additional incident of cheating.¹⁷ The licensee indicates, however, that the tests were not reviewed earlier because of an agreement with TMIA not to provide exams prior to 1980 unless they involved a known incident of misconduct. It maintains that the tests here at issue were discovered only when it began a document review in connection with the later grand jury investigation of VV.¹⁸

This added illustration of cheating by O and VV on a licensee-administered test would not have affected any pertinent Licensing Board conclusion on the cheating itself. In reaching its determination regarding management integrity, the Board explicitly declined to conclude that all possible cheating had been revealed.¹⁹ It was fully aware, moreover, that the licensee's training department was not entirely an innocent bystander; that department, after all, had assigned VV a passing score on a portion of his requalification exam although Supervisor of Training Richard Zechman was aware that O had contributed to VV's exam and had discussed the matter with Miller.²⁰ What was clear — and what was decisionally significant — was that the administration of the licensee's testing program was quite lax.²¹ Any further evidence of cheating, including the training department's possible knowledge and concealment of such cheating, would not have materially altered that conclusion.²²

Insofar as TMIA contends that the licensee improperly withheld this information and did not fully respond to its discovery request, we cannot definitively determine why the additional incident of cheating by O and VV was not brought to public attention earlier. The discovery papers and licensee's argument here are ambiguous.²³ Other factors, however, lead us to conclude that the licensee's failure to produce the tests earlier was likely inadvertent and, in any event, would not have altered any previous Board findings.

For one thing, as the Licensing Board emphasized, the involvement of O and VV in cheating was first brought to the Commission's attention by Robert Arnold, licensee's former president.²⁴ In due course, O's employment was terminated due to other cheating, and VV resigned.²⁵

¹⁷ TMIA's Brief at 4.

¹⁸ Licensee's Answer at 3 n.3.

¹⁹ LBP-82-56, 16 NRC at 290.

²⁰ *Id.* at 349-50.

²¹ *Id.* at 357. See also ALAB-772, 19 NRC at 1212 n.15, 1231-32.

²² See ALAB-774, 19 NRC 1350, 1356 (1984).

²³ See TMIA's First Set of Discovery Requests of Licensee in Reopened Hearing of Cheating Incident (As Modified by Agreement) (October 2, 1981); TMIA's First Set of Interrogatories Addressed to Licensee (October 8, 1981) at 8; Licensee's Answer at 3 n.3.

²⁴ LBP-82-56, 16 NRC at 293, 355.

²⁵ ALAB-772, 19 NRC at 1231 n.45.

There appears to be no incentive, therefore, for licensee to have concealed an additional incident of cheating by these individuals. Further, TMIA has provided no basis on which we could conclude that licensee routinely and intentionally withheld discoverable material pertinent to the hearing. Nor has TMIA given us cause to reconsider our own earlier conclusion that licensee's investigation of various cheating incidents was adequate.²⁶ Finally, the principal managers that might have been involved in any deliberate effort to conceal are no longer licensee officials. The significance of the additional incident of cheating by O and VV to the outcome of this proceeding is thus de minimis.

2. TMIA continues to challenge the propriety of the sanctions imposed against VV by the licensee's top management. The Special Master did not believe that VV's reassignment to the Accident Investigation Documentation Group following discovery of his cheating was a demotion or sufficiently punitive to serve as a deterrent. As a consequence, he believed that the licensee had failed to declare a clear policy against what VV did.²⁷ The Licensing Board took a somewhat different view. It was less critical of the licensee's motives, believing that VV's peers most likely viewed the reassignment as a demotion. The Board concluded that Arnold's reassignment of VV was a proper reallocation of the company's personnel resources.²⁸

TMIA now submits a copy of VV's senior operator license renewal application, which was filed after he had been reassigned but nevertheless lists him as Supervisor of Station Operations. TMIA also points to the certificate of competence, which was signed by Miller in connection with the application but does not indicate VV's reassignment.²⁹ TMIA concludes that this represents further evidence that the Special Master was right and the Licensing Board was wrong.³⁰

We cannot conclude that this information would have affected the Board's determination regarding the adequacy of management's response to VV's cheating. The Board fully evaluated the circumstances surrounding VV's reassignment.³¹ It was aware that neither Miller nor VV ap-

²⁶ See *id.* at 1229-30.

²⁷ LBP-82-34B, 15 NRC at 1009-13.

²⁸ LBP-82-56, 16 NRC at 347-48.

²⁹ TMIA's Motion at 4. The certificate of competence stated that VV had "discharged his license responsibilities in a competent and safe manner during his current license period." *Id.*, Exh. C (OI Report), Attachment 27.

³⁰ TMIA's Brief at 2.

³¹ LBP-82-56, 16 NRC at 345-48.

peared to view the cheating incident as particularly troubling.³² TMIA's "new" information would, at most, supply additional confirmation of this. For the purpose of evaluating management integrity, however, the Board focused its attention on Arnold's response.³³ It found that response appropriate, noting as well that VV's Unit 1 license had been voided and that the licensee did not plan to recertify VV for Unit 2 licensing.³⁴ Nothing in TMIA's presentation here undermines that ultimate Board assessment so as to warrant reopening.

TMIA's motion to reopen the record for further hearing is *denied*.
It is so ORDERED.

FOR THE APPEAL BOARD

C. Jean Shoemaker
Secretary to the
Appeal Board

³² *Id.* at 345-46. It is not clear why the license renewal application referred to VV as Supervisor of Station Operations. In answer to questions from Speaker during his investigation of the incident, Miller suggested that the application and accompanying certificate were probably prepared by the training department, which simply relied on an outdated computer printout of names and titles. The language of the certificate of competence was said to be a standard format used by the training department. Speaker Report, Investigation of VV's Qualifications 1979-1982, Deposition of Gary Miller (December 17, 1982) at 18-21.

³³ LBP-82-56, 16 NRC at 346-48.

³⁴ *Id.* at 348, 355.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

**James L. Kelley, Chairman
Dr. James H. Carpenter
Glenn O. Bright**

In the Matter of

**Docket No. 50-400-OL
(ASLBP No. 82-472-03-OL)**

**CAROLINA POWER & LIGHT
COMPANY and
NORTH CAROLINA EASTERN
MUNICIPAL POWER AGENCY
(Shearon Harris Nuclear Power
Plant)**

August 14, 1985

This Memorandum supplies the reasons supporting the Licensing Board's earlier grant of several motions for summary disposition on emergency planning contentions.

**REASONS SUPPORTING SUMMARY
DISPOSITION OF EMERGENCY PLANNING
CONTENTIONS**

In memoranda and orders dated February 27, 1985, and April 24, 1985 (both unpublished), we ruled on several motions from the Applicants for summary disposition on emergency planning contentions. In those orders, we provided explanations of our rulings only when we denied a motion. We hoped thereby to help the parties plan for litigation

and to speed the start of that litigation. In both orders we said we would provide explanations of the other rulings at a later date. We now provide explanations for our rulings in every instance in which we granted a motion that was opposed by one or more intervenor, and we impose one condition on the issuance of a full-power license. See our discussion of Contention 213a, *infra*. About half the motions for summary disposition were unopposed. We are mindful that the failure of the party opposing summary disposition to submit evidence against the disposition does not require that the motion be granted. The movant must still meet his burden of proof to establish the absence of any genuine issue of material fact. *Cleveland Electric Illuminating Co.* (Perry Nuclear Power Plant, Units 1 and 2), ALAB-443, 6 NRC 741, 753-54 (1977). We have judged that in every instance in which the motion was unopposed, the Applicants did indeed meet their burden of proof, but in light of the lack of opposition, we have not thought it necessary or useful to repeat arguments of the parties who supported the motion.

By and large, licensing boards, when considering motions for summary disposition under 10 C.F.R. § 2.749, will apply the standards established by the courts for considering motions for summary judgment under Rule 56 of the Federal Rules of Civil Procedure. *Alabama Power Co.* (Joseph M. Farley Nuclear Plant, Units 1 and 2), ALAB-182, 7 AEC 210, 217 (1974). A motion for summary disposition will be granted when the record shows that there is no genuine issue as to any material fact, and that the moving party is entitled to a favorable decision as a matter of law. 10 C.F.R. § 2.749(d). The record must be viewed in the light most favorable to the party opposing the motion. See *Public Service Co. of New Hampshire* (Seabrook Station, Units 1 and 2), LBP-74-36, 7 AEC 877, 897 (1974) (citing federal court cases).

ONSITE EMERGENCY PLANNING

We admitted two contentions on onsite emergency planning, Contentions 144 and 154, in our Memorandum and Order, November 1, 1983, at 11-12, 5, respectively. The Applicants filed a motion for summary disposition of the contentions on October 8, 1984. Accompanying the motion was an affidavit from Robert G. Black, Jr., Director of Emergency Preparedness for the Applicant. The Staff replied on November 8, 1984, in support of the motion. Accompanying the Staff's reply was an affidavit from Gerald E. Simonds of the Office of Inspection and Enforcement, Division of Emergency Preparedness and Engineering Response, Emergency Preparedness Branch, in the NRC. Mr. Simonds is a technical reviewer of work at the Shearon Harris plant and is responsible

for assessing onsite emergency plans and preparedness. The Intervenor, Mr. Wells Eddleman, replied in opposition to the motion on November 19, 1984. We granted the motion in our Memorandum and Order, February 27, 1985, at 1.

Contention 144

The text of Contention 144 is as follows:

CP&L's emergency personnel levels do not meet the requirements of NUREG-0737, REV 1 [sic; Supp. 1] Table 2.

The Table sets out what the Staff thinks to be the minimum staffing a licensee should have during an emergency at a nuclear power plant. One issue raised by the contention in its original form, when the Applicants were still planning to complete a second unit, was whether the staffing levels would be sufficient to deal with a damaged reactor and an undamaged one at the same time. See "Wells Eddleman's Motion Concerning DCRDR Information," January 8, 1983. This issue has since been mooted by the Applicants' decision to cancel plans for the construction of a second unit.

The Commission's emergency planning regulations require, among other things, that

adequate staffing to provide initial facility accident response in key functional areas is maintained at all times, [and that] timely augmentation of response capabilities is available . . .

10 C.F.R. § 50.47(b)(2). This standard is elaborated by evaluation criteria in NUREG-0654, which sets out guidelines for assembling and reviewing emergency plans for nuclear power plants. Evaluation Criterion B.5 provides, in relevant part:

Each licensee shall specify the positions or title and major tasks to be performed by the persons to be assigned to the functional areas of emergency activity. For emergency situations, specific assignments shall be made for all shifts and for plant staff members, both onsite and away from the site. These assignments shall cover the emergency functions in Table B-1 entitled, "Minimum Staffing Requirements for Nuclear Power Plant Emergencies." The minimum on-shift staffing levels shall be as indicated in Table B-1. The licensee must be able to augment on-shift capabilities within a short period after declaration of an emergency. This capability shall be as indicated in Table B-1. . . .

Table B-1, to which this evaluation criterion refers, is the same as the table referred to in the contention, Table 2 of NUREG-0737. Compliance with Evaluation Criterion B.5, or any other evaluation criterion in NUREG-0654, is not necessarily required by the Commission's emergency planning regulations. *Metropolitan Edison Co.* (Three Mile Island Nuclear Station, Unit No. 1), ALAB-698, 16 NRC 1290, 1299 (1982), *rev'd in part on other grounds*, CLI-83-22, 18 NRC 299 (1983). Like the Commission's Regulatory Guides, NUREG-0654 has never been the subject of rulemaking. Methods and solutions different from those set out in the guides are acceptable if they provide a basis for findings which must be made before a license or permit can be issued or continued. ALAB-698, *supra*, 8 NRC at 1298-99.

The numbers in Tables 2.2-1 and 2.2-2 in the emergency plans for Shearon Harris represent the staffing levels the Applicants would adhere to in an emergency. It is no longer in dispute in this proceeding that, during an emergency, the Applicants would have an adequate number of people with the skills needed to meet the emergency.

The Intervenor argues, however, that the current plans do not make several of the people available soon enough. Intervenor's Reply at 1-3. The two just-mentioned tables in the plans reveal that the Applicants would have certain emergency stations manned within 30 to 45 minutes of the start of an emergency, and certain other stations within 60 to 75 minutes. However, the analogous table referred to by Evaluation Criterion B.5, Table B-1 at 37-38 in NUREG-0654, would have the same stations manned within exactly 30 and 60 minutes, respectively. The Intervenor argues that since a footnote to the emergency planning regulations in 10 C.F.R. § 50.47(b) says that the planning regulations are "addressed" by the evaluation criteria in NUREG-0654, the criteria have the legal force of regulations. Intervenor's Reply at 1.

As we have shown above, Commission case law is to the contrary: The Staff will accept, and claims to have accepted in this case, reasonable deviations from the evaluation criteria. Staff Reply at 6-8. It is arguable that it remains then to be determined by us whether in this case the Staff and the Applicants are being reasonable. The Applicants cite possible adverse weather as a reason for extending by at most 15 minutes the time within which certain stations would be manned in an emergency. Motion at 6. The Intervenor in effect argues that such weather would be good reason to man those stations 15 minutes earlier. These trivial differences do not rise to the level of a disputed material fact. By way of contrast, the two cases we cited earlier involved one time limit embodied in Table B-1 in NUREG-0654 and at issue here. The Table calls for one of a licensee's senior managers to be in command of a licensee's

Emergency Operations Facility within one hour, but the licensee in that case proposed *four* hours. See CLI-83-22, *supra*. We find that the Applicants' proposed response times satisfy 10 C.F.R. § 50.47(b)(2).

Contention 154

The text of the contention is as follows:

Plant operators are assigned to make the dose assessments (see Table 2.2.3, page 2) [in the Site Emergency Plan (SEP) Rev. 2]. These personnel are unqualified to make the detailed judgments that may be required by the procedures for dose estimating, given in Annex B of the SEP.

In an emergency, projections of offsite dose would be crucial determinants of what protective actions were taken. According to Annex B, plant operators would perform dose assessments until the health physics staff had arrived. The Intervenor, Mr. Eddleman, asserts that

[t]he complexity of judgment required in Annex B is beyond the training, as far as the SEP establishes, of ordinary reactor operators. Moreover, there are no educational or other requirements for operators that assure they will exercise good judgment in dealing with this complex task under the pressure of accident conditions
....

The Applicants' main argument is that, in an emergency, operators would follow not Annex B but the Plant Emergency Procedures (PEPs) contained in the Plant Operating Manual, Vol. 2, Bk. 5, that Annex B contains the technical background and justification for those procedures, but not the procedures themselves. Motion at 7. The Applicants also argue that since the contention is directed to Annex B under the misimpression that the contents of Annex B were to be construed as procedures, the Applicants have, strictly speaking, met their burden on summary disposition simply by pointing out that Annex B contains no procedures.

Nonetheless, the Applicants willingly assume, for the sake of argument, that the contention is directed to the procedures, and go on to argue that, between flow charts and "cookbook" descriptions of calculations, the procedures leave little room for judgment (Black Affidavit, ¶¶ 5-10), and that, in accordance with the Commission's regulations and guidance on emergency planning, there are training programs, drills, and federally evaluated, full-scale exercises planned which will prepare the plant operators sufficiently to perform dose assessment under emergency conditions. Black Affidavit, ¶¶ 12-17. The Applicants report that the Staff has approved their training program. *Id.* ¶ 17.

The Intervenor replies principally that the Applicants nowhere in their motion argue that the operators are *now* — on the date the Intervenor filed his reply — trained to perform dose assessments (Intervenor's Reply at 3-4), and secondarily, that the PEPs, though they may be simpler than Annex B, still leave too much room for judgment. The Intervenor cites as examples several details in one PEP. *See id.*, "List of Facts in Dispute — Contention 154."

Both of the Intervenor's arguments clearly amount to new contentions. The argument concerning the PEPs is new because the text of the contention is directed quite concretely to the form and substance of Annex B. *That* text, the contention says, is beyond the operators' competence.¹

The Intervenor's principal argument is ambiguous, but, no matter which way it is read, it also is new. At first glance it appears to mean merely that operators should have been competent in dose assessment before the Applicants moved for summary disposition. The text of the contention, though, is about the complexity of Annex B, not the state of preparedness of the operators during litigation of the contention. Moreover, there is no reason in law, or from good sense, for someone to be competent in dose assessment before that person needs to be, namely before the various scheduled tests of that competence.

By the argument that the motion must fail because the operators are not now trained, the Intervenor may intend something not apparent on the face of the argument, namely, that only health physics staff persons should do dose assessment, for only they would have had the longstanding, professional, specialized training which would enable them to perform dose assessments reliably in times of stress. This claim is far broader than the claim in the contention, which was simply that operators could not be expected to perform what appeared to be procedures in Annex B, not that the operators could not reliably perform for a short,² though stressful, time any conceivably adequate set of dose assessment procedures, no matter what the operators' training.

¹ Given the bar in *Louisiana Power and Light Co.* (Waterford Steam Electric Station, Unit 3), ALAB-732, 17 NRC 1076, 1107 (1983) against litigating the myriad, often-changing, details of implementing procedures, a contention on the PEPs might not have been admissible.

² Table B-1 at 37 in NUREG-0654, which, as we reported in our discussion of Contention 144, Mr. Eddleman would have us treat as law, calls for senior health physics expertise to be available within 30 minutes of the start of an accident.

OFFSITE EMERGENCY PLANNING

Eddleman Contentions 215(1) and 215(3)

The texts of the contentions are as follows:

In violation of 10 C.F.R. 50.47(b)(10) CP&L's evacuation time study does not conform to NUREG-0654 Appendix 4 and will not provide accurate and useful guidelines for the choice of protective actions during an emergency because the study contains numerous so-called "conservatisms" including those referring to recreational populations and vehicle capacity factors (see e.g. sections 3-3 and 3-6) which may force evacuation time estimates upwards and provide inaccurate estimates for decisionmakers during an emergency, in the opinion of expert Paul Holmbeck. Potential hazards of such "conservatisms" are discussed in the 1984 *Byron* partial initial decision under emergency planning.

1. The assumption of evacuation from home. For certain times of day, this assumption is unrealistic for many persons who will not be at home, but be at work, school, shopping, doctor's office, etc. This could also result in double counting of evacuees for persons who both live and work within the EPZ (6/14/84 Order at 31).
3. The apparent assumption that those households without vehicles will automatically evacuate with neighbors (or can) at the rate of one vehicle per household.

We admitted Contention 215 in our "Further Rulings on Admissibility of Offsite Emergency Planning Contentions . . .," June 14, 1984 (unpublished), at 24. However, we ordered that before the contention could be litigated, Mr. Eddleman would have to make it more specific. He did so on June 29, 1984, and we ruled on the specified contention, and the replies to it, on October 4, 1984, admitting parts (1) and (3) of the specified contention.

The Applicants filed for summary disposition of Contention 215(1) on January 7, 1985, and for summary disposition of Contention 215(3) on January 14, 1985. Accompanying each motion was an affidavit from Robert D. Klimm and one from Dr. Dennis S. Mileti.³ Mr. Klimm is an Associate of HMM Associates, Inc., which has been under contract to the Applicants to perform the evacuation time study. Mr. Klimm's work includes management and supervision of such studies, and he was the Principal Transportation Engineer of the study for the Shearon Harris facility. He was also involved in the system development of the NETVAC computer model, which has been used in evacuation time studies at several nuclear power plants. Dr. Mileti is Associate Professor

³ Dr. Mileti's affidavit on Contention 215(1) was filed on January 10, 1985.

in the Department of Sociology at Colorado State University and Director of the Hazards Assessment Laboratory at the University.

The Staff replied in support of the motions on February 6, 1985 (on Contention 215(1)) and February 27, 1985 (on Contention 215(3)). Accompanying each of the Staff's replies was an affidavit from Dr. Thomas Urbanik II, Associate Research Engineer and Program Manager at the Texas Transportation Institute, part of the Texas A&M University System. Dr. Urbanik is also Lecturer in the Civil Engineering Department at the University. He subcontracts to Battelle Pacific Northwest Laboratories to assist them in their review for the NRC of evacuation time estimates for nuclear power plants. He was principal author of NUREG/CR-1745, "Analysis of Techniques for Estimating Evacuation Times for Emergency Planning Zones," November 1980, and he has reviewed the initial evacuation time estimates for over fifty nuclear power plants. The results of his reviews appear in NUREG/CR-1856, "Analysis of Evacuation Time Estimates Around 52 Nuclear Power Plant Sites," May 1981.

The Intervenor, Mr. Wells Eddleman, replied in opposition to the Applicants' motions for summary disposition on February 15, 1985 (on Contention 215(1)) and on March 11, 1985 (on Contention 215(3)).

Contention 215(1)

The Commission's regulations require applicants to make, and keep current, evacuation time estimates for use in an emergency, and NUREG-0654 contains quite detailed guidance for constructing such estimates. Part 50, Appendix E, § IV, the introductory paragraph, of 10 C.F.R., says, among other things, that "[t]he nuclear power reactor operating license applicant shall also provide an analysis of the time required to evacuate and for taking other protective actions for various sectors and distances within the plume exposure pathway EPZ for transient and permanent populations." The requirement for such estimates stems ultimately from 10 C.F.R. § 50.47(b)(10), which says, in relevant part, that "[g]uidelines for the choice of protective actions during an emergency, consistent with Federal guidance, are developed and in place" Evacuation time estimates are such guidelines, since, in a particular emergency, they would help determine whether evacuation were a practical alternative to sheltering. The Federal guidance mentioned by the just-quoted regulation appears in NUREG-0654. There, the evaluation criteria which address the regulation say that the estimates shall be in accordance with Appendix 4 of NUREG-0654. *See* Evaluation Criteria J.8 and J.10.1. Though, as we have held elsewhere in this Deci-

sion, NUREG-0654 generally does not have the legal force of regulations, the language of § 50.47(b)(10) that the guidelines shall be “consistent with Federal guidance,” gives special force to the guidance on evacuation time estimates. No party to the litigation of these two contentions disputes that Appendix 4 to NUREG-0654 should govern our ruling on these two contentions. Indeed, both Intervenor and Applicants appeal to the guidance.

These evacuation time estimates are to be as realistic as is reasonably achievable. Although generally, when making estimates having to do with nuclear safety, it is prudent to incorporate conservatisms wherever the calculations are uncertain, it would be imprudent to be unnecessarily conservative in making an estimate of evacuation time, for an overestimate of sufficient magnitude could, in an emergency, lead those who must choose protective actions to avoid evacuation because they thought it would take too long when, in fact, it would have resulted in less exposure to radiation than sheltering would have. *See Commonwealth Edison Co.* (Byron Nuclear Power Station, Units 1 and 2), LBP-84-2, 19 NRC 36, 262-63 (1984).

The Applicants’ motion for summary disposition of Contention 215(1) stresses what they claim to be the reasonableness and realism of the disputed assumption in the time estimates that every resident of the plume EPZ would evacuate from home. The Applicants’ affiants report that experience with emergency evacuations and the literature on such evacuations support the assumption that residents of the plume EPZ will return home before evacuating. Klimm Affidavit, ¶ 6; Mileti Affidavit, ¶¶ 4, 7. Residents would return home principally, according to the affiants, to form families and other groups for mutual aid and protection. *Id.* The time estimates allot up to 2 hours for “preparation” for evacuation, and this figure, based on discussions with local officials, allows for returns home. Klimm Affidavit, ¶ 7. More than twenty evacuation time estimates use this assumption; most of these have been approved by the Staff, and the rest are under review. *Id.* ¶ 4. Indeed, the Applicants point out, the guidance in Appendix 4 of NUREG-0654 requires that the populations at recreational facilities, industrial facilities, and the like, be treated as separate from the permanent population of the EPZ. Klimm Affidavit, ¶ 5. *See* NUREG-0654, Appendix 4, at 4-2 to 4-3.

The Applicants argue that to the extent the assumption leads to double-counting at all, it makes the estimates not conservative but more realistic. Although many children who attend school in the EPZ also live there, their evacuating from school instead of from home would have an effect not on the number of cars used by those who evacuate from home, but only on the number of passengers in the cars, for parents, at

least, would still be leaving from home, and — goes the assumption which is the subject of Contention 215(3) — would still be using one car. Klimm Affidavit, ¶ 9. Thus the double-counting of some schoolchildren does not entail a double-counting of cars, and since it is the count of cars which is a crucial factor in time estimates, the double-counting of schoolchildren cannot lead to an overestimation of evacuation time.

Some double-counting of cars does occur in the time estimates in relation to permanent residents who also work within the EPZ or who would be in one of the recreation areas in the EPZ at the time of the accident. The estimates do count the cars of such residents twice, once as leaving from the place of employment or recreation, and once as leaving from home. However, although the cars are counted twice, the departures are not. Under the assumption that permanent residents, except for the schoolchildren among them, will evacuate from home, residents who before evacuating return home from employment, recreation, shopping, and the like, would be leaving both home and those places. *Id.* The assumption thus leads, the Applicants argue, to greater accuracy because it simulates, to a degree, the traffic “friction” (as the Applicants call it) caused by these departures toward home. *Id.*

The Staff agrees that the assumption of return home is supported by experience and the relevant literature, that Appendix 4 of NUREG-0654 says that the estimates are to treat residential populations separately from factory populations and the like, and that double-counting schoolchildren who live in the plume EPZ cannot lead to an overestimation of the number of cars that would be on the road. However, as to permanent residents who work in the EPZ or are otherwise away from home at the time of an accident, the Staff does not claim, or argue against the claim, that such double-counting simulates traffic “friction.” The Staff is content to say that no data exist which would enable the estimates to avoid such double-counting. Urbanik Affidavit at 2.

As happens too often with Intervenor Eddleman’s replies to motions for summary disposition, his reply to this motion appears to be in fact a new contention, at least to the extent we are able to construe its aim. He no longer charges that there is anything unreasonable or conservative about the assumption of evacuation from home.⁴ Rather he tries to raise

⁴ It was unusual to have an intervenor arguing against such an assumption, since it is very like the claim so often advanced by intervenors in these proceedings, and advanced in Contention 4(d) in this proceeding, that parents with children in school would pick them up before evacuating. Intervenor don’t often claim that evacuation times have been overestimated either. In fact it was also odd to have Applicants arguing such an assumption, since they usually claim that parents would not try to pick up their schoolchildren before evacuating. The Applicants here avoid contradicting this usual claim by saying that families would unite — unless they received sound public information to the contrary. See Mileti Affidavit, ¶ 7; see also our discussion of Contention 4(d).

new issues about the accuracy of the time estimates' "simulation" of the traffic "friction" caused by return home before evacuation. He claims that neither the estimates' double-counting nor the 2-hour preparation time they allot can accurately represent the traffic home before evacuation: The double-counting assumes that all cars counted would be leaving the plume EPZ, but at least some of the traffic home before evacuation would be against the flow of the traffic leaving the EPZ; and the number of hours allotted for preparation is apparently only based on undocumented discussions with local officials, not on the traffic densities caused by trips home. Eddleman Reply at 1-2.

The closest the Intervenor comes to maintaining the charge that double-counting leads to an overestimation of evacuation times is to assert that since the Staff claims that no data exist which could be used to avoid this double-counting, there is no way of telling how large it may be. However, this assertion fails to raise a litigable issue because it, as the rest of the reply, concerns the accuracy of the estimates' ways of accounting for traffic home, not any conservatism caused by an allegedly unreasonable assumption.

Moreover, even if the assertion that the double-counting may be quite large is construed as a claim that the double-counting leads to an overly conservative estimate, the assertion still fails to raise a genuine issue about a material fact, for the absolute size of the double-counting is irrelevant. Rather, what matters is the size of such double-counting relative to the traffic "friction" the Applicants claim to be simulating, and it might be expected that the larger the number of cars double-counted, the greater the "friction" to be simulated, since a larger number of permanent residents would be going home before evacuating.

Of course, as we have noted above, the failure of an opponent of a motion for summary disposition to show that there is a genuine issue of material fact does not, especially in proceedings involving health and safety questions, relieve the proponent of the motion of the burden to show that there is no such issue. However, we believe that the Applicants have carried that burden here. The reasonableness of the assumption that permanent residents will evacuate from home is no longer at issue among the parties, and we see no reason that it should be. Moreover, the Applicants are, in this case, entitled to a favorable decision as a matter of law, for even if the assumption of evacuation from home results in some overestimation of the evacuation time,⁵ the conservatism is hardly out of line with the law on this subject, Appendix 4 of

⁵ Arguably a possibility when some accommodation to those trips home is already made by the 2-hour allotment for preparation time.

NUREG-0654, which, though it cautions against overcounting (*see* Appendix 4 at 4-2), clearly permits a considerable overestimation of the total evacuation time by permitting the assumption that each stage of the evacuation is wholly complete before the next stage begins, for instance, that no one begins to evacuate until everyone is prepared to do so. The authors of Appendix 4 acknowledge that this assumption, which was not used in the SHNPP time estimates, “tends to overestimate the evacuation time.” *Id.* at 4-7. There is no indication that the double-counting in the SHNPP time estimates, which, as we have argued above, is a double-counting of cars, but not of departures, would lead to as high a degree of overestimation as the assumption that each stage of the evacuation is complete before the next one begins.⁶

Contention 215(3)

Appendix 4 of NUREG-0654 says that the time estimates, in determining how long it might take the permanent residents of the plume EPZ to evacuate, should divide the class of households of permanent residents into two subclasses, one consisting of households with automobiles, and the other consisting of those without. The Appendix stresses that special attention must be given to those households not having automobiles. *See* NUREG-0654, Appendix 4 at 4-2 to 4-3, 4-9. The time estimates assume that the some 600 households without automobiles will evacuate at the rate of one vehicle per household, the same rate at which households with automobiles are assumed by the estimates to evacuate.

The Applicants argue that this assumption is not a conservatism at all, but rather a practical means of simulating the traffic which would be generated by the friends, neighbors, or emergency workers who would provide transportation to those without automobiles. Applicants’ Motion at 9; Mileti Affidavit, ¶ 2. Again as with the double-counting considered in Contention 215(1), cars might be double-counted, but departures might not be. The Applicants report that the assumption was

⁶ Moreover, it appears that the law could not be otherwise on this issue, for the reason the Staff gives, that there are no data with which to avoid the double-counting here (*Urbanik Affidavit*, ¶ 5), by which, we take it, the Staff means not merely that the authors of the estimates have not gathered the data, but that they cannot be gathered. In theory it might be possible first to determine for every industry and office in the plume EPZ which employees live in the plume EPZ (Indeed, NUREG-0654, at 4-2 to 4-3, says to so determine, using employment data.) and how far they would have to go to get home, and then model both this preevacuation evacuation of residents and its interaction with the evacuation of nonresidents and residents at home at the start of an accident. But, clearly, no comparable method is possible, even in theory, for recreational areas, shopping centers, and the like, for the modeler cannot know which patrons of these places at the time of an accident lived in the plume EPZ and how far they were from their homes. This same argument of the Staff’s also runs against the Intervenor’s call for greater accuracy in the simulation of the “friction” generated by trips home before evacuation.

reviewed with local emergency preparedness officials and “was determined” to be the most realistic means of simulating the traffic generated by people going to households which have no automobiles. Klimm Affidavit, ¶ 7. The Applicants also report that HMM Associates has used this assumption in the many estimates it has done for other nuclear power plants, and that the NRC Staff has thus far always accepted the assumption. *Id.* ¶¶ 3, 10. Affiant Klimm estimates that even if it were assumed that *no* vehicles were used in evacuating households which have no automobiles, there would be only at most 655 fewer automobiles evacuating and the evacuation time estimates would be reduced by no more than 10 minutes. *Id.* ¶ 9.

The Staff argues that the assumption at issue here is not the most realistic that could be made, since it amounts to an assumption that for each household without an automobile, one car will travel some distance to evacuate that household, that, in effect, each such household will be evacuated by taxi. However, the emergency plans contemplate more efficient means of providing transportation for these households. Urbanik Affidavit at 3. In any event, the Staff’s affiant Dr. Urbanik concludes that any more realistic assumption would reduce the estimates by only 5 to 10 minutes, and that the present overestimation in the time estimates would not lessen the usefulness of the estimates in an emergency. *Id.*

In reply, the Intervenor, Mr. Wells Eddleman, attacks both the logic of the assumption and the Staff’s conclusion that whatever overestimation the assumption entails is not significant and would not lessen the usefulness of the estimates. In regard to logic, the Intervenor argues that the assumption is not consistent with affiant Mileti’s claim that transportation for some of these households would be provided by neighbors, for, in this case, there is no extra traffic to be simulated. In regard to the significance of any overestimation the assumption may entail, the Intervenor argues that the Staff has not proved that the overestimation is not significant, or that it would not lessen the usefulness of the estimates in an emergency.

As with Contention 144, the Intervenor would have us go to hearing over a matter of a few minutes. He does not dispute that the minutes involved are no more than 10, yet he appears to think that the level of precision in evacuation time estimates is such that 10 minutes could be significant. Moreover, as with Contention 215(1), there may not be the data which would permit a less conservative assumption, for although a survey has been conducted which gave households without automobiles an opportunity to make their emergency transportation needs known, there is no sure way of knowing in advance of an emergency how many

of those households would evacuate with nearby persons such as neighbors and how many might require help from further away. Perhaps a range of possibilities might be set out, and some probabilities assigned within that range, but any possible gain in accuracy does not require an evidentiary hearing.

Contention 213a

The text is as follows:

Either each off-site ERP should contain an appendix which conforms to evaluation criterion II.P.7 of NUREG-0654 or it should be demonstrated that such an appendix is unnecessary because its functions are performed in some other way by the present form of the plans.

The average emergency plan “should consist of perhaps hundreds of pages, not thousands.” NUREG-0654, Appendix 1, at 1-29. The plan should be such a length as to permit the whole planning scheme to be grasped in one view, and to permit a sound judgment on whether the plan can be implemented in an emergency. But a document of such relatively short length will not contain enough information for implementing the plan. The plan must therefore be supplemented with implementing procedures of often changing detail — step-by-step procedures, lists of names and numbers and the like — detail not suitable for inclusion in the plan itself, and seldom suitable for litigation before licensing boards (*see Louisiana Power and Light Co. (Waterford Steam Electric Station, Unit 3), ALAB-732, 17 NRC 1076, 1106-07 (1983)*). Such detail generally cannot be achieved until late in the planning. The implementing procedures for the onsite plan, for instance, can be submitted to the NRC as late as 180 days before the issuance of an operating license. 10 C.F.R. Part 50, Appendix E, § V.

Evaluation Criterion II.P.7 of NUREG-0654 says,

Each plan shall contain as an appendix listing, by title, procedures required to implement the plan. The listing shall include the section(s) of the plan to be implemented by each procedure.

When we admitted the contention, we said, “[p]resumably the goal of P.7 is to assure not only that the implementing procedures are prepared in advance of plant operation above 5% of rated power, but also to assure coordination between the plans and the implementing procedures.” And we might have added that the list P.7 calls for would also aid development and review (including periodic review) of the plan. Indeed, this latter consideration was very likely uppermost in the minds

of the drafters of P.7, for the ultimate authority for the requirement for such an appendix is the planning standard on plan development and review, 10 C.F.R. § 50.47(b)(16): "Responsibilities for plan development and review and for distribution of emergency plans are established, and planners are properly trained."

In August 1984, no appendix as called for by Evaluation Criterion P.7 was in either the State plan or any of the four county plans. Nor was it clear that the Applicants understood that such a plan might be required. For instance, Annex H of the plans, the Plan Cross-Reference, cited as fulfilling P.7 either very general sections of the plan, such as "Concept of Operations," or other annexes dealing only with notification.

We therefore admitted the contention in our order, LBP-84-29B, 20 NRC 389, 408-09 (1984). The Applicants moved for summary disposition on January 14, 1985. Accompanying the motion was an affidavit from Jesse T. Pugh, III, Director of the Division of Emergency Management, in the North Carolina Department of Crime Control and Public Safety. Mr. Pugh is responsible for North Carolina's emergency planning and emergency response preparedness, for both nuclear and nonnuclear emergencies. The Staff filed in support of the motion on February 27, 1985. Accompanying the Staff's filing was an affidavit from Thomas I. Hawkins, Emergency Management Program Specialist for the Federal Emergency Management Agency (FEMA), and FEMA Region IV Liaison with both South and North Carolina. The Intervenor, Wells Eddleman, replied in opposition to the motion on March 11, 1985.

The Applicants argued that the level of detail in the plans, together with the existence of standard operating procedures at the State and county levels, made an appendix linking the implementing procedures and the plans unnecessary. See LBP-84-29B, *supra*, 20 NRC at 409.

But the Applicants' principal argument, with which the Staff agrees, is that Attachment 2 to each of the five plans meets the requirement of Evaluation Criterion P.7. Attachment 2 to the State plan may be taken as typical of the other four such attachments. It lists by title five emergency plans and their sources — as, for instance, "Southern Mutual Radiation Assistance Plan," the source of which is the Southern States Energy Board. The attachment also lists three sets of Standing Operating Procedures (SOPs) and their sources — as, for instance, "State Emergency Response Team Standing Operating Procedures," the source of which is the North Carolina Division of Emergency Management, DCCPS. The Applicants concede that, as presently constituted, these attachments do not, as P.7 would have them do, list the plan sections being implemented by the listed plans and SOPs, but the Applicants nonetheless argue that P.7 is satisfied by the fact that the titles of

the plans and SOPs indicate the plan sections they implement. For instance, the Emergency Operating Center SOPs clearly indicate the part of the State plan which has to do with the functions of the Emergency Operating Center.

We believe that the listings in the various Attachment 2s are much too general to be of much use as cross-references between the plans and the implementing procedures. Rather, those Attachments are clearly intended to satisfy Evaluation Criterion P.6, which says, “[e]ach plan shall contain a detailed listing of supporting plans and their source.” Indeed, Annex H, the Plan Cross-Reference, explicitly identifies the various Attachment 2s as satisfying P.6, not P.7.

In response to the Applicants’ argument, the Intervenor quite rightly says that the assumption upon which the contention is based — that P.7 has not yet been satisfied — is true. Nonetheless, we are granting the motion for summary disposition, but we are also imposing a condition — to be set out in a moment — on the issuance of the full-power license. Despite the Applicants’, the Staff’s, and FEMA’s attempts to persuade us that the various Attachment 2s satisfy Evaluation Criterion P.7, we believe that the Applicants grasp the meaning of P.7 and understand that each Attachment 2 falls short of what P.7 calls for, not only in the amount of detail in the lists in the attachment, but also in not explicitly citing sections of the plan. The Applicants do not argue that such cross-references as P.7 calls for would not be useful, or that the goals of P.7 are met by some alternative comparable in the amount of detail and degree of explicitness to what P.7 calls for. Indeed, the Applicants explicitly commit, in the course of the motion (*see* Motion at 10; Pugh Affidavit, ¶ 7), to satisfying P.7 fully by the time of the full-scale exercise of the emergency plans, which, at the time of the motion, was scheduled for May of this year.

We secure this commitment by imposing its fulfillment as a condition of the issuance of a full-power license. The Staff is charged with determining that before the issuance of a full-power license there has been added to the State plan and each of the county plans an appendix listing the implementation procedures for that plan. The listing must be in at least as much detail as the list of titles of Corporate Emergency Plan Implementation Procedures (CEPIP) in the October 1984 onsite plan, but each appendix must also cite by section, or sections, the parts of the plan the listed procedures implement. This condition is clear and straightforward and thus we believe we can assign oversight of its completion to the Staff, without running afoul of the delegation doctrine as developed in NRC case law. *See Southern California Edison Co.* (San Onofre Nuclear Generating Station, Units 2 and 3), LBP-82-39, 15 NRC

1163, 1216-17 (1982); *Commonwealth Edison Co.* (Byron Nuclear Power Station, Units 1 and 2), LBP-84-2, 19 NRC 36, 209-13 (1984). Therefore there is nothing left to litigate under this contention.⁷

Contention 30

The text of the contention is as follows: ⁴

The plan's provisions (Part 1 pp. 49-50) for Potassium Iodide do not comply with the requirements of NUREG-0654 II.J.10.e (pg. 63) that the plans must include "quantities" for persons whose "evacuation may be infeasible or very difficult" who are in the plume EPZ.

The full text of the evaluation criterion the contention cites is as follows:

10. The organization's plans to implement protective measures for the plume exposure pathway shall include:

...

e. Provisions for the use of radioprotective drugs, particularly for emergency workers and institutionalized persons within the plume exposure EPZ whose immediate evacuation may be infeasible or very difficult, including quantities, storage, and means of distribution.

The authority for this criterion is the planning standard in 10 C.F.R. § 50.47(b)(10), which says, among other things, that "[a] range of protective actions have [sic] been developed for the plume exposure pathway EPZ for emergency workers and the public."

Section IV.E.6 of the State plan assigns to the Division of Health Services the task of determining how much potassium iodide (KI) would be required in an emergency, but no provision in the plan says what amount of KI would be enough. We admitted the contention because we wondered whether the evaluation criterion in question shouldn't be read more literally, since NUREG-0654 often calls for definite quantities to be included in the plans. Presumably, the purpose of such calls is to make sure that the quantities are determined during, not after, the planning process. "Further Rulings on Admissibility of Offsite Emergency Planning Contentions," June 14, 1984, at 21-22.

⁷ The Intervenor complains in his reply that it is clear that some implementing procedures are not in the plans, and that some sections of the plans which require implementing procedures may not yet have them. As we said when we admitted this contention, there is no requirement that the implementing procedures be in the plans. To the contrary, see LBP-84-29B, 20 NRC at 408. Nor is there any deadline for the drafting of procedures other than the natural deadline imposed by the full-scale exercise of the plans. What we seek is reasonable assurance that P.7 will be satisfied.

The Applicants filed for summary disposition on January 14, 1985. Accompanying the motion was an affidavit from Charles D. Reed, Pharmacist in the Adult Health Services Section of the Division of Health Services of the North Carolina Department of Human Resources. Mr. Reed has responsibility for the coordination of, and planning for, the procurement, storage, and distribution of KI for use in an emergency. The Staff responded in support of the motion on February 2, 1985. Accompanying the Staff's response was an affidavit from Thomas I. Hawkins, who, as we have reported before, is Emergency Management Program Specialist for the Federal Emergency Management Agency (FEMA) and the FEMA Region IV Liaison to South and North Carolina. The Intervenor, Mr. Wells Eddleman, replied in opposition to the motion on March 11, 1985.

The Applicants argue that it is cumbersome to keep the plans up to date on the quantities of KI required and stored, that these quantities are, for a number of reasons, among them changes in population density, subject to frequent change. Reed Affidavit, ¶ 6. The Applicants are, in effect, arguing that the information called for by J.10.e belongs in an implementing procedure, not in a plan. And, in fact, the State appears to treat this information, and related information, very much in the manner in which it treats implementing procedures: Affiant Reed reports that the Division of Health Services frequently distributes to State and local officials updated names of the locations where KI is stored, the quantities of KI stored at each location, and the names, addresses, and telephone numbers of the persons with access to the KI stored at each location. Reed Affidavit, ¶ 6.

The Applicants argue in the alternative that the quantities of KI which would be needed in an emergency have, in fact, been determined. Reed Affidavit, ¶ 2. As we said above, to assure that such a determination was made early on in the planning was the point of Evaluation Criterion J.10.e. No party to this proceeding has argued otherwise. When dealing with an evaluation criterion, the aim of the criterion is more important than the letter, since an applicant's compliance with a criterion is not required if the applicant can show that there is another way to satisfy the aim of the criterion. See *Metropolitan Edison Co.* (Three Mile Island Nuclear Station, Unit 1), ALAB-698, 16 NRC 1290, 1298-99 (1983).

The Intervenor now proposes that we litigate the *adequacy* of the quantity the State has determined it would need in an emergency. Intervenor's Reply at 5. Again, the Intervenor is proposing a new contention, one which could have been timely filed and a basis for it proffered. The Intervenor proffers none now.

Emergency Planning Joint Contention EPJ-1

The text is as follows:

Insufficient consideration has been given in the off-site Emergency Plans to the effects of severe snow and ice conditions on evacuation times and/or capabilities to clear evacuation routes.

Section IV.E.8 of the State plan (at 50) is deficient because the state does not have enough snow plows in this area to effectively clear the roads of snow or ice in a reasonable amount of time.

We admitted this contention during the May 2, 1984 prehearing conference, at Tr. 974-75, 993-96. The Applicants filed their motion for summary disposition on December 10, 1984. Accompanying the motion were three affidavits. Affiant Brian D. McFeaters is Project Scientist and Meteorological Supervisor with Applicant Carolina Power and Light Company. He has direct supervisory responsibility for all meteorological studies, monitoring, and assessment in that Applicant's Operational Training & Technical Services Department. Affiant M.C. Adams is Manager of the Maintenance and Equipment Branch of the Division of Highways, in the North Carolina Department of Transportation. He has responsibility for overseeing and maintaining the roads throughout the state, including those in the counties which overlap the plume exposure pathway EPZ. The third affiant was Robert D. Klimm, whose professional qualifications we briefly describe in our discussion of Contention 215.

The Staff and the Federal Emergency Management Agency (FEMA) filed a joint response in support of the motion on January 16, 1985. Accompanying the response were two affidavits, from Dr. Thomas Urbanik II and Thomas I. Hawkins. We briefly describe the professional qualifications of both men elsewhere in this Decision, of Dr. Urbanik in our discussion of Contention 215, and of Mr. Hawkins in our discussion of Contention 213a. Intervenor CHANGE replied in opposition to the motion on March 11, 1985. Cosponsoring Interveners were Dr. Richard D. Wilson and the Conservation Council of North Carolina (CCNC). We had designated CCNC as lead intervenor. See LBP-84-29B, 20 NRC at 420.

Section IV.A of NUREG-0654, Appendix 4, calls for evacuation time estimates to be calculated for at least two weather conditions, normal and adverse. There cannot possibly be an estimate calculated for every possible weather condition. Rather, in order to give those who would have to choose between sheltering and evacuation some reliable notion of the effect of adverse weather on evacuation times, the estimators

must choose an adverse condition which is both severe and not too infrequent in the plume EPZ under consideration. *Id.* The requirement for such estimates is in 10 C.F.R. Part 50, Appendix E, § IV, the introductory paragraph, and the ultimate source for the requirement is 10 C.F.R. § 50.47(b)(10), which says, in relevant part, “[a] range of protective actions [has] been developed for the plume exposure pathway EPZ”

The adverse weather assumed in the Applicants’ time estimates is a severe rainstorm. Snowstorms are too infrequent around Shearon Harris to be usefully assumed in a time estimate. On average, each year only 7.5 inches of snow falls in that area of North Carolina, 2.5 of those inches in January, and 2.4 inches in February. McFeaters Affidavit at 2. Moreover, on average each year there are only 4 days in which there is any freezing rain. *Id.* at 3. However, the population of the plume EPZ is at its highest in the Fall, when adverse weather of any severity is likely to be in the form of rain. Urbanik Affidavit, ¶ 4.

Nonetheless, the State is well-prepared to clear the roads for evacuation in a snowstorm, if evacuation were to be the dose-saving protective action under such circumstances. The North Carolina Department of Transportation maintains close communication with the National Weather Service and has crews on standby around the clock in every county which overlaps the EPZ. The Department has fifty pieces of equipment in those counties — one piece for every 12 miles of highway in the plume EPZ — assigned for use in a general emergency caused by an accident at the plant. Adams Affidavit at 2-4. Thus, if such an emergency were to coincide with a large snowstorm, the Department would be prepared to begin simultaneous clearing of all the roads in the plume EPZ — and of the major evacuation routes outside the plume EPZ — when the first snow fell. *Id.*

Affiant Adams estimates that, for any storm dumping up to 6 inches of snow, it would take between 2.5 and 4 hours to clear all the roads needed for evacuation. In that time, every major U.S. or State road in the plume EPZ, and every major route beyond the 10-mile zone and leading to an evacuation shelter, could be scraped twice, and every other road within the 10-mile limit scraped once. Adams Affidavit at 3-4.

In its reply to the motion, CHANGE raises no objection to the adverse weather assumptions in the time estimates, and moreover says that “[i]t appears that the concerns of the contention have been adequately addressed, insofar as it addresses the effects of snow and ability of the State to clear the snow and ice from the roads.” However, CHANGE goes on to say that “[i]mplicit in the contention . . . is the effect of snow and ice on the ability of drivers of poorly equipped cars to deal with treacherous conditions and the ensuing difficulty in effectively clearing

roads within the time parameters specified.” The issue CHANGE raises here is new in this proceeding and can have no effect, either procedural or substantive, on our ruling on summary disposition. Moreover, the issue is late and pleaded without basis, and it has no bearing on the adequacy either of the evacuation time estimates — about which CHANGE now raises no objection — or the adequacy of the State’s preparations for clearing the roads of snow and ice.

Emergency Planning Joint Contention 4(a)

The text of the contention is as follows:

Section E4d of State Procedures (p. 47) is deficient because — Fifty percent of school bus drivers are high school juniors and seniors (as young as 16½ years). They should not be expected to perform as emergency personnel without explicit and specific authorization from their parents. Even with such authorization they should not be trusted to perform in emergency situations.

Of the seventy-five drivers planners judge would be needed to evacuate the public and private schools in the plume EPZ, about sixty-six would be high school students licensed to drive school buses. Pugh Affidavit, ¶ 3. We admitted the contention in LBP-84-29B, *supra*, 20 NRC at 420-21. Cosponsoring intervenors were Dr. Richard D. Wilson and CHANGE. We designated CHANGE as the lead intervenor.

The Applicants filed for summary disposition on January 11, 1985, with affidavits from Jesse T. Pugh III, and Dr. Dennis S. Mileti. We briefly describe the professional qualifications of Mr. Pugh in our discussion of Contention 213a, and of Dr. Mileti in our discussion of Contention 215. The Staff and the Federal Emergency Management Agency (FEMA) responded in support of the motion on February 27, 1985, with an affidavit from Thomas I. Hawkins, whose professional qualifications we briefly describe in our discussion of Contention 213a. CHANGE replied in opposition to the motion on March 11, 1985.

The Applicants’ argument, in a nutshell, is that the emergency tasks of the school bus drivers would be little different from the tasks they competently perform daily during the school year, that they will be well-informed about what would be expected of them in an emergency, and that there is no evidence in the historical record of emergency response to suggest that high school students would not perform their assigned roles.

Daily during the school year, in all kinds of weather, school bus drivers who are students drive students of all ages to and from the schools in the plume EPZ. Pugh Affidavit, ¶ 4. The student drivers’ competence

for these daily tasks is assured by regulations issued by the State Department of Public Education. These regulations set out standards for the student driver's health, vision, hearing, size, strength, age, character, and attitude. Motion at 5. Prospective drivers must also take a training course in driving school buses.

In an emergency caused by an accident at the Shearon Harris plant the school bus drivers would, as they do daily, pick students up at the schools and drop them off somewhere else, at assigned shelters in the case of an emergency. At least one school staff member would be on each bus to supervise the student passengers. Pugh Affidavit, ¶ 7. Neither student drivers nor adult ones would be asked to return to the EPZ; after arriving at the shelters the student drivers would be free to join their parents. Pugh Affidavit at 4 n.2; ¶ 6. Thus the student drivers would have faced no greater risk of exposure to radiation than their passengers would have, and very likely less risk than the general public would have faced, since the schools would probably receive notification for evacuation sooner than the general public would. *Id.* ¶ 6.

For these emergency tasks so little different from their nonemergency tasks, the school bus drivers, both student and adult, will receive adequate training. They will know which shelter they should drive to, and what route to take to get there. *Id.* ¶ 8. They will be instructed in certain concepts about radiation. *Id.* They will be given some overview of the emergency plans so that they will be able to understand better their own role in the plans. *Id.* And they will be urged to discuss their roles with their families so that they and their families can make arrangements which are consistent with the roles the driver would play in an emergency. *Id.* The plans also provide for refresher training. *Id.* Affiant Dr. Mileti claims that the historical record on emergency response shows that persons well-trained in their emergency roles perform them well in time of emergency and that high school students have demonstrated a particular willingness to perform emergency roles. Mileti Affidavit, ¶ 5. He also argues that student drivers, being neither parents nor spouses, would be less likely than older drivers would be to be caught between conflicting duties. *Id.* ¶¶ 3-4.

The Applicants also argue that requiring parental authorization for student drivers to perform their roles in an evacuation would not increase the reliability or the quality of the performance of the student drivers, and therefore would not contribute to the health and safety of the students who would be passengers on the buses. Motion at 11-12. Nor, the Applicants argue, would such authorization contribute to the health and safety of the drivers themselves, for even if they were not permitted to drive the buses, they would still ride in them and thus would face exactly

the same risks of exposure to radiation their fellow students would. *Id.* at 11. The Applicants also point out that State law expressly authorizes the use of school buses “for emergency management purposes,” but neither State statutes nor regulations require parental authorization for student bus drivers to drive the buses in an emergency. *Id.* at 6 (citing N.C. Gen. Stat. § 115C-242(6)).

CHANGE replies with what amount to four arguments. First, it claims that Applicants’ affiant Dr. Mileti “assumes,” when predicting that high school students would perform their roles well, that they will be trained in those roles. Given Mr. Pugh’s affidavit and the relevant provisions of the plans, we fail to see what is questionable about this assumption. CHANGE argues second that the State Department of Public Education regulations on the qualifications of school bus drivers “appear to be at most . . . paper requirement[s] of little reliability or application in emergency conditions.” CHANGE proffers no basis for this claim. CHANGE grants that “the reliability and quality of a driver’s performance may not be dependent on parental authorization,” but CHANGE nonetheless asserts that “parental authorization and approval are certainly important in considering issues of this nature.” How important in considering which issues of what nature CHANGE does not say. CHANGE last asserts its “general experience” of students of high school age against Dr. Mileti’s “general experience” of students that age, and thus invites us to prefer undocumented, unsworn claims to sworn affidavits summarizing scholarship. Again, “a party opposing the motion may not rest upon the mere allegations or denials of his answer; his answer by affidavits or as otherwise provided in this section must set forth specific facts showing that there is a genuine issue of fact.” 10 C.F.R. § 2.749(b).

Contention 4(d)

The text of the contention is as follows:

Section E4d of State Procedures (p. 47) is deficient because —

Most parents would demand to pick up their children at school. The chaos at every school in the area would require all local law enforcement officers and several county officers to contain. This factor is not mentioned in the plan.

The cosponsors of this contention are Dr. Richard D. Wilson, Mr. Wells Eddleman, and CHANGE. We designated CHANGE as the lead intervenor. See LBP-84-29B, *supra*, 20 NRC at 421.

The Applicants moved for summary disposition on January 14, 1985, with affidavits from Jesse T. Pugh III, Dr. Dennis Mileti, and Robert D.

Klimm. We briefly describe the professional qualifications of all three men elsewhere in this Decision, of Mr. Pugh in our discussion of Contention 213a, and of Dr. Mileti and Mr. Klimm in our discussion of Contention 215. The Staff and the Federal Emergency Management Agency (FEMA) filed a joint response in support of the motion on February 27, 1985, with an affidavit from Thomas I. Hawkins, whose professional qualifications we briefly described in our discussion of Contention 213a. CHANGE replied in opposition to the motion on March 11, 1985.

The Applicants argue first that the evacuation of the schools would probably be well under way by the time parents and other members of the general public received notification of a general evacuation, since notification to the schools, both public and private, would precede, to some extent, notification to the general public, and the buses and drivers needed for evacuation of a given school would already be at the school as a matter of daily routine, or at least at a nearby school. Pugh Affidavit at 3.

The Applicants argue second that parents well-informed about what is being done for their children's safety would not be likely to try to pick their children up at school. According to Dr. Mileti, if parents are informed well in advance about the plans' provisions for the evacuation of their children, and informed at the time of an emergency that those provisions are being carried out and that parents should proceed to the shelter assigned them, there is no reason, in light of the historical record on the response of the public in general emergencies, to expect what some choose to call the "thin veneer of civilization" to be stripped away and parents to show up in great numbers at the schools, in panic and needing to be subdued by police. Mileti Affidavit at 3-4. Affiant Pugh reports that parents will indeed be informed about plans for the evacuation of schoolchildren; the public information brochures to be distributed throughout the plume EPZ will describe those plans, as will planning personnel at Parent-Teacher Organization meetings at every school in the plume EPZ. Pugh Affidavit at 4 n.2; ¶ 4. In the event of an emergency, the Emergency Broadcast System would inform parents about the evacuation of the schools, report the names of the shelter to which each school's students had been evacuated, and urge parents not to try to pick their children up at school. *Id.* at 3.

Nonetheless, the plans make some provision for parents' trying to unite with their children before evacuation. Parents who do go to the schools will, of course, be permitted to pick up their children. *Id.* at 5 n.3. Personnel at each school will be trained to deal with the traffic. All the schools in the plume EPZ have multiple entrances and exits, with the entrances parents normally use to pick their children up separate

from exits the buses normally use. *Id.* ¶ 6. Affiant Klimm says that although the evacuation time estimates were not calculated with the possibility in mind that parents would try to go to the schools, such trips to the schools would not invalidate the estimates, for the estimates allot ample times for preparation and mobilization, and the double-counting discussed in Contention 215 leaves some room for the traffic “friction” caused by parents’ going to the schools. Klimm Affidavit at 3.

Inexplicably, CHANGE construes the Applicants’ first argument to *assume* that the schools would be evacuated before parents arrive at them. CHANGE’s only other argument is that we have received testimony at a limited appearance session from parents who said they would probably try to pick their children up at school. Thus we are invited to set aside, on the basis of brief, unsworn testimony about what the testifier thought he or she might do in a general emergency, sworn affidavits about how people have in fact behaved in general emergencies. “[A] party opposing the motion may not rest upon the mere allegations or denials of his answer; his answer by affidavits or as otherwise provided in this section must set forth specific facts showing that there is a genuine issue of fact.” 10 C.F.R. § 2.749(b).

**THE ATOMIC SAFETY AND
LICENSING BOARD**

**James L. Kelley, Chairman
ADMINISTRATIVE JUDGE**

**James H. Carpenter
ADMINISTRATIVE JUDGE**

**Glenn O. Bright
ADMINISTRATIVE JUDGE**

Bethesda, Maryland

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

**James L. Kelley, Chairman
Dr. James H. Carpenter
Glenn O. Bright**

In the Matter of

**Docket No. 50-400-OL
(ASLBP No. 82-472-03-OL)**

**CAROLINA POWER & LIGHT
COMPANY and
NORTH CAROLINA EASTERN
MUNICIPAL POWER AGENCY
(Shearon Harris Nuclear Power
Plant)**

August 20, 1985

In this Partial Initial Decision, the Licensing Board decides most of the contested safety issues, including management capability issues, in the Applicants' favor.

TECHNICAL ISSUES DISCUSSED

Accuracy of Thermoluminescent Dosimeters
Environmental Qualification of Electrical Equipment
Integrity of Containment Concrete.

APPEARANCES

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Charles A. Barth and **Janice E. Moore** for the Nuclear Regulatory Commission Staff.

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PARTIAL INITIAL DECISION ON SAFETY CONTENTIONS

I. INTRODUCTION

The factual and procedural background concerning this contested operating license case are set forth in our first partial initial decision on environmental issues. LBP-85-5, 21 NRC 410, 412-14 (1985). This Partial Initial Decision addresses most of the safety contentions that were

heard in the Fall of 1984. It resolves those contentions in favor of the Applicants and adversely to the Intervenors. The Decision also has the effect of making other dispositive Board rulings on safety contentions — i.e., rulings granting summary disposition motions or rejecting proposed contentions — ripe for appellate review.

Hearings were held on certain emergency planning contentions in June 1985 and the remaining emergency planning contention is scheduled to be heard in September. The Board anticipates that a final partial initial decision will issue late this year and resolve emergency planning and all other remaining contentions.

II. MANAGEMENT CAPABILITY

A. Background

The ability of Carolina Power & Light Company to manage the Shearon Harris facility — often referred to as “management capability” — had been a principal area of controversy at the construction permit stage. Although the construction permit Licensing Board found that CP&L management could construct Shearon Harris safely, it was not then in a position to determine management capability to operate the facility. However, that Board, the Appeal Board, and, ultimately, the Commission adopted somewhat different approaches to the same end — that management capability would receive more than routine Staff review at the operating license stage.¹ In response to the Commission’s direction, the NRC Staff performed a special “preliminary assessment” of CP&L’s management capability to operate the Harris facility. This assessment was published in the *Federal Register* prior to the Notice of Opportunity for Hearing on the operating license application. See JI Exh. 38.

Possibly in response to the Staff’s published assessment, several of the petitioners for intervention proposed sixteen relatively detailed “management” contentions at the initial stage of this proceeding. LBP-82-119A, 16 NRC 2069, 2075 (1982). In order to simplify and consolidate these contentions, the Board encouraged the petitioners, the Applicants and the NRC Staff to negotiate stipulated management conten-

¹ The Licensing Board conditioned the construction permit on a demonstration by the Applicants of their management capability in a hearing at the operating license stage. See LBP-79-19, 10 NRC 37, 98 (1979). The Appeal Board invalidated that condition, but directed the Staff to prepare a preliminary assessment of management capability at that stage. ALAB-577, 11 NRC 18, 36 (1980). The Commission reversed that Appeal Board order as beyond that Board’s delegated authority, but adopted that Board’s relief as its own. CLI-80-12, 11 NRC 514 (1980).

tions. The result was a stipulation by all parties to Joint Contention I, which reads as follows:

The Applicants have not demonstrated the adequacy of their managing, engineering, operating and maintenance personnel to safely operate, maintain and manage the Shearon Harris Nuclear Power Plant as evidenced by their record of safety and performance at their other nuclear power facilities. A pattern of management inadequacies and unqualified and/or inadequate staff is likely to be reproduced at Shearon Harris Nuclear Power Plant and result in health and safety problems.

Joint Contention I is very broad. Indeed it is so lacking in specifics that we probably would not have admitted it over an Applicant or Staff objection on that ground. In this case, however, it was apparent that a relative lack of specificity was the *quid pro quo* for a single stipulated contention, a price the Applicants and Staff were willing to pay. A principal reason for requiring specificity in contentions is to protect the opposing parties from unduly broad discovery. Because the Applicants and Staff evidenced a willingness (through their stipulations to Joint Contention I) to waive that protection here, there was no reason for the Board to insist on it. In any event, the Applicants and Staff apparently foresaw that they could adequately particularize this broad contention in the discovery process. To a large extent, that is what happened.

B. Standards

Management capability or “competence”² (as it is sometimes called) is a murky area of nuclear power regulation. The Commission, in one of its few pronouncements on the subject, has recognized “that it has not established definitive standards for management organization and operation for nuclear power plants.” *Metropolitan Edison Co.* (Three Mile Island Nuclear Station, Unit 1), CLI-80-5, 11 NRC 408, 409-10 (1980). Acknowledging the present lack of standards, the Appeal Board has called management competence a “nebulous . . . slippery concept.” *Id.*, ALAB-772, 19 NRC 1193, 1206, 1208 (1984). Not surprisingly, the few decided cases in this area do not illustrate clear “management” principles, but tend to turn on their particular facts. *See id.*, LBP-81-32, 14 NRC 381 (1982); *Carolina Power and Light Co.* (Shearon Harris Nuclear Power Plant, Units 1, 2, 3, and 4), LBP-79-19, 10 NRC 37 (1979);

² The phrases “management capability” and “management competence” are used interchangeably in this Decision and in the decided cases. Both grow out of the requirement that an applicant for an operating license be “technically qualified” to operate the facility. 10 C.F.R. § 50.40(b). That rule, in turn, derives from § 182(a) of the Atomic Energy Act, 42 U.S.C. § 2232.

Houston Lighting and Power Co. (South Texas Project, Units 1 and 2), LBP-84-13, 19 NRC 659, 669-98 (1984).

The lack of clear standards for “management capability” becomes less significant, however, when it is recognized that in a particular case that phrase may be little more than a loosely descriptive label for certain kinds of fairly specific problems that can arise at a nuclear power plant. So viewed, a “management competence” label can be similar to the “safety,” “environmental” and “emergency planning” labels Boards have become accustomed to using as convenient demarcation lines for segregable parts of big cases. For example, in the “management” phase of the TMI Restart proceeding, the Commission raised a series of relatively detailed questions for exploration by the Licensing Board — e.g., whether the Unit 1 health physics program and radiation waste system were appropriately staffed with qualified individuals to ensure the safe operation of the facility. CLI-80-5, *supra*, 11 NRC at 409. Presumably, these questions could have been raised as separate “safety” issues in the case without any explicit reference to “management capability.”³ Similarly, in the present case and for the most part, the Intervenor’s concerns about CP&L management eventually focused upon reasonably specific areas, such that the parties were fairly called upon to respond to them, and the Board is now in a position to make reasonably specific findings, based on the hearing record.

C. Management — General Considerations⁴

The Applicants presented a panel of high-level management officials to testify about CP&L’s management structure for nuclear activities and related matters, including E.E. Utley, Executive Vice President, Power Supply, Engineering and Construction, and M.A. McDuffie, Senior Vice President, Nuclear Generation Group. *See Applicants’ Joint Testimony of Utley, McDuffie, Elleman and Banks on Contention I, ff. Tr. 2452, at 1-5.* These panel witnesses have extensive experience in nuclear matters generally and in CP&L’s nuclear activities in particular. For example, Mr. Utley has been a senior management officer of CP&L since 1972, and is currently Chairman of the Evaluation and Assistance Division of the Institute of Nuclear Power Operations (INPO). Mr. McDuffie has 17

³ So too, in this case the Intervenor’s particular concerns — although related in one way or another to “management” — could have been heard individually as “safety” contentions. Conversely, a contention like Eddleman Contention 41, which was labeled a “safety” contention, might have been heard as a “management” contention in light of widespread problems in the pipe hanger inspection process. *See Testimony of Paul Bemis, ff. Tr. 3660, at 22.*

⁴ This section incorporates the Board’s findings of fact and conclusions of law on Joint Contention I. *Cf. Fed. R. Civ. P. 52(a).*

years of nuclear plant construction experience; he has been a senior management officer of CP&L since 1974.

It is not necessary for us to describe CP&L's organizational structure and functional relationships in detail. We include such description only as necessary to provide a context for the Joint Intervenors' criticisms in the management area.

Like all corporations, CP&L is headed by a Board of Directors. The Board has ten "outside" Directors; four corporate officers also serve as "inside" Directors.⁵ Sherwood H. Smith, Jr., is the Chairman of the Board, President and Chief Executive Officer of CP&L and, as such, oversees all of the company's operations. Utley Testimony at 7. Mr. Smith has been a member of CP&L senior management since 1971, when he was named Senior Vice President and General Counsel. Smith, Tr. 3906. He devotes a substantial portion of his time to CP&L nuclear activities and to national nuclear industry activities. Tr. 3919-21, 3924-26.

The Intervenors ask us to find, without any record citation, that "reliance on one person [Mr. Smith] for the three top positions has the potential to preclude effective change in response to problems in nuclear operation." Joint Intervenors' Proposed Finding (JI PF) 10. The Board declines. In the first place, it is unclear whether Mr. Smith actually holds three separate corporate positions. His testimony suggests that he is "Chief Executive Officer" by virtue of his being President of the company. Smith, Tr. 3906. In any event, there is no evidence in the record to support the Intervenors' proposition. On the contrary, it is not uncommon for senior corporate officers to wear two or more hats, some of which may be largely titular. Smith, Tr. 3914. Overall, the Board was favorably impressed with Mr. Smith's appearance as a witness. See Tr. 3907-36. We have no reason to think that CP&L's nuclear activities will suffer as a result of Mr. Smith's having more than one title in the company.

⁵ In 1982, at the request of the North Carolina Public Utilities Commission, a firm of management consultants reviewed CP&L's activities and made a number of recommendations for change, about half involving "management process improvements opportunities." The first such recommendation was that CP&L include on its Board "outside" directors having nuclear experience. In 1984, CP&L reported to the Utilities Commission that the status of the "outside nuclear director" recommendation was "completed." JI Exh. 14, at 3. However, Mr. Utley testified that there is no outside director with nuclear experience on the CP&L Board. We were told that the intent of the status report was to reflect the hiring of a particular individual with extensive experience in nuclear activities as a consultant to the Board. Utley Testimony at 7, Tr. 2797; Smith, Tr. 3910-13. The Board finds CP&L's report to the Utilities Commission on this recommendation misleading even taking into account Applicants' Exhibit 3, which provided a fuller explanation. Nevertheless, we attach no substantial significance to this matter, in and of itself, nor does any other evidence tend to prove a proclivity to make misleading statements to regulatory authorities.

Mr. Utley, as Executive Vice President for Power Supply, Engineering and Construction, reports to Mr. Smith. Five organizations, each headed by a Vice President, are involved in CP&L's nuclear power activities and report to Mr. Utley. These organizations are the Nuclear Generation Group (headed by Mr. McDuffie), the Brunswick Nuclear Project, the Operations Support Group, the Corporate Nuclear Safety and Research Department, and the Corporate Quality Assurance Department. Two of the five groups — Nuclear Generation and the Brunswick Department — are concerned solely with nuclear activities. Utley Testimony at 8-11. The other three groups support all of CP&L's generating activities, including coal, hydro and petroleum fired plants. CP&L has approximately fifteen nonnuclear generating plants employing about 1000 people.

A provision of the Staff's Standard Review Plan (SRP) states that: "A corporate officer should clearly be responsible for nuclear activities, without having ancillary responsibilities that might detract from his attention to nuclear safety matters."⁶ The Intervenor correctly point out that "the only CP&L corporate officer responsible for all nuclear activities is Mr. Utley, who is also responsible for all fossil generation, transmission and distribution for the company." JI PF 28. The Intervenor further point out, again correctly, that "this does not meet the Standard Review Plan acceptance criteria." *Id.* However, the Staff's Standard Review Plan does not rise to the level of a binding regulation. Like Regulatory Guides, the Standard Review Plan merely reflects the Staff's position on how one aspect of an Applicants' technical qualifications should be judged. Furthermore, the Staff is free to waive criteria in its Standard Review Plan if, under the circumstances, it is nevertheless satisfied with the Applicants' organizational structure. That is what happened in this case.

Staff witness Bemis testified that "the Staff finds . . . the present organization within CP&L is acceptable . . . although further nuclear consolidation is desirable." Bemis Testimony, ff. Tr. 3660, at 36. More specifically, Mr. Bemis testified that:

The Corporate Quality Assurance and the Corporate Nuclear Safety and Research Departments report to the Executive Vice President, PSE&C rather than to the corporate officer who has primary responsibility for nuclear support activities, which appears to be common industry practice. The reportability of the departments was determined by the applicant to give these departments additional independence. However, not only does this place excessive direct responsibility on the Executive

⁶ SRP 13.1.1, quoted in Bemis Testimony, ff. Tr. 3660, at 36.

Vice President who is already responsible for the largest majority of the company employees and operation, it also removes the day-to-day decision-making capabilities involving interface with the departments from the corporate officer who is considered as the primary corporate officer for nuclear support activities. The staff finds this reportability to be acceptable for the three sites at this time. However, the staff will continue to review this organization in practice.

Id. at 37. The Staff considered it significant that in August 1983, only a year before its testimony in this case, CP&L had undergone "a major restructuring of the corporate organization" which had been explained to NRC as "a major step in CP&L's movement toward nuclear consolidation in the CP&L organization." *Id.* at 30. Mr. Bemis went on to outline the major features of these changes and their rationale. *Id.* at 31-35.

Mr. Utley provided further details about the recent changes, most notably the assignment of a corporate officer (or manager with the status of a department head) to each of the three nuclear plant sites to manage activities at that site. The principal purpose of this change had been to "provide firmer management control over and greater accountability for activities at the plant." Mr. Utley regarded this change as the "single most important improvement . . . CP&L has made in the way in which it manages its nuclear program." Utley Testimony at 34.

In view of the recentness and significance of these changes, the Staff decided to give its qualified approval to them at this time. The Staff also promised to "closely monitor . . . to determine whether actual performance is clearly demonstrated during major evaluations." Bemis Testimony at 38.

Based in part on the Staff's assurance that it will monitor the practical working of the recent changes in the CP&L organization, this Board accepts that structure, as it has been presented to us. That structure appears to be reasonable and calculated to focus prompt, high-level management attention on safety concerns as they arise. The Intervenor propose no finding that the CP&L organizational structure does not meet any binding licensing standard. Nor, except as already discussed, do they direct us toward any record evidence calling that structure into question.⁷

⁷The Joint Intervenor propose a finding that senior management personnel do not receive written evaluations of their performance. JI PF 22. While the record supports that fact, we see little relevance to the issue of technical competence. Joint Intervenor's Proposed Finding 23 seeks to fault Mr. Smith for taking into account the performance of the nuclear units in his evaluation of Mr. Utley, as distinguished from an evaluation based solely on safety considerations, apparently without regard to cost. Mr. Smith made it clear that top-level management officials are evaluated under various criteria; he testified, however, that "you have to start with their safe performance . . . safety to the public has to come first." Smith, Tr. 3917. The implication that management officials should be evaluated solely on the basis of safety, without regard to such things as output, schedules or cost, is not merely unrealistic, but fatuous.

(Continued)

D. Brunswick — General

Apart from general management considerations, the testimony and exhibits largely focused on particular aspects of the Applicants' management of its Brunswick facility and on the Applicants' ratings in the Staff's annual "Systematic Assessment of License Performance" (commonly called "SALP Reports") for 1981-84. The pertinent history at Brunswick and these SALP Reports are closely interrelated. For the sake of clarity, we turn to the Brunswick history first.

Applicants' testimony concerning Brunswick came principally from Mr. Utley (Testimony at 29-33) and from the current senior CP&L managers at Brunswick — Patrick Howe, Vice President-Brunswick Nuclear Project, and C.R. Dietz, General Manager-Brunswick Plant. See Howe/Dietz Testimony, ff. Tr. 3124. The senior managers and the organizational structure presently in place at Brunswick are pertinent, not in and of themselves, but for what they say about the Applicants' willingness and ability to identify management problems and to implement corrective action in a timely manner.

Both Mr. Howe and Mr. Dietz have extensive training and experience in the nuclear field. Mr. Howe has some 30 years of nuclear experience, including senior positions at the Lawrence Radiation Laboratory, the Atomic Energy Commission and CP&L. Mr. Dietz has held a variety of responsible positions in the nuclear industry. Howe/Dietz Testimony at 1-3. Messrs. Howe and Dietz spoke on the basis of first-hand experience about the Brunswick plant and, generally, the Board found their testimony persuasive. Messrs. Howe and Dietz testified in some detail about the present organization and staffing of the Brunswick Nuclear Project. *Id.* at 1-10. The record reflects that the *present* organization and staffing at Brunswick are adequate. However, an earlier period at Brunswick, from about 1977 until late 1982, raises questions about CP&L's management competence, not only at that facility, but in all its nuclear operations.

E. The NRC Staff's View of Brunswick

The NRC Staff's principal witness on the management contention was Paul R. Bemis, a Section Chief in the NRC's Atlanta Office. Mr. Bemis was very well qualified to address the management contention. His

Intervenors ask us to find that "only limited personnel actions" have been taken in response to violations of NRC regulations. JI PF 25. There is insufficient evidence in the record to make any generalizations about this subject. Joint Intervenors' Exhibit 17 indicates that more regulation violations occur at operating plants (Robinson and Brunswick) than at a construction site (Harris). That would not be surprising, but it proves nothing about the Applicants' managerial competence.

general background and experience were set forth in his extensive testimony. Furthermore, for approximately 2 years preceding the hearing, Mr. Bemis was directly responsible “for managing the performance of the NRC inspection and enforcement program at all of the CP&L facilities.” Bemis Testimony at 6. Mr. Bemis explained this unusual assignment, as follows:

In the fall of 1982, the Regional Administrator and his top management staff decided that due to numerous continuing problems at CP&L facilities, in particular the Brunswick site, a break from a conventional NRC management style was required and a radical management style would be put into place . . . Rather than managing solely from the Regional Office I was detailed to observe first hand the operations at the individual nuclear sites and corporate office. During the first six months of this new assignment, I spent approximately 85% of my normal work time assignment at CP&L nuclear sites and the corporate office evaluating: the management at the nuclear sites, and at the corporate office; plant operation, including support groups; and progress of the Brunswick and Robinson Improvement Programs to ensure that lessons learned from these programs were implemented at Harris. During the past year, I have been evaluating the programs put in place to ensure that progress is being achieved, evaluating implementation of the new corporate and site organizations including individual managers, and following closely the Robinson Steam Generator Repair Project, the implementation of the Brunswick and Robinson Improvement Programs, and the construction progress at the Harris facility.

Among other matters, Mr. Bemis testified in some detail concerning the following areas of concern at Brunswick.

1. Enforcement History

According to Mr. Bemis, “Brunswick’s enforcement history has been poor.” *Id.* at 15. (This assessment is also indicated by prior SALP ratings, as discussed further below.) Mr. Bemis singled out a civil penalty of \$600,000 — the largest penalty levied by NRC to that date — associated with certain surveillance and quality assurance activities. *Id.* See JI Exh. 18. He testified that:

Originally, it was thought that only a few surveillance requirements were missed but after a thorough check of the Technical Specifications it was determined that a large number of Limiting Conditions for Operation could not be verified. When the magnitude of these problems was recognized, CP&L management shut down both units, performed the required verifications, and began development of the Brunswick Improvement Program (BIP).

Mr. Bemis characterized this incident as a “breakdown in management controls” (Bemis Testimony at 20), a characterization with which Mr. Smith and Mr. Utley of CP&L seemed to agree. Tr. 2907, 3928.

With respect to more recent trends in enforcement matters, however, Mr. Bemis testified that “my review of enforcement history of CP&L sites indicates violations are becoming fewer in number. More importantly, the level of severity of the violation is decreasing.” Bemis Testimony at 18. He further concluded that violations at the Harris plant over the past 3 years, for the most part, “did not represent programmatic or management control system failures.” *Id.* at 20.⁸

2. Other Brunswick Problems Relevant to Management Competence

Mr. Bemis also cited certain other Brunswick problem areas he considered pertinent to future operation of Harris. For several years, Brunswick had a relatively small operating staff which had led to high turnover rates, long working hours and generally poor staff morale. These factors undoubtedly made it difficult to attract and retain qualified personnel. Mr. Bemis noted, however, that “due to management directed changes at Brunswick of the past 18 months, employee morale has improved and site attrition has dropped from greater than 11% to less than 4% per year.” *Id.* at 25. As Mr. Howe testified, the number of employees at Brunswick has increased dramatically, from 400 in 1980 to about triple that number at the present time. Howe Testimony at 15-16. Completion of required rework flowing from TMI requirements and equipment failures, and NRC regulations limiting working hours have reduced extended working hours. All of these related changes have improved the quality of work and employee morale. Bemis Testimony at 25-26.

Brunswick had experienced “numerous problems” in its radiation protection program. Mr. Bemis attributed these problems to “poor management control of the problem.” *Id.* at 26. He testified that:

In the summer of 1980, the radiation protection problems culminated with a large civil penalty being issued for Brunswick allowing contaminated material to be dumped in a clean area. CP&L management then took decisive action by installing a new manager over the program and gave him the required backing to completely restructure the radiation protection program. Upgrading procedures, additional upgrading of equipment, and more qualified personnel were installed at the facility. This program has seen continued improvement to the present and is reflected in each SALP rating since that time. . . . The Harris program has benefited from the problems experienced at Brunswick, in that personnel are better trained from the

⁸ The Joint Intervenors also point to an incident that occurred in January 1983 involving refueling operations as evidence of programmatic deficiencies at Brunswick. JI PF 106; Tr. 3754-57. The circumstances concerning this incident were not fully developed on the record and it is unclear whether it represents an isolated incident or a programmatic deficiency. In any event, the incident occurred when the Brunswick Improvement Plan was first being implemented. In view of improvements under that plan and thereafter, we see no significance in the incident for present purposes.

beginning, a superior program will be in place at fuel load, and Harris has state-of-the-art equipment to begin operation. These items lead the NRC to conclude that the Harris radiation program will meet requirements and not have the problems experienced at Brunswick.

*Id.*⁹

3. *The Brunswick Improvement Plan*

As the foregoing discussion indicates, Mr. Bemis saw in Brunswick a disconcerting pattern of regulatory problems between the late 1970's and late 1982, followed by marked, even dramatic, improvement from then until the present time. It appears that from a management perspective these healthy changes come about partly as a result of changes in CP&L attitudes and partly as a result of strong pressure from NRC officials in Region 2. Mr. Bemis testified that:

By mid-1982, the Regional Office had concluded that no substantial program improvements had been observed since the Cantrell concerns were aired in the 1979 ASLB hearings on Harris. Therefore, the NRC insisted on a formal improvement program. The NRC gave general input to the BIP requirements. The general requirements of this program were:

- Establish a centralized tracking system to insure all regulatory requirements and commitments are met.
- Rewrite all procedures required for safe plant operation insuring technical adequacy.
- Upgrade the corporate and site QA organization.
- Continue post-maintenance testing program.
- Upgrade training and discipline of operations.
- Upgrade the corporate and site Nuclear Safety organizations.
- Implement the findings of several previous outside audits.

This program was confirmed and imposed by an NRC Order on December 22, 1982.

Id. at 15-16.

⁹ The Applicants presented testimony and proposed findings on several other aspects of Brunswick operations, including shift rotations, radwaste control and training programs. APFs 101-108. In general, the Board was favorably impressed with the Applicants' evidence in these areas. We do not make specific findings on these areas since the Intervenor propose no such findings.

The Intervenor cite the high number of Licensee Event Reports (LERs) at Brunswick in the 1979-82 period. JI PF 39. They fail to note, however, that LERs decreased sharply after that, a trend that conforms with our overall assessment of Brunswick management. See APF (Reply) 19. The Intervenor also propose findings on Brunswick capacity factors. JI PF 44-45. The Intervenor do not explain the relevance of such factors to this case, which we think is marginal.

F. Conclusions About Brunswick

Partly as a result of implementation of the Brunswick Improvement Plan, Mr. Bemis expressed a positive view about Brunswick operations, present and future. As he saw it:

The Brunswick facility has shown steady improvement over the past 18 months in management programs, control and ability to adhere to regulatory requirements. Each project improved over its predecessor indicating a management committed to improvement. CP&L acknowledged . . . NRC concerns and was able to implement corrective actions in such a way that many major improvements resulted, bringing about a more enlightened and aggressive staff attitude that was more sensitive to detail and NRC regulations than before implementation of the Brunswick Improvement Plan. CP&L recognized where weak areas existed and filled positions with capable individuals from outside the company when necessary. The result has been an improved, more closely coordinated operation, capable of performing difficult, integrated site projects. Region II feels that the Brunswick of today is significantly improved over the Brunswick of five years ago. Our aggressive inspection and enforcement program gives us confidence that CP&L will continue to improve its management and operation of its entire nuclear program.

Id. at 23. The Licensing Board agrees with the Staff's evolving assessment of management performance at Brunswick from the late 70's until the hearing in the Fall of 1984. That assessment, in its essentials, reflects poor management performance for several years, until implementation of the Brunswick Improvement Plan in late 1982. Since then, however, there has been fairly steady improvement in Brunswick management. At the present time, the record indicates that Brunswick management is basically sound.

We reach these general conclusions about Brunswick for several reasons. First, we rely substantially on the detailed and informed testimony of Mr. Bemis. He was in a unique position — based on his unusual assignment to oversee all CP&L facilities in the relevant time period — to assess Brunswick management in depth and to provide an objective viewpoint. That assessment is also supported by the weight of the other evidence. Thus, the Applicants' witnesses (although generally more favorable to the CP&L performance than Mr. Bemis) testified to much the same effect. For example, they candidly conceded that some of their past difficulties at Brunswick stemmed from management deficiencies. Tr. 2907, 3928. The Intervenor's did not present witnesses on Brunswick; responses to their cross-examination were generally consistent with the conclusions we reach here. Furthermore, the "SALP" Reports, which we discuss next, also support our conclusions about Brunswick.

G. The "SALP" Reports on CP&L Facilities

1. Introduction

For the past several years, the NRC Regional Offices have conducted annual "Systematic Assessments of Licensee Performance" of each licensee of a nuclear power plant, including an evaluation of each facility. Uniform procedures for such assessments were first formalized in 1982.¹⁰ The nature and purposes of the SALP program were summarized at that time, as follows:

SALP is an integrated NRC staff effort to collect available observations on an annual basis and evaluate licensee performance based on those observations. Positive and negative attributes of licensee performance are considered. Emphasis is placed upon understanding the reasons for licensee's performance in important functional areas, and sharing this understanding with the licensee. The SALP process is oriented toward furthering NRC's understanding of the manner in which: (1) The licensee management directs, guides, and provides resources for assuring plant safety; and (2) such resources are used and applied. The integrated SALP assessment is intended to be sufficiently diagnostic to provide a rational basis for allocating NRC resources and to provide meaningful guidance to licensee management.

Each year, a licensee's performance at each site is assessed in several functional areas — for example, plant operations, fire protection, security, refueling. On the basis of that assessment, including consideration of inspection reports, the SALP Board for that particular licensee assigns a rating for each functional area. Such ratings, in turn, call for varying levels of NRC inspection and enforcement effort, as follows:

- a. Category 1. Reduced NRC attention may be appropriate. Licensee management attention and involvement are aggressive and oriented toward nuclear safety; licensee resources are ample and effectively used such that a high level of performance with respect to operational safety or construction is being achieved.
- b. Category 2. NRC attention should be maintained at normal levels. Licensee management attention and involvement are evident and are concerned with nuclear safety; licensee resources are adequate and are reasonably effective such that satisfactory performance with respect to operational safety or construction is being achieved.
- c. Category 3. Both NRC and licensee attention should be increased. Licensee management attention or involvement is acceptable and considers nuclear safety, but weaknesses are evident; licensee resources appear to be strained or

¹⁰ See Systematic Assessment of Licensee Performance; Request for Public Comment, 47 Fed. Reg. 12,240 (1982).

not effectively used such that minimally satisfactory performance with respect to operational safety or construction is being achieved.

47 Fed. Reg. at 12,241. SALP boards are composed of Regional Office personnel particularly knowledgeable about the licensee; they receive input from knowledgeable sources, including resident inspectors at particular sites. Written input is obtained from the Office of Nuclear Reactor Regulation and other Washington offices, as appropriate. Ratings are arrived at through discussion and consensus judgments, with differences resolved by Board vote. *Id.* See Bemis, Tr. 3653-55.

One or more of the following criteria are used to evaluate performance in each functional area:

1. Management involvement in assuring quality.
2. Approach to resolution of technical issues from a safety standpoint.
3. Responsiveness to NRC initiatives.
4. Enforcement history.
5. Reporting and analysis of reportable events.
6. Staffing (including management).
7. Training effectiveness and qualification.¹¹

As can be inferred from the criteria, a conscious effort is made to assess managerial effectiveness in the various areas. In addition to assessments of individual facilities, the SALP Report contains an overall evaluation of the licensee. Following completion of the SALP Board's assessment, the licensee is given an opportunity to file written comments. Thereafter, both the Board assessment and the licensee comments, if any, are issued as an NRC Report by the Regional Administration.

The NRC Staff introduced the most recent SALP report into evidence, the 1984 Report. Bemis Testimony, ff. Tr. 3660, at 42. The three preceding reports were introduced by the Joint Intervenors, JI Exhs. 19, 20 and 21. These four SALP Reports were referred to in the hearing as SALP I-IV; they covered the following time periods:

SALP I	April 1, 1979-March 31, 1980
SALP II	July 1, 1980-December 31, 1981
SALP III	January 1, 1982-January 31, 1983
SALP IV	February 1, 1983-April 30, 1984

¹¹ JI. Exh. 21, SALP III, at 1.

In the aggregate, these time periods cover the time periods of principal interest in this case. Events occurring prior to April 1979 would probably be too remote in time to have much bearing on future management ability to operate Shearon Harris.

The Joint Intervenors seek to make selective use of these SALP Reports in order to denigrate CP&L's management capability. *See* JI PF 32-43. As we explain hereafter, although some individual findings do not reflect very favorably on CP&L, read as a whole the SALP Reports support CP&L's claim of improved management competence. The other parties make references to the Reports, but do not rely strongly on them in their findings. This is understandable in the case of CP&L, which emphasized the testimony of their own witnesses, who occasionally disagreed with the SALP findings. *See, e.g.,* Utley, Tr. 2969. The Staff's approach was to rely on its witness, Mr. Bemis, who made only a passing reference in his prepared testimony to the most recent SALP Report.¹²

The Board considers the four SALP Reports to be highly significant evidence on the management contention. As noted above, the reports blanket the relevant time period and therefore should reflect any significant trends. They represent the judgments of disinterested observers, as contrasted with necessarily self-serving declarations from the Applicants' witnesses. The SALP Reports are based upon expertise from a wide range of technical disciplines. For example, the Board that produced the most recent SALP Report on CP&L included four members, three of whom are Division Directors at Region II, and thirteen "attendees," among these Mr. Bemis, four Resident Inspectors, and three NRC specialists from Washington. SALP IV at 8. The reports attempt to factor in management considerations, including an overall judgment about the licensee's competence.

Before turning to the most pertinent aspects of the four SALP Reports on CP&L, we emphasize again that a rating of "3" is not a "failing grade." As we have explained, a "3" means that "minimally satisfactory performance . . . is being achieved." A "3" rating probably would result in greater inspection attention by NRC Regional personnel, but licensees can continue to operate notwithstanding a "3" rating on a safety-related function.

¹² Had the Staff chosen to rely heavily on the SALP Reports, it may have been required to produce several additional witnesses to stand cross-examination on them. That, in turn, might have strained the Staff's resources. We note in this connection that the Staff nevertheless produced more than a dozen witnesses at the 1979 remand hearing, a hearing held at the Commission's behest. *See* LBP-79-19, *supra*, 10 NRC at 43-44. We imply no criticism of Mr. Bemis, who was an effective witness, in observing that the Staff chose to present a modest direct case in this proceeding, compared to its command performance in 1979.

2. SALP I (1979-80)

The first SALP Report on CP&L was relatively brief and conclusory, perhaps because it was the first such assessment to be performed.¹³ SALP I did not include numerical category ratings. Because of the problems then being encountered at Brunswick, we will focus particularly on SALP I's assessments of that facility.

The Review Board stated that there had been "no adverse trends with respect to noncompliance" at Brunswick, but that "problems related to radiation protection and contamination had been observed . . ." The Board concluded generally that "Brunswick had been responsive to NRC regulations and findings of noncompliance." The view was expressed that "the recent reorganization at the corporate and site levels appears to be providing increased responsiveness to our concerns." SALP I at 2-2. The assessment of Brunswick concluded with a discussion of an unmonitored, uncontrolled release of airborne radioactive material. However, the "Action Plan" portion of the assessment did not call for any escalated enforcement action. SALP I, App. B. The "Overall Evaluation" of Brunswick was as follows:

The performance of licensed activities was adequate during the appraisal period as compared to other Region II facilities. Subsequent performance would indicate a well below average performance as indicated by recent inspection findings in the areas of radiation control, contamination control, and environmental protection program. These areas are being closely monitored by Region II and corrective action is being taken by the licensee.

SALP I at 2-4.

The SALP I assessments of the Robinson and Shearon Harris facilities were generally favorable. Overall, Robinson was deemed to be "slightly above average as compared to other Region II facilities." Shearon Harris was rated "slightly below average," with certain deficiencies noted in the quality assurance area. SALP I at 3-3, 4-3.

In its overview of CP&L as a licensee, SALP I noted certain areas of "good performance," other areas where "improved performance is warranted," including contamination and procedural controls. The "overall evaluation" for the licensee was that:

CP&L is, in general, responsive to NRC requirements, findings of noncompliance, and information requests from the NRC. Their performance is evaluated to be

¹³ SALP I (JI Exh. 19) was 17 typewritten pages long. The subsequent SALPs were: II — 40 pages; III — 61 pages; and IV — 69 pages. Generally, each successive SALP has provided more data and analyses than its predecessor.

below average for Region II. However, their reorganization appears to be improving their performance. A continuation of this uptrend is expected.

3. SALP II (1980-81)

The SALP II Report represented the low point for Brunswick. The performance analysis for Brunswick was relatively lengthy and frequently critical. SALP II at 5-21. For example, the discussion of numerous violations in plant operations concluded that they were "examples of recurrent problems and the lack of management control in the area of plant operations." *Id.* at 5. Following a lengthy discussion of radiation control problems, the report concluded that "significant management control problems" were present. *Id.* at 13. Similarly, the analysis of certain quality assurance problems found that "insufficient management attention" had been given to that area. *Id.* at 16.

SALP II was the first SALP to assign numerical category ratings to functional areas. Brunswick received the following ratings (SALP II at 2-3):

Functional Area	Rating
1. Plant Operations	3
2. Refueling Operations	—
3. Maintenance	3
4. Surveillance and Inservice Testing	2
5. Personnel, Training, and Plant Procedures	3
6. Fire Protection and Housekeeping	3
7. Design Changes and Modifications	2
8. Radiation Protection, Radioactive Waste Management, and Transportation	3
9. Environmental Protection	3
10. Emergency Preparedness	2
11. Security and Safeguards	2
12. Audits, Review and Committee Activities	3
13. Administrative, QA, and Records	3
14. Corrective Action and Reporting	2

These ratings represent an average rating of 2.6. In terms of the category definitions stated above, this rating may be equated with a below average, slightly above minimally acceptable, — in a word, mediocre — performance.

The overall facility evaluation for Brunswick was as follows:

During the review period the licensee underwent a reorganization which included major personnel changes. Evaluation of these changes is still in progress although improved performance is expected to result. Major weaknesses were noted in

areas of plant operations, maintenance, fire protection, plant procedures, radiation protection, environmental protection, and quality assurance.

SALP II at 2.

The SALP II analyses for the Robinson and Harris facilities were less extensive. These facilities received ratings of “2” for almost all functional areas. *Id.* at 3-4.

SALP II’s “overall utility evaluation” was that the licensee is cooperative with the Commission and displays good technical competence. Weaknesses common to both operating sites were found in the areas of plant operations, procedures, and radiation protection. *Id.* at 2.

CP&L filed extensive comments on the Review Group’s Report, contending that that report was not fairly balanced, and taking issue with numerous specific finding and ratings. Addendum 3 to JI Exh. 20. The Regional Administrator reviewed these comments but, in the main, upheld the Review Board’s positions. Addendum 4 to JI Exh. 20.

4. SALP III (1982-83)

SALP III found improvement at Brunswick in a few areas, but other problems persisted. Licensee performance was termed “acceptable.” SALP III at 3. On the positive side, the report noted that “major strengths were identified in the areas of emergency preparedness and security and safeguards. Positive actions taken during the period were the assignment of a senior manager to the site and development of a long-range improvement plan. Improvements were evident over the previous SALP period in the area of radiological controls.” *Id.*

However, on the negative side “major weaknesses were identified in the areas of plant operations, maintenance, surveillance, fire protection, refueling, licensing activities, and quality assurance. Improvements from the previous SALP were not apparent in the areas of plant operations, maintenance, and fire protection.” *Id.*

The report expressed the hope that “the long range improvement initiative, which is currently being implemented, is expected to result in improved licensee performance in the weak areas. The licensee has committed a substantial amount of facility and corporate resources to this improvement program.” *Id.*

Brunswick’s SALP III ratings were as follows:

Functional Area	Rating
1. Plant Operations	3
2. Radiological Controls	2
3. Maintenance	3

Functional Area	Rating
4. Surveillance	3
5. Fire Protection	3
6. Emergency Preparedness	1
7. Security and Safeguards	1
8. Refueling	3
9. Licensing Activities	3
10. Quality Assurance Program	3

These ratings yield an average rating of 2.5, not a significant improvement over SALP II's 2.6 average.

The SALP III ratings of Robinson and Harris were substantially similar to SALP II — i.e., an average of 2.

The "overall utility evaluation" for SALP III was, in part, as follows:

During this appraisal period, the licensee has shown significant improvement in some areas; but several areas, identified during the previous review period as requiring increased management attention, have not shown improvement. The licensee has identified those areas and has initiated extensive long-range improvement programs.

The licensee has exhibited a positive attitude to NRC initiatives; but, in general, licensee responses have demonstrated inadequate management involvement in licensing activities, particularly in the interface with NRR. Levels of performance were consistent with that noted in the previous review period.

Once again, CP&L filed extensive comments on the Review Board's report and, again, the Regional Administration generally upheld the Review Board. See JI Exh. 21, Letter from O'Reilly to Utley dated June 14, 1983.

5. SALP IV (1983-84)

SALP IV found very marked improvement at Brunswick, as reflected in the ratings for functional areas.

Functional Area	Rating
1. Plant Operations	2
2. Radiological Controls	1
3. Maintenance	2
4. Surveillance	2
5. Fire Protection	2
6. Emergency Preparedness	1
7. Security and Safeguards	1
8. Refueling	1
9. Licensing Activities	2
10. Quality Assurance Program	2

The rating for each functional area improved from SALP III, except for Emergency Preparedness and Safeguards, which retained their maximum ratings of "1." The average rating for SALP IV was 1.6, almost a full unit higher than SALP III's 2.5. The SALP IV average of ratings for Robinson and Harris were also improved and were very similar. SALP IV at 4, 8.

The overall evaluation of Brunswick was quite favorable. *Id.* at 5. It spoke of "several major achievements," including implementation of the Brunswick Improvement Plan. No "major weaknesses" were identified. The following comments are particularly relevant here:

The reorganization at Brunswick has resulted in a significant increase in management awareness and control, particularly in the areas of operations and outage management. The effects of assigning a corporate Vice President (VP) to the site became evident during this SALP period, as many problems were handled quickly and effectively with the VP dealing directly with administrative obstacles.

Id. at 6.

Similarly, the SALP IV overall evaluation of CP&L was favorable, including the following endorsement:

During the evaluation period, the increased licensee management attention applied to the entire nuclear organization has changed CP&L from being considered as a poor performer during the previous SALP period to a significantly improved utility. The Improvement Program implemented by CP&L has been used as a model by some other Region II utilities to follow in development of their own improvement programs.

Id. at 3.

H. The Joint Intervenors' Approach to the SALP Reports

The preceding description of the SALP Reports casts CP&L in an improving and generally favorable light. The Joint Intervenors ask us to look at various pieces of these same reports from some different angles and to draw less favorable conclusions about CP&L. We consider these Intervenor perspectives next.

In their Proposed Finding 32, Joint Intervenors note that several areas of weakness in SALP II showed up again as weaknesses in SALP III, notwithstanding Executive Vice President Utley's statements to the effect that CP&L would attempt to make improvements in areas of weakness. Tr. 2968-74. In this same connection, SALP III criticized CP&L for not moving with sufficient vigor in areas cited as weak in the past. Report at 3. We do not believe that, taken in context, the areas of con-

tinuing weakness from SALP II to SALP III are fairly viewed as an indictment of CP&L. Most importantly, *all* the areas of cited weakness were cited as improved (to category 1 or 2) in SALP IV. This trend of gradual improvement supports Mr. Utley's testimony that remedial actions were under way early, but that some would take time. Furthermore, CP&L's extensive comments on SALPs II and III reflect that the SALP criticisms were being taken seriously at the time, even if we assume that CP&L might have taken remedial action more quickly and effectively than it did.

The Joint Intervenors introduced into evidence their Exhibit 39, which "compares selected functional areas for SALP II through SALP IV in those areas where comparisons can be made . . ." They assert that JI Exh. 39 "is helpful in assisting in comparison between the different SALP reports and their evaluations." JI PF 33. However, they do not go on to explain why this exhibit is "helpful." This exhibit might be somewhat helpful if the SALP methodology simply equated numbers of violations with category ratings. As Mr. Bemis made clear, however, violations are only one factor. Tr. 3855. Even under Exhibit 39's violation-counting approach, it generally indicates that higher numbers of violations lead to lower ratings, and vice versa. *See, e.g.,* Robinson: Radiation Controls, Emergency Preparedness, Quality Assurance. Other ratings do not exhibit the same relationship between numbers of violations and ratings. *See, e.g.,* Robinson: Maintenance; Brunswick: Surveillance, Fire Protection. Apparently, other factors were controlling in the latter group of ratings.¹⁴ In any event, we do not think we can draw any useful conclusions from JI Exh. 39.

Joint Intervenors' Exhibit 40 consists of excerpts from a publication entitled *Public Citizen 1983 Nuclear Power Safety Report*. The publication was based upon and included data derived from NRC reports, including SALP II on CP&L's facilities. One apparent purpose of this *Public Citizen* compilation was to compare the sixty-two commercial reactors operating in 1982 in order to show which were "safest" or "least safe," "best" or "worst" in the country. It comes as no surprise that Brunswick fared poorly in that comparison. Thus, among the ten reactors having more than 100 LERs (License Event Reports), Brunswick 1 and 2 ranked 4th and 5th, with 150 and 141 LERs, respectively. In the category of "5 or more incidents with an NRC rating of 2," Brunswick 2 tied for first

¹⁴ Under this management contention, we are not considering the merits of any of the individual ratings. For example, if Brunswick were rated "3" for fire protection, we consider that along with other evidence only to determine CP&L's overall management competence as reflected in the SALP Reports, e.g., whether they take prompt remedial action in response to Staff criticism.

place. (Brunswick 1 also scored high in this dubious distinction category with seven incidents. Forty-three of the sixty-two operating reactors had fewer than five incidents.) Brunswick 1 and 2 exposed 4957 workers to measurable doses of radiation, the highest number by far of any facility in the country. Finally, *Public Citizen* averaged the SALP ratings for Brunswick (as we have done above) and compared them with the averaged ratings of the other sixty operating reactors. Brunswick's average rating for 1982, as we have already seen, was 2.57. Comparatively, Brunswick had the highest (and poorest) average in the country. The next highest average rating went to Arkansas 1 and 2 — 2.45; the lowest and best average ratings went to Yankee Rowe and Haddam Neck, with perfect "1" ratings.¹⁵

Joint Intervenor's Exhibit 40 indicates that Brunswick was a poorly managed facility in 1981. The clear preponderance of the other evidence in this case supports the same conclusion. It may be worth noting that Exhibit 40 casts a somewhat more favorable light on CP&L's contemporaneous performance at Robinson (average rating 2.13) and Shearon Harris (average rating 2). Beyond that, however, Exhibit 40 sheds little or no light on the ultimate issue before us — will CP&L operate Shearon Harris competently in 1986 and thereafter? Most significantly, Exhibit 40, based largely on SALP II, does not reflect the very different results of SALP IV at all.

I. Other Matters

1. Robinson

CP&L's operation of its Robinson 2 facility was not a major focus of separate attention at the hearing and there is little evidence in the record on that subject. As noted above, the SALP Reports on Robinson are generally favorable. The Intervenor's proposed findings on Robinson (JI PFs 71-77), viewed in context, do not lead to any relevant conclusions.

¹⁵ To be sure, the comparative "rankings" of Brunswick and other facilities reflected in Exhibit 40 may not be taken uncritically to demonstrate that Brunswick was then one of the worst managed facilities in the country. For example, as the Applicants point out (APFs 19-20) the number of LERs a facility generates can depend on factors unrelated to safety. In addition, the Applicants and the Staff urge that "SALP ratings cannot be algebraically manipulated to result in an arithmetic mean. Tr. 3655-56 (Bemis)." APF 18. While that may be true in the strict sense, we think that a simple averaging of SALP ratings for a facility in a given year does yield a good rough estimate of how a licensee performed at that facility at that time. Similarly, we think it is legitimate to compare the averages of different facilities.

2. *Shearon Harris*

Similarly, while certain of the Intervenor's proposed findings on Shearon Harris (JI PFs 78-90) find some support in the record, they say little about the ultimate management issue before us. *See, e.g.*, JI PFs 87-90. The portions of Mr. Maxwell's testimony cited in Proposed Findings 84-86 appear to be the kind of grist one would expect to find in any resident inspector's mill, and not to reflect management failures.¹⁶ The subject of cable tray supports — as discussed in SALP IV and referred to in JI PF 81 — is fairly characterized by the Applicants in their PF 28. On the whole, the SALP IV evaluation of this activity area was favorable. SALP IV at 61-62.

3. *Training*

The Applicants presented two witnesses, Messrs. Davis and Powell, who testified at some length about the CP&L training program for its nuclear plant personnel. Testimony, ff. Tr. 3399. In their proposed findings, the Joint Intervenor's take exception with only two narrow aspects of the training program. First, they allege that the record evidence is inadequate to determine whether "GET" Levels I and II satisfy regulatory training requirements. JI PF 91. As the Applicants correctly point out, their witnesses, who were well qualified to address the question, testified that Levels I and II *did* satisfy regulatory requirements. Testimony at 9. Tr. 3423-35, 3453-55. There was no evidence to the contrary, except as noted hereafter.

Joint Intervenor's Exhibit 29 is an NRC Information Notice entitled "Deliberate Circumventing of Station Health Physics Procedures." The Intervenor's point to it as proof that the CP&L GET Level I or II Training received by contractor personnel is not adequate. JI PF 92. We agree with the main thrust of the Applicants' Reply Finding 32, as follows:

An investigation of the incident at Brunswick, which involved two contract personnel allegedly swapping dosimeters, revealed no evidence that there was a widespread practice of any duration. There is no evidence that this incident at Brunswick was the result of inadequate training.

¹⁶ The Intervenor's cite Mr. Maxwell's testimony that he has been a resident inspector at Shearon Harris since 1980, and that he was employed by CP&L as a quality assurance technician at Brunswick in 1973-74. Tr. 3816-17. The Board implies no personal criticism of Mr. Maxwell in questioning the wisdom of assigning a former employee to police activities at the former employer's site.

J. Conclusion

Generalizing largely from the Brunswick experience to CP&L's overall nuclear program, including Harris, Mr. Bemis expressed confidence in CP&L's managerial ability and commitment to safety. He testified that:

At the time of my assignment my impression about the management at all levels of the CP&L structure was that they were not being kept informed as to what was occurring at the nuclear facilities, that they were only interested in meeting the minimum requirements, and that they did not understand the difference in operating a nuclear facility with its many different rules and regulations for protection of the public health and safety and operating a fossil facility. We in nuclear regulation call this "fossil mentality" The development of the Brunswick Improvement Program in 1982 and the issuance of the civil penalty for the breakdown in management controls was where I feel that CP&L's genesis of a "nuclear mentality" took place. From the summer of 1982 to present I found strong dedication from all CP&L management not only to meet the NRC regulations, but to exceed our requirements when possible. . . . I found management open minded about preventative enforcement. By this I mean they would envelop areas that the resident inspectors and I would see as having potential enforcement concerns and implement immediate corrective measures in these areas prior to NRC being required to institute enforcement actions.

Mr. Bemis summarized his conclusions and the NRC Staff's position as follows:

The staff concludes CP&L is technically qualified to operate the Harris facility within the purview of the regulations and with due regard for public health and safety. The Region II inspection and enforcement program will be applied to assure the CP&L continues to operate within the regulations and continues to make improvements in the nuclear program.

The Board basically agrees with this Staff assessment. As we stated previously, we have high confidence in Mr. Bemis, based on his technical expertise and extensive experience with CP&L. Moreover, the Staff's assessment at the hearing, as expressed by Mr. Bemis, is consistent with the SALP Reports. The Joint Intervenor's rather miscellaneous collection of evidence unfavorable to CP&L largely derives from events occurring in 1982 and earlier. This evidence has been superseded (substantially, if not entirely) by a sustained period of improved CP&L management performance since that time. The Applicants, supported by the NRC Staff, have effectively refuted Joint Contention I.

III. THERMOLUMINESCENT DOSIMETERS

A. Introduction

1. A thermoluminescent dosimeter (TLD) is a device used for measuring exposure to radiation. When a TLD is irradiated by ionizing radiation, some energy is absorbed and stored. If the TLD subsequently is heated, some of the stored energy is released as light which can be detected and measured. The quantity of light released is proportional to the dose received by the individual wearing the TLD. (Browne, ff. Tr. 6407, at 3.)

2. Joint Contention IV concerning Applicants' use of thermoluminescent dosimeters originally consisted of four claims: (1) TLDs are inaccurate; (2) TLDs lack real-time monitoring capability; (3) TLDs are inadequate to assure worker health and safety; and (4) pressurized ionization monitors are necessary to protect worker health and safety. Applicants moved for summary disposition and the NRC Staff supported the motion. Summary disposition was granted on three of the issues. The Board found that other instruments provide real-time monitoring capability; that TLDs used in conjunction with the totality of the radiation protection program are not inadequate and that pressurized ionization monitors are not necessary. The sole issue litigated was "whether the TLDs and measuring equipment and processes to be used at the Harris facility can measure occupational doses with sufficient accuracy to comply with the NRC regulations." (Memorandum and Order Ruling on Motions for Summary Disposition, April 13, 1984 (unpublished), and Tr. 2218 for Telephone Conference of August 10, 1984.)

3. Mr. Stephen A. Browne, who currently is responsible for the technical direction of personnel dosimetry programs at all CP&L nuclear plants, testified for the Applicants. (Browne, ff. Tr. 6407, at 1.) Mr. John P. Cusimano, Mr. Seymour Block and Mr. Ross Albright testified on behalf of the NRC Staff. Mr. Cusimano is employed by the U.S. Department of Energy, Radiological and Environmental Sciences Laboratory, as a Senior Physicist in the Dosimetry branch. Mr. Block is employed by the NRC as a Senior Health Physicist and is responsible for reviewing Applicants' radiation protection programs. (Cusimano/Block, ff. Tr. 6560, at 1-2.) Mr. Albright is a Radiation Specialist with NRC Region II. His responsibilities include the inspection of the radiation protection and radioactive materials transportation programs at various licensed facilities in Region II. (Albright, ff. Tr. 6567, at 1.)

4. At the request of the Board, the Staff also presented Dr. Phillip Plato as a witness in this proceeding. Dr. Plato is a Professor of Radiological Health at the University of Michigan. Dr. Plato was a member of the

Health Physics Society Working Group which wrote draft standard ANSI N13.11. He is also the contractor who conducted the pilot studies involving both versions of this draft standard. (Plato, Tr. 6562.) Dr. Plato adopted and agreed with the Staff's testimony of Messrs. Cusimano and Block to the extent that it described the third pilot study. (*Id.*)

5. Joint Intervenors did not contribute any testimony on this contention.

B. Background

6. NRC regulations do not contain an explicit standard for accuracy in measurements of radiation doses to workers. In 1975, the Health Physics Society Standards Committee formed Working Group 1.4 to prepare a standard that could be used to test the performance of organizations that provide personnel dosimetry processing for radiation workers. The Standard was issued for trial use by the American National Standards Institute as ANSI N13.11 in 1976. At this same time, the NRC announced its intention to amend 10 C.F.R. Part 20 to require that NRC licensees obtain personnel dosimetry from a processor that had passed the ANSI standard. The NRC held a public meeting to discuss this potential amendment to Part 20 [and other Government agencies expressed similar intentions]. The attendees at the NRC's public meeting requested that, before a mandatory testing program were initiated, a pilot study should be conducted which would use the ANSI standard. In 1977, the University of Michigan was awarded an NRC contract to provide two tests to dosimetry processors that chose to participate voluntarily.

The results from Tests #1 and #2 were reviewed by the Health Physics Society Standards Committee and formed the basis for revision of the Standard in 1981. Subsequently, the revised Standard was used in Test #3 conducted by the University of Michigan during 1981-82. (NUREG/CR-2891, "Performance Testing of Personnel Dosimetry Services," February 1983.)

The revised Standard was adopted by ANSI and published as ANSI Standard N13.11-1983. Further, the NRC has issued a proposed rule under Part 20 titled "Improved Personnel Dosimetry Processing" (49 Fed. Reg. 1205-11 (Jan. 10, 1984)) that includes the ANSI N13.11-1983 Standard as part of the evaluation of dosimetry processors. The Summary in the Proposed Rule states:

Tests have indicated that a significant percentage of personnel dosimetry processors may not be performing with a reasonable degree of accuracy. Current regulations do not address the competency of these processors. The NRC is proposing amendments

that would require its licensees to utilize the specified services of processors that have been accredited by the National Voluntary Laboratory Accreditation Program (NAVLP) of the National Bureau of Standards.

This nationwide and decade-long concern with dosimetry inaccuracy formed much of the basis for the Joint Intervenors' allegations in this proceeding.

C. The ANSI Standard¹⁷

7. The ANSI standard is formulated in terms of tolerance limits, L , as a pass/fail criterion. The performance index for a single dosimeter, P , is calculated as:

$$P = (H' - H)/H$$

where:

H = delivered quantity

H' = reported quantity

For each radiation category, the average performance index, \bar{P} , and the standard deviation, S , are calculated. These two statistics are combined in the ANSI formulation of the pass/fail criterion. A processor passes a category if

$$\bar{P} + S \leq L$$

where:

$L = 0.5$ (doses below 10 rem)

$L = 0.3$ (doses above 10 rem)

This formulation of the tolerance limit is less stringent than the original formulation in the draft ANSI standard, which was $\bar{P} + 2S \leq L$. The Health Physics Society Standards Committee recognized that the revised formulation was weaker than the recommendations of international authorities in the field of radiation protection.¹⁸

¹⁷ As the Board saw it, we were not directly litigating the adequacy of the ANSI Standard, which, as we have noted, is the subject of a pending rulemaking. See *Duke Power Co.* (Catawba Nuclear Station, Units 1 and 2), ALAB-813, 22 NRC 59, 85 (1985). Rather the litigation focused on whether the Applicants' dosimetry was sufficiently accurate to meet existing NRC accuracy standards. As the record developed, however, the two subjects were to some extent necessarily intertwined.

¹⁸ The rationale for the tolerance level is described in ANSI N13.11-1983 in Appendix D3 to the standard in the following words:

Choice of Tolerance Level, L

The values chosen for the tolerance level represent a compromise between the recommendations of international authorities in the field of radiation protection and radiation measurements, and
(Continued)

8. As Applicants' witness Browne testified, a recent publication¹⁹ of the International Commission on Radiation Protection (ICRP) states the following concerning the measurement of dose equivalent:

If these quantities are of the order of the relevant annual limits, the uncertainties should not exceed a factor of 1.5 at the 95% confidence level. Where they amount to less than 10 mSv [1 rem] an uncertainty of a factor of 2 at the 95% confidence level is acceptable.

(Browne, ff. Tr. 6407, at 6.)

The Board finds, in agreement with Mr. Browne, that the ICRP 35 recommendation can be expressed in mathematical terms as: $\bar{P} + 2S \leq 0.5$, for doses of approximately 5 rem (the annual limit). (*Id.* at 10, 11.) The weaker ANSI standard appears to be questionable when viewed against the ICRP recommendation.

9. In our April 13, 1984 Memorandum and Order, the Board took the position that the NRC regulations require that personnel dosimetry be carried out in a manner such that the results can be relied upon to be accurate to integer values or one significant figure for doses of a few rem. Regulatory compliance is not compatible with the acceptance of performance with a standard deviation of 50%. A conventional interpretation of the 50% standard deviation would be that, at the 95% confidence level, an individual dose estimate would be uncertain by 2 standard deviations amounting to 100%. An observed dose, for example, of 2 rem in 1 calendar quarter could not be viewed, *with reasonable confidence*, as meeting the regulatory 3-rem quarterly limit because the uncertainty would range from 0 to 4 rem by the ANSI standard. We find the

the limitations dictated by available measurement techniques. In ICRU Report 20 [E20] and NCRP Report 57 [E42], a 30-percent limit is recommended for the uncertainty in the interpretation of the dose equivalent (or absorbed dose) in the vicinity of the maximum permissible levels, although an uncertainty of as much as a factor of three is considered acceptable at levels smaller by an order of magnitude. In ICRP Report 12 [E43], on the other hand, a limit of 50 percent is recommended in the vicinity of maximum permissible levels under field conditions, when errors caused by unknown irradiation geometry or ambient conditions are taken into account. For dose interpretations at accident levels, a tolerance level of 20 percent is recommended in NCRP Report 57 [E44].

In this standard, a fixed irradiation geometry and fixed laboratory ambient conditions are specified for the test irradiations. Because of limitations in measurement technique, the tolerance level is set at 0.5 (50 percent) for all but the accident categories, where it is set at 0.3 (30 percent). Larger tolerance levels for dose equivalents well below the maximum permissible dose equivalent were considered and, in fact, had been incorporated in the first version of this standard. Subsequent to the experience gained in the pilot testing program referred to in the Foreword, this feature was deleted since for the tests specified in this standard (calling for irradiation in relatively straightforward radiation fields under ideal laboratory conditions and analysis of performance based on the average performance quotient obtained over a large range of dose equivalents), relaxation of the tolerance levels was found to be unnecessary.

¹⁹ "General Principles of Monitoring for Radiation Protection of Workers," ICRP Publ. No. 35 (1982), at 25.

ICRP recommendation to be compatible with our reading of the NRC regulatory requirement and, thus, from both points of view, we review the Applicants' TLD program to see if these performance qualities will be achieved.

D. CP&L Performance in Dosimetry Tests

10. The Applicants propose to use Panasonic Model UD-802 AQ TLDs at the Harris plant. These TLDs were used by CP&L in the performance testing carried out by Dr. Plato at the University of Michigan. (Browne, ff. Tr. 6407, at 10.) The results of the testing were summarized as follows:

Category	Radiation Type	1982 CP&L Performance (P + S)	1984 CP&L Performance (P + S)	ANSI Limit
I	X-ray Accident	0.24	0.18	0.3
II	Gamma Accident	0.10	0.15	0.3
III	X-ray Shallow	0.11	0.18	0.5
	X-ray Deep	0.12	0.16	0.5
IV	Gamma	0.06	0.10	0.5
V	Beta	0.30	0.28	0.5
VI	Gamma & X-ray Shallow	0.06	0.19	0.5
	Gamma & X-ray Deep	0.16	0.18	0.5
VII	Gamma & Beta Shallow	0.16	0.29	0.5
	Gamma & Beta Deep	0.11	0.10	0.5
VIII	Gama & Neutron	*	0.09	0.5

*CP&L did not participate in this test category in 1982.

The Board finds that the CP&L performance in all eight radiation categories met the ANSI tolerance limits with fairly comfortable margins. Further, the Applicants testified that the test results would be acceptable even if the more stringent tolerance formulation of ICRP 35 or the original 1976 ANSI standard were used, as shown in the following tabulation.

Category	Radiation Type	1982 CP&L Performance (<i>P</i> + 2 <i>S</i>)	1984 CP&L Performance (<i>P</i> + 2 <i>S</i>)	1976 ANSI Limit
I	X-ray Accident	0.37	0.29	0.3
II	Gamma Accident	0.14	0.21	0.3
III	X-ray Shallow	0.16	0.26	0.5
	X-ray Deep	0.22	0.25	0.5
IV	Gamma	0.09	0.17	0.5
V	Beta	0.36	0.37	0.5
VI	Gamma & X-ray Shallow	0.12	0.26	0.5
	Gamma & X-ray Deep	0.23	0.28	0.5
VII	Gamma & Beta Shallow	0.22	0.41	0.5
	Gamma & Beta Deep	0.17	0.18	0.5
VIII	Gamma & Neutron Deep	*	0.15	0.5

*CP&L did not participate in this test category in 1982.

(Browne, ff. Tr. 6407, at 10.)

11. Applicants' witness noted the exceedance in the results for the accident x-ray category in 1982 and took the view that it is not realistic to expect that an individual could receive accident-level exposures to x-rays in a nuclear power plant. We agree and, further, the improved 1984 results in this category lead us to give little weight to this one exceedance.

12. The Board finds these test results provide an unusually clear and unequivocal line of evidence that refutes the allegation of dosimetry inaccuracies in this contention, and demonstrates compliance with NRC regulations.

E. Applicants' Quality Control for TLDs

13. Test results may be questioned in terms of whether unusual care was exercised during the tests, so that the results might not be representative of the accuracy achieved during routine personnel dosimetry. Consistent accuracy will be dependent on the existence of an appropriate quality control program.

14. NUREG/CR-2891, the report of the results of the 1982 Pilot study, noted the existence of four common reasons for poor performance of dosimetry processors. These were: (1) use of incorrect calibration factors; (2) dosimeter variability; (3) clerical errors; and (4) poor calibration for accident doses. CP&L has taken steps to minimize errors in each of these four areas through an extensive quality assurance program. (*Id.* at 20-21.)

15. Calibration factors have been determined for the Applicants' TLD system based on irradiation of TLDs to NBS traceable radiation standards. These correction factors have been verified by the tests conducted in 1982 and 1984, and will also be verified by the quarterly inter-comparison program engaged in by Applicants with the University of Michigan. (*Id.* at 21.) This program follows the format of the ANSI performance test, except that CP&L has added two additional radiation categories which are applicable to the radiation types and energies found in its nuclear plants, and has dropped the accident categories which differ from other categories only in the dose level. These two added categories are low-energy beta and mixtures of low-energy beta with high-energy photons. (*Id.* at 12-13.) A monthly cross-check program is conducted where a number of TLDs are read on each TLD reader with a 0.3 accuracy standard. Each reader is calibrated semiannually and after any maintenance affecting calibration. (*Id.*) The TLD readers also undergo a daily quality assurance check which requires a 15% standard of accuracy for critical parameters. (*Id.*)

16. In the semiannual calibration of the readers, ten TLDs are read at five exposure levels from 0.25 to 4.0 rem. They must be within 10% of the known dose, and the standard deviation must not exceed 10%. For daily TLD reader calibration checks, TLDs are read after being irradiated to known doses of 0.5 and 4.0 rem. Each TLD must read within $\pm 15\%$ of the actual irradiated dose. If a reading within $\pm 15\%$ is not obtained, the check is repeated two more times; if the check fails two out of three times, the TLD is removed from service. (*Id.* at 22.)

17. Dosimeter variability is minimized by carrying out an initial acceptance test of TLDs received from the manufacturer. Each TLD in a batch of 500 must be accurate to within $\pm 15\%$. The same test procedure is performed semiannually to determine whether any TLDs should be removed from service. *Id.* at 23.

18. In order to eliminate the potential for clerical error, CP&L has installed an automatic data processing system with detailed verification techniques. Individual records are on a computer which interfaces with the TLD reader. Where a manual entry is required it is verified by other

people, and hard copies of records are maintained to back up the computer. (*Id.*)

19. With regard to poor calibration for accident doses, CP&L has performed in-house tests which establish the dose response of the TLDs up to doses of 100 rem. The response is essentially linear within approximately $\pm 15\%$. In addition, CP&L has participated in and passed the accident dose categories during ANSI performance tests in 1982 and 1984. This verifies that poor calibration for accident doses is not a problem at CP&L. (*Id.* at 24.)

20. During cross-examination of Applicants' witness, Intervenors raised the issue of whether the effects of fading are considered in the reading of TLDs. (Browne, Tr. 6440.) Applicants' witness indicated that their procedures consider fading and that most fading of the stored signal on the TLD occurs within a relatively short time period after exposure. (*Id.*) It is Applicants' opinion that fading is contingent on temperature, and that at the temperatures experienced in a nuclear power plant, fading is not a significant problem. (*Id.*, Tr. 6441.)

21. The effects of fading also depend on the way the TLD reader is calibrated. (*Id.*, Tr. 6442.) Applicants allow the badges used to calibrate their readers to fade for 24 hours before they calibrate their system, so that most fading has occurred. (*Id.*) The fading of the TLD which occurs between the first and 30th day after exposure is relatively small, less than 10%. (*Id.*, Tr. 6442-43.) Applicants' witness testified that the elements in the TLD, which are sensitive to light, are always protected to prevent fading from light. (*Id.*)

22. It is the Staff's position that the Panasonic System has been found to provide reliable and accurate information. (Cusimano, Tr. 6568.) In addition, inspections of the Applicants' dosimetry program indicate that they have quality control programs for dosimetry equipment. Such inspections also indicate that the TLD program is adequate to protect the health and safety of the Applicants' workers. (Albright, Tr. 6569-70.) Finally, it is the Staff's position that the results of the third pilot study conducted by the University of Michigan indicate that Applicants have the capability to perform good-quality dosimetry processing. (Cusimano/Block, ff. Tr. 6560, at 8.) Therefore, Applicants' personnel monitoring program is adequate, in the Staff view, to protect the health and safety of the workers and complies with 10 C.F.R. § 20.202(a) of the Commission's Regulations. (*Id.*)

23. The Board finds that the CP&L quality assurance program for TLD personnel dosimetry appropriately controls the sources of errors that have plagued other dosimeter processors. Although CP&L's self-imposed accuracy requirements are more stringent than the ANSI stand-

ard, CP&L has no intention of relaxing its own in-house standards if the ANSI standard is adopted by the NRC as part of a final rule for accrediting dosimetry processors (Browne, Tr. 6536.) We concur with Staff that the program is adequate and go further to the view that indeed we think the program is commendable.

24. Joint Intervenors' proposed findings basically comport with the record as we have described it. However, their Proposed Finding 12 urges the Board to require Applicants to have written procedures for the performance of all routine dosimetry operations, formal training and qualification of all operating personnel and supervisory review of all quality control records. This suggestion has no merit since Applicants have testified that their program already contains these features (Browne, ff. Tr. 6407, at 24, 25), and the NRC Staff has confirmed their existence and functioning during recent inspections. (Albright, ff. Tr. 6567.)

25. Joint Intervenors advocate, in their Proposed Findings 13 and 14, that Applicants should be required to compensate for possible inaccuracy in TLD measurements by limiting worker exposure to two-thirds of the regulatory limit. Such an exotic modification to the regulations is beyond our authority. As the NRC Staff points out in reply, if the Intervenors wish to challenge the regulatory limits, then their remedy would have been to show "special circumstances" pursuant to 10 C.F.R. § 2.758.

26. The results of the testing by the University of Michigan and the Applicants' quality assurance program for personnel dosimetry using TLDs provide clear and uncontroverted evidence that resolves this contention in favor of the Applicants.

IV. ENVIRONMENTAL QUALIFICATION OF ELECTRICAL EQUIPMENT

A. Introduction

1. Contention 9 as litigated in this proceeding states:

The Program for environmental qualification of electrical equipment at Shearon Harris is inadequate for the following reasons: (A) the proposed resolution and vendors modification for ITT-Barton transmitters has not been shown to be adequate. (Ref. IE Information Notices 81-29, 82-52, and 83-72.) (B) There is not sufficient assurance that the concerns with Limatorque valve operators identified in IE Information Notice 83-72 (except for items C2, C5 and C7) have been adequately resolved. (C) It has not been demonstrated that the RTDs have been qualified in that the Arrhenius thermal aging methodology employed is not adequate to reflect

the actual effects of exposures to temperatures of normal operation and accidents over the times the RTDs could be exposed to those temperatures. (Ref. NUREG/CR-1466, SAND-79-1561, Predicting Life Expectancy of Complex Equipment Using Accelerated Aging Techniques.) (D) The qualification of instrument cables did not include adequate consideration and analysis of leakage currents resulting from the radiation environment. These leakage currents could cause degradation of signal quality and/or spurious signals in Harris instrument cables. (E) There is not sufficient assurance that the physical orientation of equipment in testing is the same as the physical orientation of equipment installed. (F) The effects of radiation on lubricants and seals has not been adequately addressed in the environmental qualification program. (G) There is inadequate assurance that failure to report all results of environmental qualification tests, including failures, has been brought to light in connection with electrical equipment installed at Harris. This includes past test failures of equipment which subsequently passes an EQ test and test failures of equipment which is said to be qualified by similarity. (REF. Item 2, Page 5, L.D. Bustard *et al.*, Annual Report: Equipment Qualification Inspection Program, Sandia National Laboratories, FY83).

2. Eddleman Contention 9 was originally admitted by the Board in September of 1982. LBP-82-119A, *supra*, 16 NRC at 2091. The contention was modified to read, as stated above, by negotiations between Applicants and Intervenor Eddleman. This modification was accepted by the Board in July of 1984. "Memorandum and Order (Revision of and Schedule for Filing Written Testimony on Eddleman Contention 9; Rulings on Eddleman Contentions 45 and 67) (July 24, 1984)."

3. Intervenor presented no direct evidence on this contention.

4. The Staff presented the testimony of Armando Masciantonio with respect to each of the seven subparts of this contention. Mr. Masciantonio is employed as an Equipment Qualification Engineer, Division of Engineering, Office of Nuclear Reactor Regulation. He is responsible for the technical reviews, analyses and evaluations of the adequacy of the environmental qualification of electrical equipment important to safety, and safety-related mechanical equipment whose failure under postulated environmental conditions could adversely affect the performance of safety systems in nuclear power plants. Masciantonio, ff. Tr. 5567, Attach. 1. Mr. Masciantonio is directly responsible for the review of the Shearon Harris Environmental Qualification Program. Masciantonio, Tr. 5608.

5. The Applicants presented the testimony of various panels concerning different subparts of the contention and those panels are identified *infra* in the findings for the specific subcontentions. In addition, Applicants' panel, consisting of Mr. Robert W. Prunty and Peter M. Yandow, provided for informational purposes introductory testimony which described briefly Applicants' program for environmental qualification of electrical equipment ("EQ Program"). (Mr. Masciantonio's tes-

timony also included general discussion of Applicants' EQ Program.) Mr. Prunty is employed by CP&L as a Principal Engineer in the Electrical Group and Instrumentation and Control Group at Harris. He is responsible for the EQ Program in a supervisory capacity. Mr. Yandow is employed by CP&L as a Senior Engineer in the Instrumentation and Control Group and is responsible for the detailed aspects of the EQ Program, ff. Tr. 4971, at 2.

6. The purpose of the EQ Program at the SHNPP is to ensure all safety-related electrical equipment and other electrical equipment important to safety is capable of performing its safety functions in the environment postulated for design basis events. Environmental conditions include temperature, pressure, humidity, radiation, chemical spray and submergence. Applicants' Introductory Testimony at 9; Masciantonio at 3-5.

7. The Commission's regulations at 10 C.F.R. § 50.49 establish requirements for environmental qualification of electrical equipment important to safety. Equipment "important to safety" includes safety-related electrical equipment, nonsafety-related electrical equipment whose failure under postulated environmental conditions could prevent satisfactory accomplishment of safety functions by safety-related equipment, and certain post-accident monitoring equipment. In general, environmental qualification is required to meet General Design Criteria 1, 2, 4 and 23 of Appendix A, and §§ III and XI of Appendix B, to 10 C.F.R. Part 50. Staff guidance for meeting the regulatory requirements in 10 C.F.R. § 50.49 is provided in NUREG-0588 (Rev. 1), "Interim Staff Position on Environmental Qualification of Safety-Related Electrical Equipment," July 1981. Applicants' Introductory Testimony at 9-10; Masciantonio at 3-5.

8. Applicants' Environmental Qualification Program is contained in § 3.11 of the FSAR. FSAR Appendix 3.11A compares Applicants' procedures for environmental qualification of electrical equipment with NUREG-0588. Prunty/Yandow, ff. Tr. 4971, at 10. The Staff's review of Applicants' submittals is in the early stages. Masciantonio, Tr. 5601.

9. However, Applicants submitted letters on July 25 and August 24, 1984, indicating how the specific concerns raised by Contention 9 were being resolved in their Environmental Qualification Program. Masciantonio, ff. Tr. 5567, at 7. The Staff has reviewed the information provided by the Applicants to determine the adequacy of the Environmental Qualification Program in addressing each of the issues raised in this contention. *Id.* The Staff also made a site visit to verify the accuracy of the information submitted by Applicants. *Id.* at 8.

10. Intervenor Eddleman points out in his Proposed Finding 30 that the NRC Staff requested additional information after the hearing on the Harris EQ Program (transmittal December 5, 1984), and Mr. Eddleman takes the position that this request for information "undermines all assertions that the Harris EQ Program is adequate." Mr. Eddleman has ignored Applicant and Staff testimony that only the specific concerns in this contention had been reviewed at the time of the hearing. We do not find any merit in this proposed finding.

B. Contention 9A: ITT-Barton Transmitters

11. Testimony for the Applicants on this contention was presented by Peter M. Yandow, Robert W. Prunty and Richard B. Miller. Mr. Yandow is employed by CP&L as an Electrical Engineer and is currently responsible for the Environmental Qualification Program at Harris. Mr. Prunty is employed by CP&L as a Principal Engineer in the Electrical and Instrumentation and Control ("I&C") areas, and he established the EQ Program for the Harris plant. Mr. Miller is employed as a Principal Engineer with the Nuclear Safety Department of Westinghouse Electric Corporation. Mr. Miller is a co-author of WCAP-8587, which describes Westinghouse's methodology for qualifying electrical equipment. Mr. Miller was active in the performance of safety evaluations concerning the problems noted with ITT-Barton Transmitters. Prunty *et al.*, ff. Tr. 5093, at 2-3.

12. ITT-Barton Transmitters are pressure-type transmitters. They use either a bourdon tube or bellows assembly to measure pressure and differential pressure, respectively. Pressure changes cause the mechanical movement of strain gages. The variation in tension causes changes in electrical resistance of the strain gages, which is converted into an electrical output by the electronic circuitry of the transmitters. *Id.* at 4.

13. At Harris, both models 763 and 764 ITT-Barton Transmitters are used for various safety functions such as to check reactor coolant pressure, pressurizer pressure, steam pressure, pressurizer level, steam generator level, and steam flow. Such transmitters are located throughout the containment building. *Id.* at 6.

14. Both Applicants and Staff testified that three deficiencies with ITT-Barton Transmitters were noted by Information Notices 81-29, 82-52 and 83-72. *Id.* at 5; Masciantonio, ff. Tr. 5567, at 8-10.

15. The first defect consisted of failure of initial qualification tests due to erratic behavior. The significance of the failure was an error in output which could have resulted in the safety analysis limits being exceeded. Prunty *et al.*, ff. Tr. 5093, at 5. The failure was determined to

result from degradation of contacts in internal circuit connector assemblies of the transmitters. *Id.* This problem was corrected by the soldering of connector assemblies. *Id.* The modification and test results were reported to the Staff and approved by the Staff on November 10, 1983. *Id.* at 6; Masciantonio, ff. Tr. 5567, at 8.

16. Applicants returned the affected models of ITT-Barton Transmitters to ITT-Barton for performance of the above-described modifications. Applicants have received test reports to confirm that the modification is adequate to qualify the equipment. Prunty *et al.*, ff. Tr. 5093, at 7.

17. The two additional problems with ITT-Barton Transmitters concern the negative shift which is a decrease in output during initial exposure to constant operating pressure, and thermal nonrepeatability of both models 763 and 764 ITT-Barton Transmitters. *Id.* at 7-8; Masciantonio, ff. Tr. 5567, at 8-9. Thermal nonrepeatability is the inability of the instrument to repeat a specified output within allowable limits when exposed to the same temperature and pressure to which it was initially calibrated. Prunty *et al.*, ff. Tr. 5093, at 8.

18. The cause of the negative shift problem was determined to be combined creep in the link wire between the pressure bourdon tube and the strain-sensing beam, and in the material used to attach the link wire. *Id.* This negative shift problem was determined not to have any safety significance. *Id.* The effect of negative shift on the over-temperature delta T is minimal and in the conservative direction. Also, the effect of such negative shift on low-pressure trip is conservative. There is no modification presently proposed for this problem. *Id.* at 9.

19. Westinghouse's conclusions regarding the safety significance of the negative shift problem are contained in an analysis performed by Westinghouse. This analysis was first presented to the Staff in a meeting during February of 1984. Miller, Tr. 5095-98.

20. At the time of the hearings, the Staff had not completed its review of this Westinghouse analysis. Masciantonio, ff. Tr. 5567, at 9; Masciantonio, Tr. 5634. The Staff testified, however, that there is no indication that such analysis is inadequate. Masciantonio, Tr. 5635.

21. During the hearing, Staff Counsel informed the Board that the review of the Westinghouse analysis relating to ITT-Barton Transmitters could be accelerated and that this review would be completed shortly. Tr. 5692. This review was completed and the Staff submitted the Affidavit of Armando S. Masciantonio, Richard A. Kendall and Robert C. Jones, Jr., along with a Motion to Supplement the Record to receive the Affidavit. "NRC Staff Motion to Supplement the Record" (November 20, 1984). During the hearing, Mr. Eddleman indicated he had no desire to cross-examine Staff witnesses on the results of their review,

and had no objection to the submission of a supplemental Staff Affidavit setting forth those results. However, he wished it to be understood he did not necessarily agree with the Affidavit. Eddleman, Tr. 5770-71. On December 17, 1984, the Board admitted the Staff's Affidavit which sets forth the results of its review of the Westinghouse analysis as NRC Staff Exhibit 7. Tr. 7413, 7432.

22. With respect to the negative shift problem, the Staff concluded that the additional error introduced by the negative shift does not cause a safety concern. The Staff's review indicates that the maximum additional error due to the negative shift in the transmitter output was calculated based on actual long-term test data. This maximum transmitter error was included in the calculation of the total actuation system channel error allowance using the same methodology previously reviewed and approved by the Staff. At Harris, the Safety Analysis Limit for the high pressurizer pressure reactor trip has been increased from 2440 psig to 2445 psig. The Staff has determined that this revised value will provide adequate protection for the RCS overpressurization events and limit the peak RCS pressure to less than 110% of the design value. This is consistent with §§ 15.2.1-15.2.5 of the Standard Review Plan. Staff Exh. 7, ¶ 7.

23. With regard to thermal nonrepeatability, the sources of the errors were discovered to be improper calibration techniques used by Barton. The resultant error would always be in the positive direction. Barton also found an electrical leakage path through the wiper arm of the zero and span potentiometers to the instrument cases. The path only creates positive errors at high temperatures and is only of concern during accident conditions. Prunty *et al.*, ff. Tr. 5093, at 9-10. Westinghouse calculated the expected deviations due to this error, and evaluated the effects of the deviations on transmitter function. Westinghouse changed the set points at Harris to provide an adequate margin between the Safety Analysis Limits and the set points so that there would be no safety concern. *Id.* at 10-11.

24. As corrective actions, the correct calibration techniques were used to check the transmitters. Also, a fiberglass insulator was installed between the potentiometer and the case to interrupt the leakage path. *Id.* at 11. Any transmitter returned to the factory for other repairs would also have the above modifications performed. *Id.*

25. With regard to thermal nonrepeatability, the Staff's affidavit indicated that their review of test results for modified units demonstrates that the proposed resolution of this defect is adequate. Staff Exh. 7, ¶ 6.

26. During cross-examination, Applicants' witness testified that another report of a negative shift problem on the zero-based pressure

transmitters manufactured by ITT-Barton has also been observed. Some of these transmitters are used in Harris. The nature of this negative shift is the same as that discussed in Applicants' testimony. Miller, Tr. 5102. The effect on the Barton transmitter is less, according to Applicants' witness, in magnitude than on the other suppressed zero model. *Id.*, Tr. 5103.

27. Applicants' witness testified that there is a $\pm 1\%$ shift allowance for Barton transmitters. The negative shift discovered on the zero-based transmitter is within the $\pm 1\%$. *Id.*

28. Applicants' witnesses testified that all of the ITT-Barton transmitters were qualified by test rather than by similarity. Miller, Tr. 5113. Applicants also indicated that the potential safety significance of thermal nonrepeatability is somewhat mitigated because the establishment of a set point is not at the point where there would be a safety concern. These set points are backed off from safety limits so that an instrument could exceed the set point and stay within safety limits. Yandow, Tr. 5121. The margin between the set point and the safety limit accounts for all instrument errors. This margin is on the order of 10 to 15%. Miller, Tr. 5122. Applicants indicated that upon receipt from Barton of the transmitters previously returned to the factory they would be inspected by Applicants' QA Program. Prunty, Tr. 5133.

29. On cross-examination Applicants stated that Westinghouse has now approved Barton's calibration procedures, and that Westinghouse's QA organization will actually check as to how the procedures are performed. Miller, Tr. 5160.

30. In light of the modifications being made to correct the thermal nonrepeatability and connector problems, and in light of the results of the Westinghouse analysis dealing with thermal nonrepeatability and negative shift problems, both Applicants and Staff have concluded that the Harris Environmental Qualification Program adequately addresses all of the concerns with the ITT-Barton Transmitters. Prunty *et al.*, ff. Tr. 5093, at 12; Masciantonio, ff. Tr. 5567, at 8-10; Staff Exh. 7, ¶ 8.

31. The Board finds that Applicants' Environmental Qualification Program has adequately addressed concerns relating to ITT-Barton transmitters. The Board also finds that the proposed vendor modifications of the ITT-Barton transmitters are acceptable.

C. Contention 9B: Limitorque Valve Operators

32. For Contention 9B, Applicants' panel was composed of Mr. Prunty and Mr. Yandow, who are identified *supra*.

33. A valve operator is a component of a valve which causes it to open or close. These valve operators have motors which cause the valve to change position. They are used in valves such as globe valves, butterfly valves, and gate valves. Limitorque valve operators are used on a number of valves at Harris which perform safety functions, including containment isolation, reactor coolant pressure boundary isolation, ECCS operation, and operation of the emergency safeguard system. These valve operators are located both inside containment and in the auxiliary building. Prunty/Yandow 9B, ff. Tr. 4971, at 3.

34. Applicants testified that Limitorque determined that only one of a number of deficiencies noted in IE Information Notice 83-72 pertaining to Limitorque valve operators was applicable to Harris. That deficiency concerned the use of unqualified terminal blocks in some Limitorque valve operators supplied to Westinghouse. Applicants testified that Limitorque indicated that Westinghouse had undertaken to replace all unqualified terminal blocks. *Id.* at 5. In addition, however, Applicants have committed to do a 100% field verification of all Limitorque valve operators on active valves in harsh environments. Yandow, Tr. 4975-77; Prunty/Yandow 9B, ff. Tr. 4971, at 5.

35. Applicants testified that an active valve is one which actually must move to perform its function. Yandow, Tr. 5029. It is Applicants' position that the function of a passive valve would not have safety significance if it failed. Yandow, Tr. 5030.

36. The inspection is being performed in three phases. The first phase — the inspection of all active safety-related valves inside containment — has found no deficiencies. The second phase involved inspection of all active valves in the steam tunnel; no deficiencies were found. All of the remaining safety-related active valves in a harsh environment were yet to be inspected at the time of hearing. Yandow, Tr. 4975.

37. A concern was also raised about the motor insulation used in Limitorque valve operators. Prunty/Yandow 9B, ff. Tr. 4971, at 8. Bechtel had raised a concern about the use of a class of insulation which had not been type-tested for inside containment. As part of the field verification program, Applicants are checking the name plates to determine that the insulation is correct. *Id.* at 9. To date, all insulation has been found to be RH. Any motor inside containment found to be unqualified would be replaced. *Id.*

38. A concern was also raised whether Limitorque valve operators are qualified for all installation orientations. *Id.* Applicants have specified procedures for ensuring the proper installation orientation of safety-related electrical equipment, including Limitorque valve operators. *Id.* at 10. The field verification program includes a check of the installation

orientations. No deviations from Limitorque's recommended orientation have been identified. *Id.*

39. Bechtel also raised a concern about whether the installation of drain plugs and orientation of drain holes at other than the lowest point of the operator would affect its qualification. Limitorque has required the installation of drain plugs to prevent moisture buildup on the motor; plugs must be installed in the two lowest drain plug locations. The drain plugs are placed in the limit switch compartments with installation instructions at the time of shipment by Limitorque. *Id.* at 11. Applicants have specifically instructed their personnel, via design documents, how to install drain plugs. *Id.* Installation of these drain plugs is verified as part of the field verification program. *Id.*

40. A concern was also raised whether purchase order and qualification files agree with the installed components. *Id.* at 12. Applicants testified that both CP&L and Ebasco review the qualification documentation against the requirements contained in the purchase order and specifications for the equipment. The equipment is inspected prior to shipment, upon receipt at the site, and after its installation. During the verification program Applicants will be verifying that the equipment, as installed, agrees with the purchase order specifications and other design documents. *Id.*

41. The final concern about Limitorque valve operators is related to the qualification of O-rings. *Id.* Applicants do not believe that this concern is applicable to the equipment employed at Harris. Applicants testified that O-rings cannot be identified without disassembling the equipment. However, Applicants have committed that if the field verification program identifies any equipment component of which qualification appears questionable, the operator will be disassembled and all questionable components will be replaced, including any unidentifiable O-rings. *Id.* at 13.

42. The Staff testified that in light of Applicants' commitment to perform a 100% reinspection of all Limitorque valve operators in a harsh environment, there is reasonable assurance that Applicants' Environmental Qualification Program has addressed the concerns raised in IE Information Notice 83-72. Masciantonio, ff. Tr. 5567, at 11. In addition, the Staff testified that it is possible that during the audit the Staff would tear down a Limitorque valve operator to independently verify its qualification. However, the Staff went on to point out that a decision to do so has not been made at this time. Masciantonio, Tr. 5642-43.

43. Based on the commitment to perform a 100% reinspection of all the Limitorque operators in a harsh environment, the Board finds that Applicants' Environmental Qualification Program adequately addresses

the concerns regarding Limitorque valve operators raised in Contention 9B.

D. Contention 9C: Thermal Aging of RTDs

44. Applicants' witness, Dr. Thomas Dakin, is a consultant for Westinghouse. During his career Dr. Dakin's research activities concentrated on the electrical behavior, and electrical and thermal aging of insulation, both in service and laboratory tests simulating service environment conditions. Dr. Dakin has published papers which discuss most, if not all, of the precautions regarding application of accelerated aging mentioned in the Sandia Report referenced in Contention 9C as well as other precautions. He is a fellow of the IEEE. Miller/Dakin, ff. Tr. 4839, at 2-3.

45. An RTD, a resistance temperature detector, is an instrument used to measure temperature in which the primary element, a resistance wire, has a well-defined resistance temperature relationship. Harris uses RTDs manufactured by the RdF Corporation. There are eighteen Model 21204 RTDs directly immersed in the bypass lines to the reactor coolant system. There are three coolant loops at Harris. The eighteen RTDs are used to measure the "hot-leg" and "cold-leg" temperature in each loop. These RTDs are directly immersed to provide rapid time response measurements for use in the reactor protection and control system. Six Model 21205 RTDs are installed in wells located in the reactor coolant system piping to provide measurement of the hot- and cold-leg temperature in each loop for use in monitoring plant conditions. *Id.* at 4.

46. Thermal aging is a temperature-dependent chemical process which can lead to changes in the properties of organic materials over a period of time. *Id.* at 6. Since real-time aging is not practical over the long periods of time over which electrical equipment must be qualified for nuclear power plants, accelerated processes have been developed to simulate a defined life over a much shorter period of time. *Id.* at 7.

47. The Arrhenius methodology has been developed to simulate accelerated aging. This methodology is based on the premise that deterioration of materials in service is due to chemical reaction. These occur internally, sometimes between components of the material, and sometimes with compounds in the environment such as oxygen or water vapor. Chemical reactions occur more rapidly at higher temperatures. Arrhenius showed that temperature dependence of chemical reactions follows an exponential equation. He postulated a consistent correlation between the amount of physical change and chemical reaction so that the time to reach a selected amount of physical change will vary according to an

equation. *Id.* at 7-8. The rate of thermal aging is the slope of the graph using the Arrhenius equation. *Id.* at 8. It is Applicants' conclusion that other than testing of the material or system for the predicted years of service, this is the most logical scientific way of predicting whether a material or system will be reliable. *Id.* at 9. Type tests for thermal aging are made from 1 to 2 years. After the linearity of the Arrhenius graph for a particular material is confirmed, then short-time, more accelerated tests are acceptable to evaluate small changes in materials or application conditions. *Id.* Generally, the experience has been excellent in confirming the predictions. *Id.*

48. The NRC Staff has concurred in the use of the Arrhenius methodology for thermal aging. *Id.* at 9; Masciantonio, ff. Tr. 5567, at 14.

49. The environmental qualification for the RTDs to be used at Harris includes thermal aging, thermal cycling, irradiation aging, and vibration aging, as a part of the preconditioning process. The RTDs are temperature-cycled to account for plant heatup and cooldown temperatures. They are exposed to radiation for normal and accident conditions. They are also exposed to conditions which simulate pipe and flow vibrations. This process simulates a minimum 20-year life for those RTDs in the bypass line and a minimum of 10-year life for those in the wells. Miller/Dakin, ff. Tr. 4839, at 10. After preconditioning, these RTDs are subjected to the effects of seismic event and high-energy line-break environments. *Id.*

50. Since epoxy is the only age-sensitive material used in the RTD, the activation energy was selected for this material. Using the Arrhenius methodology and the ambient temperature at the cable interface, the aging temperature was calculated which would simulate the desired life at an accelerated rate and not inadvertently degrade the material due to the high temperature alone. *Id.* at 11. The normal ambient temperature equivalent to the normal ambient temperature in the region, plus the expected temperature rise associated with the heat transferred to the interface from the reactor coolant system, is a 49°C plus a 50°C rise. Therefore, the temperature to which these RTDs would be exposed would be 100°C. *Id.*

51. The activation energy chosen was at the low end of the range of activation energies for epoxy resins. Therefore, this activation energy is quite conservative. Dakin, Tr. 4918.

52. The Arrhenius methodology was also used to simulate accident conditions, but only in the post-accident period. The first day, after a high-energy line break, was simulated in real time and temperature. Following the first day of testing, the remaining post-accident period was simulated by accelerated thermal aging. Miller/Dakin, ff. Tr. 4839, at

12. Westinghouse uses a standard accident profile which uses a 0.5 standard electron volt activation energy to determine the time/temperature relationship during this period. RTDs were subjected to this generic profile. *Id.*

53. After the accelerated aging was performed, the RTDs were tested by calibration checks and resistance measurements at 0°C, 274°C, and 329°C as well as insulation resistance measurements. *Id.* No degradation was detected. *Id.*

54. In supporting this contention, Intervenor Eddleman cited a Sandia Report which cautioned using the Arrhenius methodology for accelerated aging. The predicted deficiencies noted in the Sandia Report do not apply to the epoxy used at Harris. The insulation system of the RTD and connector are sealed against moisture so that diffusion of the moisture is prevented. Moisture diffusion is the only potentially invalidating condition referred to in the Sandia Report that could apply to the accelerated aging of RTDs. In addition, epoxy resins are not known to be sensitive to moisture effects as was the polyurethane used in the Sandia Report. *Id.* at 14-15.

55. The Sandia Report concludes that “accelerated aging techniques offer the best opportunity for predicting lifetimes or simulating life of complex equipment.” *Id.* at 15; Masciantonio, ff. Tr. 5567, at 14.

56. Dr. Dakin testified that another potential mechanism for degradation of epoxy is oxidation. However, he testified that the requirements on the epoxy in an RTD are minimal, and that it does not have to withstand much voltage. Therefore, it needs almost no dielectric strength. Epoxy could endure large amounts of cracking without harming the function of an RTD, even if oxygen were present. Dakin, Tr. 4924.

57. Epoxy is also relatively insensitive to radiation. Dakin, Tr. 4945. Applicants’ witness is not aware of any radiation-caused cracking or diffusion in epoxies. *Id.*

58. The Staff reviewed the basis for Applicants’ aging calculations. The Staff is aware of the inadequacies in the Arrhenius methodology. However, it is the best approach currently available to address accelerated thermal aging and has been used in Equipment Qualification Programs of every nuclear power plant in the country. Masciantonio, ff. Tr. 5567, at 13-14. The Staff does not allow reliance exclusively on the Arrhenius methodology of accelerated aging to address the requirements for establishing a qualified life for equipment. Applicants must have a surveillance and maintenance program to account for unanticipated degradation which is not reflected in the results of the accelerated aging process. Combined with the surveillance program, the Arrhenius methodology is

considered acceptable for aging to establish a qualified life. *Id.* at 14. Applicants have committed to a surveillance program in compliance with Regulatory Guide 1.33. *Id.* at 12-13.

59. As stated above, the life of 20-23 years for RTDs was based on an ambient temperature of 50°C and a 50°C temperature rise. The temperature rise is based on heat transfer analyses which presumes 327°C coolant temperature and a 60°C ambient temperature. Conservative activation energy was chosen. The Staff believes that the activation energy chosen by Applicants was conservative because the ranges chosen were those which would give the shortest lifetime for the RTDs. Masciantonio, Tr. 5652. Tests for the NRC performed by Sandia National Laboratory showed that RTD housing temperatures are in the range of 66°C to 93°C for PWR primary coolant temperatures of 316°C and containment temperatures of 42°C. These are consistent with the Harris calculations. Therefore, the Staff judged the methodology used by Applicants for accelerated aging of RTDs to be acceptable and to represent actual plant conditions. Masciantonio, ff. Tr. 5567, at 16.

60. For the reasons set forth above, the Board finds that the use by Applicants of the Arrhenius methodology, coupled with a maintenance and surveillance program, is adequate to demonstrate that the RTDs have been environmentally qualified.

E. Contention 9D: Leakage Currents from Instrument Cables

61. Applicants presented the testimony of Richard M. Bucci and Edwin J. Pagan on this contention. Mr. Bucci is employed by Ebasco Services, Inc., as an Associate Consulting Engineer in the Corporate and Consulting Engineering Department. Mr. Bucci is Manager of Ebasco's Equipment Qualification Program. Bucci/Pagan, ff. Tr. 5166, at 2-3. Mr. Pagan is employed by Ebasco Services, Inc., as a Senior Electrical Engineer. He is responsible for developing and implementing the EQ Program for non-NSSS equipment and supervising the work of the EQ group, which consists of nine multidisciplined engineers. *Id.* at 3-4.

62. Instrument cables are cables constructed of a conductor, insulation, shield, drain wire and overall jacket. They are designed to conduct low-power electrical signals which give information about plant operating conditions such as reactor coolant system pressure, temperature, and containment radiation levels. *Id.* at 6.

63. These cables have been qualified by tests using the methodology employed in IEEE-383-1974. This methodology is endorsed by Regulatory Guide 1.131. *Id.* at 7. These cables are subjected to thermal aging, radiation, and design basis accident conditions as applicable. *Id.* at 8.

The cables are qualified for the worst-case location and most severe environmental conditions that any part of the cable could experience. *Id.* They are exposed to much higher doses of radiation than the most severe doses which could actually be received under normal and accident conditions. *Id.* According to conservative radiation calculations, the maximum normal, plus accident, dose which this instrument cable could receive at Harris is 5×10^7 rads, one-fourth of the dose which the cable sample received during testing. *Id.* After the testing was completed, the cables were required to pass a voltage withstand test which subjected them to additional electrical and mechanical stresses of a greater magnitude than the cables would experience during normal service. This test indicated that margins still existed in the integrity of the insulation after the qualification testing. *Id.*

64. The leakage current is that portion of the signal carried by the cable which is conducted through the insulation to the ground. The insulation resistance is the resistance of the cable insulation to the flow of the leakage current. The leakage current and insulation resistance are inversely proportional to each other. *Id.* The safety implications of reduced insulation resistance depend on the instrument sensitivity. Leakage currents could affect the accuracy of the information transmitted by the instrument. If the instrument is a safety-related instrument, plant safety could be impaired. *Id.* at 9.

65. Both the leakage current and insulation resistance were measured during qualification testing. The leakage current is sensed by a measuring device and converted to an insulation resistance value which is recorded. The insulation resistance of these cables was measured at a minimum prior to the test, after irradiation and at frequent intervals during the design basis accident testing. It was not measured during the radiation test because radiation causes a cumulative change which does not result in fluctuations in insulation resistance during testing. *Id.* at 9-10.

66. Irradiation was not found to result in a significant decrease in insulation resistance. For example, in one sample, the insulation resistance before irradiation was 8.75×10^{10} ohms per 1000 ft. The insulation resistance after irradiation was 1.75×10^{10} ohms per 1000 ft. Insulation resistance values of these magnitudes indicate negligible leakage currents in the circuit. *Id.* at 11.

67. Ebasco is performing insulation resistance calculations which will consider insulation resistance measurements taken during the entire qualification test sequence. The results must show that the quality of the instrument signals will not degrade to a point where the instrument may not be capable of performing its safety function. These results will be

contained in individual environmental qualification packages. *Id.* at 11-12.

68. Therefore, it is Applicants' position that these instrument cables have been reviewed to ensure there will be no adverse effects on the safety functions performed by Harris instrument cables as a result of leakage currents caused by radiation. *Id.* at 12.

69. During Board examination, Applicants' witness Bucci pointed out that the current loss, due to the decrease in the insulation resistance, would be 2×10^{-10} amps, which is too small to measure. Bucci, Tr. 5228.

70. The Staff during its site visit found that the effects of radiation on insulation resistance had been included in the Environmental Qualification Program. Masciantonio, ff. Tr. 5567, at 16. It is the Staff's position that the measurement of insulation resistance gives a direct indication of the leakage current. Staff review of three qualification files on August 9 and 10 determined that leakage current was measured after radiation exposure. The results showed little loss of insulation resistance due to radiation exposure. *Id.*

71. Intervenors did not raise any issues during cross-examination which caused a change in either the Staff's or Applicants' conclusions.

72. The Board finds that Applicants' Environmental Qualification Program takes adequate account of leakage currents resulting from the radiation environment.

F. Contention 9E: Orientation of Installed Equipment

73. Applicants presented the testimony of Mr. Richard M. Bucci, Mr. Edwin J. Pagan, and Mr. Edward M. McLean on this contention. Mr. McLean, a Project Mechanical Engineer, has worked on the installation of electrical and mechanical equipment insofar as the preparation of work packages and process control sheets are concerned to ensure the proper completion of quality control inspection. Bucci *et al.*, ff. Tr. 5234, at 3-4.

74. Generally speaking, the physical orientation of a piece of equipment is not relevant to its environmental qualification. For the most part environmental conditions are identical regardless of the orientation of the particular piece of equipment. Physical orientation is more likely to be related to seismic qualification or operability. However, Applicants testified there are some circumstances where physical orientation could affect environmental qualification. These include, for example, circumstances where a valve operator would be upside down and hydraulic fluid could leak onto cable terminations causing corrosion of the connections. Similarly, incorrect orientation of battery chargers could result in

improper ventilation, and thus raise the temperature for components above the expected normal operating temperature. This could shorten the life of that component. *Id.* at 5.

75. The environmental qualification test reports, provided by the vendors of equipment which is qualified by testing, include sketches of test configurations, including the physical orientation of the tested equipment. The vendor may test the equipment in several manners. First, the vendor may test the equipment in the most limiting orientation, that which causes the most stress on the equipment. Thus, the equipment is environmentally qualified for any orientation. This is the most common form of testing equipment. *Id.*; Bucci, Tr. 5395.

76. The vendor may also test the equipment in a single orientation which is not the most limiting, and qualify equipment by analysis for other orientations; or the vendor may specify that the test orientation is the only permissible orientation. Bucci *et al.*, ff. Tr. 5234, at 6. The vendor may also test in several orientations. He must provide installation and maintenance instructions. He must also provide mounting drawings which include the mounting orientation instructions. *Id.*

77. Ebasco, as the design organization, reviews the test orientation against the design drawings for installation. The orientation during testing must either be identical to the design drawings' orientation or the equipment must be susceptible to qualification by analysis for a different orientation. *Id.* at 6-7. Ebasco also reviews the manual accompanying the equipment to determine its consistency with the test conditions. *Id.* at 7.

78. Applicants also have employed procedures for the review and control of installation documents and documentation of corrective actions which includes physical orientation. Drawings are prepared based on the vendor's information and physical conditions at the equipment locations. They are reviewed by the affected engineering disciplines to ensure adequate consideration of all aspects of plant design. These drawings are sent to vendors for review and correction before they are issued to the field. As part of the Environmental Qualification Program, vendor reports are reviewed to ensure that the test orientation is consistent with the installation drawings. Concerns about orientation are documented in the environmental qualification packages as outstanding items which need resolution prior to considering the equipment qualified. *Id.* In order to change an installation drawing, a design change notification (DCN) must be issued. This is reviewed in the same manner as the original drawings. *Id.* at 8. It is affixed to the drawings so that all affected personnel know of the change and it is given to the field personnel for implementation. *Id.*

79. Applicants ensure that equipment is installed according to the drawings through procedures for control of design documents, preparation of work packages, and quality assurance inspection to verify proper installation.

The construction engineer receives documents from the document control center and prepares the work package. The work package includes installation drawings, vendor drawings, vendor manuals, process control sheets, field change requests (FCRs), and DCNs. *Id.* at 8-9.

80. The work package is sent to the field superintendent to ensure that the equipment is installed according to the documents and notifications. *Id.* at 9. Inspection points of installation are noted at which point quality assurance inspection activities must be conducted. These points are indicated on the process control sheet. An inspector prepares inspection documents. Inspectors examine the work packages when conducting inspections and look at physical orientation. *Id.* at 9-10.

81. If a piece of equipment cannot be installed in accordance with the work packages, and needs a change in installation orientation which exceeds design tolerances in the work package, the construction engineer writes a field change request which must be reviewed by the responsible design engineer. *Id.* at 10. The design engineer evaluates the changes, obtaining additional information from the vendor or Ebasco, if necessary. If the FCR is approved, it is sent to the document control center, forwarded to the construction engineer, and made part of the work package. Then the equipment would be installed. *Id.*

82. If the field change request is denied, and the equipment cannot be installed according to the original design, the design engineer should provide an alternate resolution. *Id.* at 11. If the FCR is denied, an installation cannot be completed as designed, and work stops. The program does not allow the work to be completed and accepted until installation agrees with the design documents. *Id.*

83. At an inspection point such as location, elevation, orientation, and anchor tightening, there are places on the process control sheet with spaces for craft and inspector signatures. These are reviewed by the quality assurance inspector and the construction engineer. Inspection points are provided for those activities that affect the quality of installation. Until the inspection is acceptable, the installation is not acceptable. *Id.* at 11-12. If there is a discrepancy between the design documents and the installation, a nonconformance report is written (NCR). *Id.* at 12. A hold tag is placed on the equipment which may limit the work which can be performed regarding that equipment. Each NCR requires specific disposition, which may include rework. *Id.*

84. An additional assurance is also provided concerning the physical orientation of electrical equipment due to the fact that the startup organization checks the orientation of equipment prior to plant operation. *Id.* at 13.

85. Therefore, Applicants conclude that they have programs to ensure the correct installation of electrical equipment. *Id.* at 13-14.

86. The Staff reviewed certain environmental qualification packages and determined that the installation review procedures of the Applicants demonstrate that the physical orientation of equipment is adequately addressed in the Environmental Qualification Program. Masciantonio, ff. Tr. 5567, at 18. In the Staff's testimony, a concern about interface requirements in the packages reviewed was raised. However, during cross-examination Staff witness Masciantonio concluded that additional information provided during the site visit, and subsequent to that visit, appeared to show that the configuration of the interfaces was representative of the test configuration, and that the Staff's concerns on this matter were alleviated. Masciantonio, Tr. 5689. In addition, during the final walkdown, equipment will be inspected to verify that the installed configuration compares favorably with the test configuration. Masciantonio, Tr. 5688.

87. Intervenor Eddleman proposed only a single finding (35E) on this part of the contention. He cites Eddleman Exhibit 49, which is NRC Inspection Report 83-25 (October 19, 1983). This exhibit was offered in support of Contention 41 concerning pipe hanger inspections, not this contention. It was not admitted into evidence at the hearing because we wished to give further consideration to the Applicants' and Staff's position that only a very limited portion of the Construction Assessment Team (CAT) inspection report is possibly germane to Contention 41.

On the basis of this report, Mr. Eddleman would now have us find that "NRC inspectors have found CI (Construction Inspection) did not have sufficient independence to perform their duties in accordance with an adequate 10 C.F.R. Part 50 Appendix B QA program." We do not believe that any "structural independence" concept relating to the Applicants' QA organization is within the scope of this contention, which relates to the actual orientation of equipment. We, therefore, exclude proposed Exhibit 49 from any consideration under this contention.

88. Based on the above, the Board finds that the Applicants' Environmental Qualification Program provides adequate assurance that the physical orientation of tested equipment is the same as the physical orientation of installed equipment at the Harris site.

G. Contention 9F: Inadequate Consideration of Radiation Effects on Lubricants and Seals

89. Testimony on this part of Contention 9 was provided by Applicants' witnesses Richard M. Bucci, Edwin J. Pagan and Peter M. Yandow.

90. All of the balance-of-plant, safety-related electrical equipment, which is equipment not part of the nuclear steam supply system, is provided by Ebasco, and if located in the harsh environment, is qualified by test. Equipment which normally contains lubricants or seals is tested with those as part of the equipment qualification tests. The tests consist of accelerated thermal aging, radiation, and design basis accident simulation, if applicable. Bucci *et al.*, ff. Tr. 5441, at 4.

91. During the radiation portion of these tests the equipment is irradiated as a whole, including lubricants and seals. The dose to which this equipment is exposed exceeds the total integrated dose to which it could be exposed over its qualified life. The required radiation dose exposure is based on normal operation, design basis accident, and post-accident conditions as applicable. *Id.* at 4-5.

92. Ebasco reviews vendor reports for balance-of-plant equipment to identify organic components of the equipment including lubricants and seals, and compares them with the lubricants and seals supplied or recommended to the vendor to verify that they are the same. If the lubricants and seals are not defined in the test report or a discrepancy exists between those in the reports and those recommended by the vendor, Ebasco attempts to obtain more information from the vendor or corrective action is taken to qualify the component. These corrective actions must be documented in the environmental qualification package. *Id.* at 5.

93. The Nuclear Steam Supply System (NSSS) safety-related electrical equipment is supplied by Westinghouse Corporation. There are lubricants and seals in NSSS equipment in some instances. These seals may be either metallic or organic. *Id.* at 6. Metallic seals are not degraded by the environmental conditions for which electrical equipment must be qualified. Organic seals are qualified as part of the equipment tested. *Id.* Westinghouse has not identified the lubricants used in testing, but recommends a general type of lubricant and provides specifications which the lubricant must meet to ensure operability of equipment. Therefore, CP&L has obtained a lubrication study performed for Harris by the Mobil Oil Company, a leading lubricant vendor, to identify the specific brands of lubricant which can be used for each piece of electrical equipment requiring lubrication. Applicants are presently reviewing the adequacy of this study. The study provides the results of radiation stability testing. This radiation stability testing included standard performance

tests which were conducted both before and during irradiation to measure the effects of radiation. The dose for lubricants will be compared with the total integrated dose the equipment will receive. The test dose must be higher than the qualified dose. Applicants will verify that the manufacturer's lubricant performance specifications have been met. *Id.* at 6-7. There will be an equipment qualification package for documenting tests of the lubricants in the study, and analyses which apply the test results to specific equipment at Shearon Harris. *Id.* at 7.

94. Applicants have concluded that their program adequately addresses the effects of radiation on lubricants and seals. *Id.* at 8.

95. The Staff testified that 10 C.F.R. § 50.49(c)(4) requires that a radiation environment must include the total dose over the installed life of the equipment, irradiation from the most severe design basis accident, and dose rate effects. Applicants have shown that radiation is included in the environmental qualification testing of equipment with lubricants and seals, and other organic materials. Masciantonio, ff. Tr. 5567, at 19.

96. The Staff testified that the effects of radiation on lubricants and seals are accounted for by exposing the equipment to the total dose during the expected life, including lubricants and seals. Where lubricants are other than those tested, the documentation must provide a proper analysis to show that they are qualified for the intended application. The results of the actual test and analyses, with a good surveillance program, will provide assurance that unanticipated degradation is not taking place. The Staff has concluded that Applicants' program properly addresses the effects of radiation on lubricants and seals. *Id.* at 18-20.

97. Intervenor presented no contrary evidence on this subpart, and the cross-examination raised no issues which would cause any change in Applicants' or Staff's conclusions. His proposed finding only emphasized the need for Staff review. The record shows such review has been and will be carried out by Staff.

98. Based on the above, the Board finds that Applicants' Environmental Qualification Program adequately considers the effects of radiation on lubricants and seals.

H. Contention 9G: Test Failures

99. Applicants presented the testimony of Messrs. Robert W. Prunty, Richard M. Bucci, Edwin J. Pagan and Kumar V. Hate on this contention. Mr. Hate is employed by Carolina Power & Light Company's Corporate Quality Assurance Department at the Shearon Harris Nuclear Power Plant as Principal QA Engineer, QA/QC Harris Plant section. He has worked on QA for CP&L since 1974. Prunty *et al.*, ff. Tr. 5515, at

2-3. His responsibilities have included the direction of a team of quality assurance engineers in an overview of the electrical design, procurement and construction installation process from a QA viewpoint for the Harris project. *Id.* at 3.

100. This contention references Item 2 of a report issued by Sandia National Laboratories. Applicants testified that this item is based on inspection reports which document the results of inspections of the Rockbestos Company. The inspection report questions the use of Rockbestos environmental qualification test report QR 2806 to qualify their entire 100 series line of coaxial, triaxial and twinax cables. The Rockbestos Company argued that other members of the product line were qualified by similarity. One product had substantially degraded during previous attempted tests. Degradation observed in previous tests was never discussed in the similarity report. The company had also changed test parameters until they obtained good results. These efforts were never mentioned by the reporting company. *Id.* at 5.

101. Rockbestos cable RSS-6-104/LD is used in the Shearon Harris radiation monitoring system. RSS-6-105/LD coaxial and RSS-6-108/LD triaxial are both used in the electrical containment penetrations. Rockbestos was not the direct cable vendor at Harris. Other than the radiation monitoring systems interconnected cable, there are no Rockbestos cables in the Harris raceway systems. *Id.* at 6.

102. In determining how they would qualify Rockbestos cable, Applicants visited Rockbestos and determined that there was not sufficient documentation to support the use of the original Rockbestos report to qualify cables at Harris. Prunty *et al.*, Supplemental Testimony, ff. Tr. 5515, at 3.

103. Applicants have obtained two test reports, IPS-1053 and IPS-1054, from Conax Corporation which describe environmental qualification testing of penetration module assemblies including Rockbestos RSS-6-105/LD coaxial cables. Applicants have reviewed these reports and determined that the test parameters envelope Shearon Harris parameters for the worst-case locations through which the coaxial and triaxial cables are routed. Applicants testified that the minor differences among the RSS-6-105/LD, RSS-6-104/LD and RSS-6-108/LD cable types do not affect qualification. Thus, Applicants concluded that the qualification testing of RSS-6-105/LD cables is applicable to the other Rockbestos coaxial and triaxial cable used at Harris. *Id.* at 3-4.

104. Conax's quality assurance program has been reviewed by Applicants since it is a direct vendor to CP&L and its quality assurance program has been found acceptable. *Id.* at 4.

105. With regard to the two Rockbestos firewall cables, Applicants have received two test reports which describe environmental qualification research tests performed by Sandia National Laboratories on Firewall III control cables. Shearon Harris cables are one of the cable types tested in these reports. NUREG/CR-2932 and NUREG/CR-3588. Applicants have determined that the test parameters envelope applicable Shearon Harris parameters for the worst-case locations for both types of cable. In addition, the control cable is representative of the thermocouple cable for environmental qualification purposes, since all the features of the two cables significant to environmental qualification are the same. The thickness of the insulation material on the thermocouple cable is 25 mils compared to 30 mils on the control cable. However, the thermocouple cable wires are covered by a metallic shield and Hypalon overall jacket, which more than compensate for this minor difference in thickness. Prunty *et al.*, Supplemental Testimony, ff. Tr. 5515, at 5-6; Bucci, Tr. 5560. Applicants' witness also testified that the control cable was stressed to 480 volts rather than the milivolts which would be used on the thermocouple cable. Bucci, Tr. 5561. Therefore, it is Applicants' position that the Environmental Qualification Program can demonstrate the qualification of the limited number of Rockbestos cables used at Harris. Prunty *et al.*, Supplemental Testimony, ff. Tr. 5515, at 6.

106. Applicants testified that they have reasonable assurance that significant test failures have been identified or have not occurred. In specific vendor test programs initiated at the request of one or more customers, a test plan and test procedure are approved by the customer(s) prior to actual testing. Specific numbers and types of test samples are delineated. Upon completion of testing, data gathered with respect to each sample, as well as the conclusions drawn, are presented in the report. Applicants testified that it would be apparent if the vendor had not reported test results on any of the samples. Prunty *et al.*, ff. Tr. 5515, at 10.

107. In addition, Applicants have taken steps to assure the quality of vendors. Suppliers are evaluated before contracts are awarded. Visits are made to supplier's facilities. *Id.* at 12-13. Vendors may be qualified by an audit, or by acceptance of the vendor's ASME certification, by acceptance of the NRC, or by qualification through the CASE system. In the CASE system another utility has performed an audit of the vendors in question. Hate, Tr. 5529-30. In the case of Conax, Applicants qualified this vendor through the CASE system. Hate, Tr. 5529.

108. The Staff testified that Part 21 of the Commission's Regulations requires that all environmental qualification test facilities must report all

test failures and test results which could affect safety. In addition, the requirements for quality assurance programs at vendors' facilities are detailed in Appendix B to 10 C.F.R. Part 50. This section of the regulations also requires that all results of environmental qualification tests be documented and reported. There are also industry standards which are explicit in the requirement to report all qualification tests results. Masciantonio, ff. Tr. 5567, at 20.

109. In August of 1982, the NRC instituted a vendor inspection program to assess test facilities' QA programs. This program has found numerous nonconformances which have subsequently been corrected. The specific case cited in this contention is based on one inspection of the Rockbestos Company. It was, and still is, concluded by the Staff that environmental qualification of these cables has not been established based on the documentation provided by Rockbestos. *Id.* at 20-21.

110. The Staff set forth its findings concerning the Rockbestos Company in Information Notice 84-44. The Staff suggested the possible courses of action which could be taken to qualify Rockbestos cables, which are: (1) a valid qualification test could be performed of the installed Rockbestos cables; (2) an Applicant could obtain documentation from other available qualification tests already performed, and determine its applicability to the installed cables; and (3) Applicants could perform analyses of the existing qualification reports applicable to the installed cables to ensure that the documentation relied upon to demonstrate environmental qualification supports such a conclusion. *Id.*, Attach. 3, at 2-3.

111. The Staff reviewed Applicants' supplemental testimony on this contention, and testified that the approach described in that testimony is consistent with the pertinent Staff suggestions in Information Notice 84-44. Masciantonio, Tr. 5585.

112. Intervenors did not present evidence either direct or by cross-examination which would raise a question as to the adequacy of the Applicants' environmental program to address concerns regarding test failures with regard to Rockbestos cables. The Board resolves this issue in favor of the Applicants.

I. Conclusion

113. The Board finds that the seven issues raised in this contention have been satisfactorily addressed in the Applicants' Environmental Qualification Program. No significant deficiency was raised through cross-examination. This contention is resolved in favor of the Applicants.

V. CONTAINMENT CONCRETE

A. Introduction

1. As originally admitted by the Board on September 22, 1982, Eddleman Contention 65 stated as follows:

Because Daniel International, CP&L's prime contractor on the Harris project, has a history of building defective basemats and containments (e.g., Callaway, Wolf Creek, Farley) a complete ultrasonic reexamination of the containment and basemat, able to detect voids over 1 inch in any size (any dimension over 1") therein, or another type of examination with similar capabilities to detect voids, is necessary before Harris 1 is allowed to operate. Otherwise, the voids could become (through cracking from thermal stress, concrete aging, or external impact) paths for radioactivity to leak from containment at unforeseeable times, including during rad releases inside containment, e.g. from reactor and primary system relief valves after a reactor trip or feedwater trip.

Supplement to Petition to Intervene by Wells Eddleman at 171 (May 14, 1982); Memorandum and Order (Reflecting Decisions Made Following Prehearing Conference), LBP-82-119A, 16 NRC 2069, 2101 (1982).

2. In a telephone conference on July 12, 1984, the Board announced its decision to grant in part and deny in part Applicants' Motion for Summary Disposition of Eddleman Contention 65 (January 18, 1984). As a part of its ruling, the Board substituted the following language for the original Contention 65, to reflect the matters which remained in dispute:

Inspection of CP&L concrete pour packages has shown that numerous instances of improper concrete placement have occurred in the basemat and containment structure. In view of this, a complete examination of the basemat and containment structure must be conducted using ultrasonic techniques or, where use of such techniques is not feasible, other appropriate tests.

Tr. 2168-69. The Board further ruled that the concrete pour packages at issue are those discussed in Wells Eddleman's Response to Summary Disposition Motion on Eddleman 65 (Concrete) (June 14, 1984), and the accompanying affidavit of Charles C. Stokes, with the exception of matters related to the waterstop, which the Board excluded by rejecting proposed Eddleman Contention 65-B. Tr. 2172-75. The Board also held that the second sentence of the revised contention (on testing) would not be at issue unless litigation of the first sentence revealed actual defects in the concrete. Tr. 2170.

3. Following the receipt of evidence on Eddleman Contention 65 and prior to the adjournment of the hearing on safety matters, the

Board, on its own initiative, reached a tentative decision on that contention. Tr. 7368-70. As Applicants pointed out in their proposed findings, the Board “tentatively concluded that there is no basis for questioning the integrity of the concrete in the Harris containment.” Tr. 7369. In explanation of the grounds for its tentative decision, the Board stated its findings that “the Applicant and Staff direct cases were very convincing,” and “that those cases were not shaken by the cross-examination.” *Id.* With respect to Eddleman witness Stokes, the Board found that: (1) he “was rather substantially impeached in his presentation”; (2) “he retracted much of his testimony previously filed”; and (3) he did not raise “any questions of a safety nature about the containment concrete.” *Id.* The Board, therefore, adopted the direct testimony of Applicants and the Staff as its tentative decision in favor of Applicants and the Staff on Eddleman Contention 65. Tr. 7369-70.

4. The Board provided Mr. Eddleman with the opportunity to file proposed findings on Contention 65, if he wished to continue to pursue the matter. In view of the Board’s tentative decision and the state of the record, any proposed findings by Mr. Eddleman were to be filed by December 21, 1984. Applicants and the Staff were provided the opportunity to file any reply on or before January 4, 1985. Tr. 7369-70.

5. Mr. Eddleman filed proposed findings on December 21, 1984; Applicants replied on January 4, 1985, and the Staff filed a reply on January 11, 1985.

B. The Record

6. In opposition to Applicants’ motion for summary disposition and in support of his newly proposed Contentions 65-A and 65-B, Mr. Eddleman filed the affidavit of Charles C. Stokes on June 14, 1984. The Stokes affidavit evaluated thirteen containment concrete pour packages²⁰ produced by Applicants during discovery. These same thirteen pour packages became the exclusive subject of controversy as a result of the Board’s ruling of July 12, 1984. See ¶ V.A.2, *supra*. In the affidavit of Roland M. Parsons filed in support of Applicants’ Response to Eddleman Proposed Contentions 65-A and 65-B (June 29, 1984), Applicants provided a point-by-point refutation of Mr. Stokes’ evaluation of each of the thirteen pour packages.

²⁰ A “concrete pour package” is the assemblage of documentation for each concrete placement, which is required to be retained by Quality Assurance in its records vault. See Applicants’ Testimony of George A. Kanakaris, Roland M. Parsons and Larry F. Garner in Response to Eddleman Contention 65 (Concrete Containment Structure), ff. Tr. 5764, at 10.

7. Thus, well in advance of the August 9, 1984 deadline for filing direct testimony and exhibits, Mr. Eddleman knew not only the identity of the concrete documentation at issue, but also Applicants' defense to Mr. Stokes' evaluation of that documentation. Yet, Mr. Eddleman filed no new or revised testimony responsive to Applicants' positions. Instead, he chose to rely on the Stokes affidavit of June 14, 1984, as testimony in support of Contention 65. Indeed, not until it was time for Mr. Stokes to take the witness stand on October 30, 1984, did Mr. Eddleman and his witness attempt to come to grips with the other parties' positions.

8. Applicants' direct testimony, filed on August 9, 1984, again included the point-by-point response to the Stokes affidavit (Kanakaris *et al.*, ff. Tr. 5764, at 13-22). The NRC Staff's direct testimony, filed on the same date, included an even more detailed response to the Stokes affidavit. See NRC Staff Testimony of John R. Harris, Joseph J. Lenahan and Paul R. Bemis on Eddleman Contention Number 65, Concrete Placement, ff. Tr. 6320 (hereinafter "Harris *et al.*"), at 11-50. Nevertheless, it was only on the third day of Mr. Eddleman's examination of Applicants' witnesses that the Board and parties were informed that Mr. Eddleman's witness had abandoned some undefined portion of his testimony upon review of the information provided in the testimony of Applicants and the NRC Staff. A recess was required at that point in order for Mr. Eddleman and his witness to confer and to reach a position on the subjects which remained in controversy. See Tr. 6035-45. Consequently, not only had substantial hearing time been wasted on examination of Applicants' witnesses on matters later abandoned by the Intervenor, but hearing time was also expended while he determined what the areas of controversy actually were and while the witness and the Intervenor proceeded to edit Mr. Stokes' testimony on the record. See Tr. 6046-68. All of this could have occurred prior to the filing of testimony on August 9, and should in any case have occurred prior to October 30, 1984. The path followed, however, is partially responsible for a record which the Board described as "extremely convoluted and confused." See Tr. 7370.

9. Applicants' panel included three witnesses. Mr. Kanakaris is Manager of Civil Engineering for Ebasco Services, Inc., the architect/engineer for Harris. He is responsible for direction of all civil engineering and design of Ebasco power plant projects, and has over 25 years of experience in the civil engineering and design of generating stations. (Kanakaris *et al.*, ff. Tr. 5764, at 1). Mr. Parsons, also a civil engineer, has been employed by CP&L at the Harris site since major construction activity was undertaken in 1976. Previously Project General Manager of the Harris Plant Construction Section, Mr. Parsons

is now in charge of the Completion Assurance Section. *Id.* at 2; Tr. 5754-55 (Parsons). Mr. Garner is employed by CP&L as Senior Construction Specialist in the Harris Plant Construction Section. During containment construction he was the Construction Inspection (CI) Supervisor-Civil, with extensive responsibilities in the inspection of concrete placements. Kanakaris *et al.*, ff. Tr. 5764, at 2-3. Applicants' direct case on Eddleman Contention 65 also included FSAR § 3.8.1, which describes the design of the concrete containment. Applicants' Exh. 9.

10. In addition to the witnesses sponsored by Applicants, five Harris site employees, who were involved in one or more of the thirteen containment concrete placements at issue, appeared voluntarily in response to the Board's grant of Mr. Eddleman's August 17, 1984 request that these individuals be subpoenaed to testify at the hearing. Mr. Sealey is employed by CP&L as a senior construction specialist and, during containment construction, served as a CI inspector and supervisor. Mr. French, now a senior engineer with CP&L, was also in the CI department during containment concrete placements. Mr. Breedlove, an employee of Daniel Construction Company, continues to work in the CI department at Harris, and was involved as a CI inspector throughout the majority of the containment construction. Mr. Strickland, an employee of Daniel, served as a quality control inspector who conducted the field tests of concrete being placed in containment. As a quality assurance technician employed by CP&L, Ms. Woltz performed break tests on compressive strength cylinders in the concrete lab. Tr. 6222-28.

11. The NRC Staff's direct case was presented through a panel of three witnesses. Mr. Harris, a Civil Construction Inspector in the Plant Systems Section in NRC's Region II, inspects nuclear power plants in civil and geotechnical areas (Harris *et al.*, ff. Tr. 6227, at 1-3). Mr. Lenahan, formerly a civil construction inspector in the Plant Systems Section at Region II, is now a reactor inspector in the Test Program Section. A civil engineer, Mr. Lenahan's inspection responsibilities at construction sites have included structural concrete, structural steel and installation of post-tensioning systems. *Id.* at 1, 3-4; Tr. 6306 (Lenahan). Mr. Harris has been inspecting civil construction activities at the Harris site since 1977, and Mr. Lenahan has conducted such inspections at Harris since 1978. Harris *et al.*, ff. Tr. 6227, at 5. Mr. Bemis, formerly Chief of Projects Section 1C at Region II, is now Director of the Division of Reactor Safety. *Id.* at 1; (Bemis, Tr. 6305-06).

12. Mr. Eddleman's witness on Contention 65 was Mr. Stokes, an engineer who has been self-employed since October of 1983. (Stokes, Tr. 6128). Mr. Stokes' previous experience in the nuclear power industry

concentrated in pipe support system design and stress analysis. Affidavit and Resumes of Charles C. Stokes, ff. Tr. 6177 (hereinafter "Stokes"). While Mr. Stokes had college courses on concrete and some concrete work experience (Stokes, Tr. 6143-44, 6157-58), he has never: (1) designed a concrete containment; (2) designed concrete mixes for a containment; (3) developed or written procedures for concrete placement, testing or inspection; (4) had field responsibility for concrete placements; (5) been responsible for, supervised or conducted concrete field tests on containment placements or compressive strength testing of containment concrete. (Stokes, Tr. 6131-34.)

13. As a result of the withdrawal by Mr. Stokes of portions of his testimony and the striking of two paragraphs by the Board (Tr. 6164, 6176), seven of the thirteen concrete pour packages once at issue under Contention 65 were no longer questioned by Mr. Eddleman's only witness as of the October 30, 1984 hearing.

C. Mr. Eddleman's Proposed Findings

14. Mr. Eddleman begins with a series of proposed findings that accurately reflect the record but would not contribute in any substantial way to the resolution of this contention.

15. Eddleman's Proposed Finding 8 would be material and important, if true. It reads:

Witness Stokes pointed out that insufficient clearance from asbestos board to cad-weld existed in pour ICBSL 216001 (affidavit following Tr. 6177 and resumes, p. 8), and the "correction" was not to do it again. This pour package is Applicants' Exhibit 21. Nevertheless in pour package 216002 (Applicants' Exhibit 22) the same problem is documented again. (Stokes, *ibid*, p. 9). There is no evidence this problem was ever corrected; inadequate clearance can lead to voids as aggregate will not pass into the tight space created by the inadequate clearance.

Mr. Eddleman has ignored the record and proposes an erroneous finding. There is evidence that this problem was corrected. Staff testified that "this problem was identified and documented by a licensee construction inspector during preplacement inspections." The construction inspector stated that his purpose for documenting this problem on the FIRWW was to ensure the minimum clearances would be met prior to concrete placement. The construction inspector stated that he reinspected this item prior to concrete placement and verified that the minimum clearances were attained. Review of the records and discussions with inspection personnel show that a clearance of less than 1/2 inch was never accepted. (Harris *et al.*, ff. Tr. 6227, at 45.)

The Staff testimony was not challenged during cross-examination. The Board finds Mr. Eddleman's statement that there is "no evidence" of corrective action to be not only wrong but in culpable disregard of the record.

16. Eddleman's Proposed Finding 9 cites Mr. Stokes' view that "you generally do not want the slump below 2 inches" (Tr. 6140-41). We note that none of the 160 slumps reported in the referenced pour packages were less than 1½ inches and only 10 were less than 2 inches. Kanakaris, Tr. 6102. Since stiff or low-slump concrete has maximum strength, low slump is desirable. Staff's expert witnesses had the view that "you can place concrete easily with a 2 inch slump or a 1½ inch slump." (Lenahan, Harris, Tr. 6395.) The Board agrees with the Staff witnesses.

17. The remainder of Mr. Eddleman's proposed findings are concerned with the strength testing and evaluation of placement 1CBXW29001 (Applicants' Exh. 14). These proposed findings do not reflect the record accurately. As succinctly summarized in the Staff testimony (Harris, *et al.*, ff. Tr. 6227, at 26-27), test cylinders from this placement had an average strength of 4865 psi at 28 days, which is slightly less than the required design strength of 5000 psi. Therefore, nonconformance number C-508 was issued. The reserve cylinder set was tested at 90 days and showed an average strength of 5660 psi which is well above the design strength. The Board finds the Applicants properly identified a nonconformance and properly resolved it.

In addition, the Licensee drilled five cores in this placement for testing. Because of reinforcing steel congestion, the diameter of the cores was limited to 1¾ inches. Three of the cores tested satisfactorily and two did not. Staff testimony was that "experience has shown that test results from cores of this size are variable." The Board does not find a basis for concern in these results, particularly in view of the satisfactory results from the test cylinders at 90 days.

Mr. Eddleman would have us find that many errors are present in these pours. We find only one. Lab test 9323 is shown in Applicants' Exhibit 14 as a sample from Placement 1CBXW29001. As reported in the Staff testimony, this sample came from 1CBXW296003. The low strength (4105 psi) in this test lead to Nonconformance Report C-507. Ninety-day test results on the reserve cylinder of 5040 psi (40 psi above required design strength) form the basis for resolving this nonconformance. The Board finds the error in tabulating the lab tests undesirable but without any ultimate harm. Clearly, the record does not support Mr. Eddleman's proposed conclusion that a pattern of widespread errors may have occurred.

18. The Board finds the record provides no evidence that concrete was inadequately placed during the Harris construction of the containment building, but rather the record demonstrates the Applicants' proper identification of a few nonconformances and proper resolution of these items. This contention is resolved in favor of the Applicants.

VI. SUMMARY DISPOSITION RULINGS

Prior to the safety hearings, the Board granted the Applicants' summary disposition motions with respect to Eddleman Contention 11, concerning polyethylene cable insulation, and 132C(II), concerning control room design. We stated at that time that we would set forth the reasons for those rulings at a later date. Tr. 2167. Those reasons follow:

Contention 132C(II)

Eddleman Contention 132C(II) states as follows:

With respect to layout [of the Control Room], [Applicants'] proposal arranges control and display cabinets such that they block or impede view of some others (see Fig. 1, p. 12, where view of/from panels 8, 9, 10 & 11 is obscured by #'s 12, 13, 14 and 15 from #'s 6, 7, and 1, 2, 3, 4 and 5. #6 and 7 are hidden from operators by 1 and 2 (as well as 3, 4 and 5). #'s 16 and 17, the incore instrumentation and nuclear instrumentation system are almost totally behind the 2 blocks 1 through 5 and 6-7 with respect to the radiation monitor equipment panels 12 through 15, the 8-11 block (startup and generator) and the 1-5 block's sections 1 through 4 and possibly 5. Operator inability to see, read accurately, or integrate the information on these panels can imperil public safety in an accident.

This contention was accepted by the Board in a Memorandum and Order of October 6, 1983. Discovery was conducted by the parties and on May 9, 1984, Applicants submitted a Motion for Summary Disposition. Staff responded in support of Applicants' motion on May 29, 1984. Applicants submitted the Affidavit of Raymond G. Ramirez. Mr. Eddleman responded to Applicants' motion on June 14, 1984.

The control room at Shearon Harris was laid out according to the recommendations resulting from a detailed control room design review conducted by CP&L with Ebasco Services, Inc. (Architect/Engineer), Westinghouse Corp. (NSSS Vendor) and Essex Corp. (Human factors consultants). Prunty Affidavit, ¶¶ 4-5. Three operating positions were chosen at the main control board because of their proximity to the Reactor Controls, Emergency Safeguards and Emergency Power controls and

displays. The position of equipment panels other than the main control board were then optimized for operator visual access. *Id.* ¶¶ 6-7. Mr. Eddleman alleges that regardless of the design process used by Applicants there are points in the control room where an operator would have his view of certain panels blocked by other panels, and specifies them in his contention. Applicants agree that this is true, but that Mr. Eddleman errs in essentially assuming that all panels must be visually accessible to all operators.

Applicants point out that NRC regulations require that two operators, one of whom is a senior operator, must be in the control room and that one operator must be at the controls at all times. 10 C.F.R. § 50.54(m)(2)(i) and (iii). Applicants expect that a majority of the time there will be three operators and a shift foreman in the control room. Prunty Affidavit, ¶ 8.

Mr. Eddleman's first situation in his contention is that operator view of panels 8, 9, 10 and 11 are obscured by panels 12, 13, 14 and 15. However, this is true only if the operator is standing at panels 1 through 5 or at panels 6 and 7. Applicants state that operators are not ordinarily stationed at panels 1 through 5, but even if an operator were in that position, the other operator or operators would have visual access to panels 8 through 11. *Id.* ¶¶ 8, 9.

Mr. Eddleman's second concern is that panels 6 and 7 are obscured by panels 1 through 5. The Applicants agree, but state that panels 6 and 7, which have to do with Cooling Tower and River Water Makeup Control and Condensate Booster Hydraulic Coupling Control, are neither safety-related nor are required to be operated in an accident scenario. *Id.* ¶ 10. The third concern in the contention is that panels 16 and 17 (Incore Instrumentation and Nuclear Instrumentation System) are obscured by panels 1-5 and 6 and 7, and/or panels 12-15, and/or panels 8-11, assuming that the operator is located at various positions across the room from panels 16 and 17. As with Mr. Eddleman's first concerns, the operator positions necessary to cause such blockage are not typical, but even if an operator were at one of these there would be visual access for the other operator or operators. *Id.* ¶ 11.

The Staff's affiant, Mr. Ramirez, having reviewed the Applicants' motion and related documents, visited the Shearon Harris control room and physically determined the visual access available to operators in various positions in the control room. He found that the blocking of visual access of certain panels from certain positions was as Mr. Eddleman alleges, but he also agreed that Applicants' arguments that such blocking is unlikely or of no importance to safety are valid. Ramirez Affidavit, ¶¶ 7-9.

Mr. Eddleman's response to Applicants' motion touched in principal part concerns beyond the scope of his contention. The Board found no litigable substance to it. The Board therefore finds, based on Applicants' arguments which were corroborated by the Staff, that no material fact exists to be litigated in this proceeding concerning control room configuration, and the contention is therefore dismissed.

Contention 11

Eddleman Contention 11 states as follows:

Applicants' FSAR and the SER are deficient and in error because they do not take account of the fact that polyethylene used as cable insulation, deteriorates much more rapidly under long-term doses of gamma radiation than it does when exposed to the same total dose over a much shorter period of time (which is how this material, PE, is tested for service in nuclear plants), as shown by the work of K. Gillen and P. Clough of Sandia Laboratories. The tests these workers conducted show that the insulation becomes embrittled by the radiation's breaking chemical bonds in these polymers (which are long groups of linked chemical units called 'mers' allowing oxidation of the plastic PE which makes it brittle.

This contention was admitted by the Board in its Memorandum and Order of September 22, 1982 (LBP-82-119A, 16 NRC at 2091-92). Discovery was conducted by the parties, and on May 25, 1984, Applicants moved for summary disposition, submitted the affidavits of Richard M. Bucci and of Peter M. Yandow, Edward M. Stendel and Harold W. Bowles. Staff responded in support of Applicants' motion on June 18, 1984, submitting the affidavit of Armando S. Masciantonio. Mr. Eddleman responded on June 29, 1984.

In the course of discovery it was determined that polyethylene is not used as electrical cable insulation at Shearon Harris, and, to Applicants' knowledge, is not used as insulation on any electrical equipment inside containment. Bucci Affidavit, ¶¶ 31-32. This fact was affirmed by the Staff. Masciantonio Affidavit, ¶ 4. The Board therefore found the contention to be moot and dismissed it from the proceeding.

In this response to Applicants' Motion, Mr. Eddleman did not attempt to defend Contention 11, but did suggest that the Board might look into radiation effects on neoprene insulation, which he states is used in Shearon Harris cables, to see if a Board question on the subject might be appropriate. The Board did review the information received from the parties, i.e., the three affidavits received from Applicants and the Staff, as well as Mr. Eddleman's own pleadings, but could find no significant safety concern therein. The Board therefore declined to entertain Mr. Eddleman's suggestion.

VII. CONCLUSIONS OF LAW

The safety matters in controversy in this proceeding are limited to those raised by the Intervenor. 10 C.F.R. § 2.760a. As reflected in the foregoing opinion on management capability and findings of fact on other contentions, those matters have (with a few exceptions to be addressed later) now been resolved in favor of the Staff and the Applicants and against the Intervenor. Based on that opinion and those findings of fact, the Board concludes that as to the contested safety matters addressed herein, there is a reasonable assurance that, if an operating license is subsequently granted for the Harris facility, the activities authorized thereby can be conducted without endangering the health or safety of the public and that such activities will be conducted in compliance with applicable NRC regulations.

VIII. APPEALS

Pursuant to 10 C.F.R. §§ 2.760(a) and 2.762, an appeal from this Partial Initial Decision or from any prior Board Order granting a motion for summary disposition, in whole or in part, of a safety contention or excluding a proposed safety contention from litigation may be taken by filing a notice of appeal with the Atomic Safety and Licensing Appeal Board within 10 days after service of this Decision.²¹ A brief in support of an appeal must be filed within 30 days after the filing of the notice of

²¹ Although this Decision does not authorize issuance of a license or resolve all pending safety issues (because of conflicting and higher priority assignments of the Board members), it does resolve a "major segment of the case" and is therefore appealable at this time. See *Boston Edison Co.* (Pilgrim Nuclear Power Station, Unit 2), ALAB-632, 13 NRC 91, 93 n.2 (1981).

The Applicants' unopposed motion of December 20, 1984, concerning transcript corrections is granted and the evidentiary record shall be deemed amended to incorporate said changes.

appeal (40 days if the appellant is the NRC Staff), any other party may file a brief in support of or in opposition to an appeal.

**THE ATOMIC SAFETY AND
LICENSING BOARD**

**James L. Kelley, Chairman
ADMINISTRATIVE JUDGE**

**Dr. James H. Carpenter, Member
ADMINISTRATIVE JUDGE**

**Glenn O. Bright, Member
ADMINISTRATIVE JUDGE**

**Bethesda, Maryland
August 20, 1985**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

**Dr. Robert M. Lazo, Chairman
Dr. Richard F. Cole
Dr. Emmeth A. Luebke**

In the Matter of

**Docket Nos. 50-250-OLA-1
50-251-OLA-1
(ASLBP No. 84-496-03-LA)
(Vessel Flux Reduction)**

**FLORIDA POWER AND LIGHT
COMPANY
(Turkey Point Nuclear Generating
Plant, Units 3 and 4)**

August 16, 1985

In this Order the Licensing Board rules on Licensee's motions for summary disposition of Intervenors' two admitted contentions in this operating license amendment proceeding. The motion for summary disposition of Intervenors' Contention (b) is granted. The motion for summary disposition of Intervenors' Contention (d) is denied.

RULES OF PRACTICE: SUMMARY DISPOSITION

Under 10 C.F.R. § 2.749(d) a motion for summary disposition will be granted when the record shows that there is no genuine issue as to any material fact, and that the moving party is entitled to a favorable decision as a matter of law.

RULES OF PRACTICE: SUMMARY DISPOSITION

Summary disposition is available in hearings on amendments to licenses.

TECHNICAL ISSUES DISCUSSED

ECCS evaluation model, peak cladding temperature, fuel design limits, heat transfer coefficients, Appendix K, critical heat flux, departure from nucleate boiling (DNBR).

ORDER

INTRODUCTION

Before us are two motions from the Licensee for summary disposition, two motions to strike which are related to the motions for summary disposition, and a motion from the Intervenors for suspension of the license amendments which are the occasion of this proceeding. We grant one summary disposition motion, on Contention (b), deny the other, and deny the motions to strike and the motion to suspend.

We begin with a brief account of the origin and course of this proceeding, one of three dealing with amendments to the licenses for Units 3 and 4 at Turkey Point. In the course of this account, we rule on the motions to strike, and we pay particular attention to the prehearing conference we held on the summary disposition motions to aid us in determining whether any genuine issues existed concerning any material fact. Though the Intervenors had supported the holding of this conference, they ultimately objected to it. We set out our reasons for holding it, and for conducting it as we did. After this account of the origin and course of this proceeding, we shall rule on the summary disposition motions and on the Intervenors' motion to suspend the amendments, which is closely tied to Intervenors' Contention (b).

HISTORY OF THIS PROCEEDING

By letters dated August 19 and September 9, 1983, the Licensee requested amendments to the technical specifications of Licenses DPR-31 and DPR-41, to support the Licensee's program for reduction of neutron bombardment (vessel flux), and consequent embrittlement, of the pressure vessel walls, and to remove restrictions imposed when

the Licensee was operating with steam generators having a larger number of plugged tubes than the steam generators which the Licensee is now using.

Notice of the proposed amendments was published in the *Federal Register* on October 7, 1983. 48 Fed. Reg. 45,862-63. In response to the notice, the Center for Nuclear Responsibility (CNR) and Joette Lorion filed a joint petition to intervene. The NRC Staff (the Staff) issued the amendments on December 23, 1983, stating that the amendments posed no significant hazards and therefore, under 10 C.F.R. § 50.91(a)(4), could be issued without a hearing on the contentions filed by the Intervenor.

The Intervenor filed an amended petition on January 25, 1984. We ruled on the contentions filed then, and on other matters, in our May 16, 1984 Order (unpublished). We admitted only Contentions (b) and (d), each of which is now the subject of a motion from the Licensee for summary disposition. Contention (b) alleges shortcomings in one of the computer models which, when functioning together, yield predictions of the temperature of the hottest rod in a reactor core during reflood of the core after a loss-of-coolant accident (LOCA). Contention (d) alleges that under the amendments there is an increase in the probability that films of steam will form around the fuel rods during normal operation and certain abnormal occurrences other than LOCAs. Such films reduce transfer of heat away from the rods. The chief concern of both contentions is that operation under the amendments not increase the risk that the integrity of the cladding of the fuel could be threatened.

The Licensee filed motions for summary disposition on August 10, 1984. Along with the motions, the Licensee also submitted a memorandum of law, statements of material facts as to which the Licensee contended that no genuine issues existed (required by 10 C.F.R. § 2.749(a)), and affidavits from Mark J. Parvin and Edward A. Dzenis, both of Westinghouse Electric Corporation (Westinghouse). Mr. Parvin, whose affidavit is in support of summary disposition of Contention (b), is senior engineer in the Reload Safeguards Analysis Group of the Nuclear Safety Department in the Nuclear Technology Division of Westinghouse. His professional work has included analyses of LOCAs and preparation of computer code input data for these analyses. Mr. Dzenis, whose affidavit is in support of summary disposition of Contention (d), is Manager of Thermal and Hydraulics Design for the Nuclear Fuel Division of Westinghouse. His principal professional work is management of thermal-hydraulic analysis of fuel for pressurized water reactors (PWRs) which are supplied by Westinghouse. The PWRs at Turkey Point are Westinghouse reactors.

On September 4, 1984, the Staff filed responses in support of the motions. The responses were accompanied by affidavits from Summer B. Sun, on Contention (b), and Yi-Hsiung Hsii, on Contention (d). Both Dr. Sun and Dr. Hsii are nuclear engineers in the Core Performance Branch of the Division of Systems Integration, Office of Nuclear Reactor Regulation of the Nuclear Regulatory Commission. Dr. Sun's professional work includes review of models of core thermal-hydraulic behavior during LOCAs and other abnormal occurrences. Dr. Hsii's work includes technical review of safety evaluation reports and methodological topical reports submitted by applicants and licensees.

On September 4, 1984, the Intervenor responded in opposition to the motions and submitted affidavits from Joette Lorion — who is one of the Intervenor and Research Director of CNR, which is the other Intervenor — and Dr. Gordon D.J. Edwards, President of the Canadian Coalition for Nuclear Responsibility and Professor of Mathematics and Science at Vanier College, Montreal, Canada. Both affiants spoke to both contentions. The opponent of a motion for summary disposition is required by 10 C.F.R. § 2.749(a) to submit a statement of material facts as to which the opponent contends there exists a genuine issue. The Intervenor did not submit such a statement.

THE MOTIONS TO STRIKE

On September 21, 1984, the Licensee filed a motion to strike both the Intervenor's response and the accompanying affidavits. The Licensee argued that the response should be struck because it was not accompanied by statements of material facts as to which it was contented that no genuine issue existed. Licensee's Motion to Strike at 9-10. The affidavits should either be struck, or the facts as asserted by the Licensee deemed admitted as true, the Licensee argued, because the Intervenor had not met the burden, imposed by 10 C.F.R. § 2.749(b), of showing affirmatively in the affidavits that the affiants were competent to testify to the matters stated in the affidavits. The Licensee cited cases indicating that such competence was to be shown by education or experience which gave the affiant some special knowledge or skill germane to the matters discussed in the affidavits, and that neither a well-informed layperson's general familiarity with issues surrounding nuclear power, nor expertise in an unrelated field of science or engineering, was sufficient proof of an affiant's competence. *Id.* at 3-4. The Licensee argued that affiant Lorion, despite her title of Research Director, had no more than a layperson's knowledge of the issues in the proceeding (*id.* at 4-7), and that

Dr. Edwards, though a mathematician, had not shown that he had an expert's knowledge of computer modeling of the behavior of a reactor core (*id.* at 7-9). The Licensee also argued that some of Dr. Edwards' statements amounted to attacks on some of the Commission's regulations and should be struck for that reason alone. *Id.* at 10-12.

The Staff responded on October 9, 1983, largely in support of the Licensee's motion to strike, though granting Ms. Lorion a general familiarity with nuclear issues, and construing Dr. Edwards' statement that as an applied mathematician he had been keenly interested in mathematical modeling to mean that he had expertise in such modeling. *See* Edwards' Affidavit, Exh. A at 3; Staff's Response at 6-7.

On October 12, 1983, the Intervenor's responded to the Licensee's motion to strike with, among other things, their own motion to strike the Licensee's motion to strike. The Licensee responded to the Intervenor's motion to strike on October 17, 1983. The Intervenor's construed the Licensee's motion to strike as an unauthorized reply to the Intervenor's answer to the Licensee's motions for summary disposition.¹ We, however, construe the Licensee's motion to strike differently. It does not address, as a reply would, the merits of the Intervenor's arguments against summary disposition. Rather, it confines itself to the procedural sufficiency of the Intervenor's response and affidavits. The Licensee's motion to strike is simply that, a motion to strike, and thus is to be either granted or denied, but not stricken. We therefore deny the Intervenor's motion to strike the Licensee's motion to strike, and go on to consider the merits of the Licensee's motion to strike.

In their response to the Licensee's motion to strike, the Intervenor's make only oblique defenses of their affiants' competence to testify to the matters they discuss in their affidavits. In defense of Ms. Lorion's qualifications, for instance, the Intervenor's appear to concede the Licensee's point. "Joette Lorion has not represented herself to be an expert witness in the nuclear field" Intervenor's Response to Licensee's Motion to Strike at 4. Nonetheless — or rather, somehow therefore — the Intervenor's conclude (using a wonderfully self-illustrating phrase) that "a finding by this Board that she is unqualified would be inappropriate and superfluously redundant." *Id.* at 5. The Intervenor's also say that the affiants "have had no fair opportunity to defend their professional

¹ The Intervenor's apparently are relying on 10 C.F.R. § 2.730(c), which says, among other things, that "the moving party shall have no right to reply, except as permitted by the presiding officer or certain other officers of the Commission."

qualifications.” *Id.* at 3. Yet the Licensee’s motion to strike provides just such an opportunity.²

We nonetheless deny the Licensee’s motion to strike. We deny it as it applies to the Intervenor’s affidavits in opposition to the motions for summary disposition. We are inclined to think that in a proceeding where safety is at stake, a motion to strike a filing and affidavits on summary disposition is most useful when it is directed at a *proponent* of a motion for summary disposition who puts forward, on the basis of questionable competence, technical arguments before a judicial panel wholly unprepared by education or experience to distinguish competence in technical matters from incompetence in the same. In such a situation, without the motion to strike, safety may receive less than its due.

Here, however, the context of the motion to strike is quite different. First, it is the opponent of summary disposition who puts forth the challenged affidavits. If on the strength of the opponent’s representations, the motion for summary disposition is denied, the proponent still has a chance at hearing to persuade the judges that his case is sound. Second, the challenged filings consist, in most telling part, of claims quoted and paraphrased from technically competent Staff discussions, and we found the Intervenor’s emphasis on those discussions helpful as a starting point for our coming to a fuller understanding of the technical questions raised by the parties’ filings. Last, the members of this Board are, by both education and experience, together competent in several fields related to nuclear power. Denial of the motion in no way compromises safety, and the proponent of the motion can at the hearing challenge the competence of the opponents’ witnesses under the more rigorous rules applicable where an evidentiary record is being built.

We also deny the Licensee’s motion to strike as it applies to the Intervenor’s response to the motions for summary disposition. As the Staff points out (Staff’s Response to Licensee’s Motion to Strike at 3 n.2), under 10 C.F.R. § 2.749(a), the Intervenor’s failure to file statements of the material facts as to which the Intervenor contend there exist genuine issues is grounds not for striking the Intervenor’s response, but for deeming as admitted the facts as set forth in the Licensee’s statement of material facts as to which the Licensee contends no genuine issues exist. Finally, though we grant that some of Dr. Edwards’ statements in

² The Intervenor also make a general defense of their response to the motions for summary disposition. They argue that, simply by having admitted Contention (b), “the Board has already acknowledged that the Intervenor have raised a substantial issue of material fact suitable for disposition at hearing.” Intervenor’s Response to Licensee’s Motion to Strike at 2. Such a view of the legal significance of the admission of a contention leaves no room for summary disposition.

his affidavit can be read as attacks on some of the Commission's regulations, we construe those statements another way in our discussion of Contention (b).

THE PREHEARING CONFERENCE ON MARCH 26, 1985

We found the pleadings and the rest of the written record insufficiently informative for a determination of whether there existed genuine issues about material facts. We therefore called, on February 8, 1985, for a prehearing conference to be held on March 26, 1985, and we ordered that the Licensee be prepared to make didactic presentations in response to issues raised in the parties' filings. In the February 8 Order, we listed, as examples, several such issues.

On February 19, 1985, the Licensee filed a motion calling upon us to clarify or reconsider our decision to hold a prehearing conference on the summary disposition motions. The Licensee claimed such a conference would provide opportunity for testimony that the other parties might regard as unfairly surprising. Motion for Reconsideration at 7. The Licensee noted that the Commission's regulations consistently speak of summary disposition as judgment on the pleadings, and make no mention of oral testimony as a basis for summary disposition. *Id.* at 3-4. Although the Licensee recognized that there were federal court cases in which oral testimony had, at the discretion of the judge, been given on summary disposition, the Licensee nevertheless argued that this discretionary power was derived from a rule of federal civil procedure for which there was no analogue in the Commission's regulations. *Id.* at 5.

Since the Licensee thought that the pleadings supported summary disposition, the Licensee would have preferred a judgment on the pleadings alone. *Id.* at 9. As next best, the Licensee wanted us to put our questions in writing and order that the answers likewise be in writing. *Id.* at 7-8. The Licensee suggested that even if we decided to take oral testimony, we nonetheless use written questions — to avoid surprise and to limit the scope of the additional material to the question of whether a genuine issue existed about a material fact — and give the other parties an opportunity to examine the witnesses. *Id.* at 8.

The Intervenors responded on February 25 to the Licensee's motion for clarification or reconsideration. Noting the existence of federal court cases in which oral testimony had been taken on summary disposition motions, the Intervenors supported holding the prehearing conference we had proposed, on condition that testimony taken at it was limited to the question of whether a genuine issue existed, and that other parties were permitted to examine the witnesses. The Intervenors also said that

they should be given an opportunity after the conference to rebut elements of the Licensee's presentation.

The Staff responded to the Licensee's motion for clarification and reconsideration on March 6, 1985. The Staff argued that although no regulation explicitly permitted oral testimony on summary disposition, neither did any regulation explicitly prohibit such testimony, and that a licensing board did have the power to request additional information where it believed that the existing record was insufficient to allow summary disposition. Staff's Response to Licensee's Motion for Reconsideration at 3 (citing *Cleveland Electric Illuminating Co.* (Perry Nuclear Power Plant, Units 1 and 2), ALAB-443, 6 NRC 741, 752 (1977)).³ The Staff also pointed out that there had been other boards which had heard oral testimony on motions filed outside of a hearing. *Id.* at 3 n.2 (citing *Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-756, 18 NRC 1340, 1343 (1983) (Appeal Board heard oral testimony and cross-examination on motion to reopen the record)).

The Staff agreed with the Licensee that caution had to be exercised, to "avoid a lengthy trial for the purpose of establishing that an actual trial is necessary." *Id.* at 4 (quoting 6 J. Moore, W. Taggart & J. Wicker, *Moore's Federal Practice*, ¶ 56.11[1.6]). The Staff even suggested that one proper course for us was simply to deny the motions for summary disposition, a solution we believed to be more in keeping with the letter of the law on the Licensee's burden of proof than with the spirit of the summary disposition rules, which seek to avoid needless litigation.

The Staff nonetheless saw that permitting only written additions to the record, as the Licensee had suggested, would "deprive the Board of an opportunity to pursue fully questions to determine whether there was a genuine issue of material fact." *Id.* at 6. The Staff echoed the other parties' call for an opportunity to examine the Licensee's witnesses, and the Intervenors' call for a later opportunity to rebut. *Id.*

On March 14, 1985, we affirmed by written order (unpublished) our intention to hold the prehearing conference, having determined that under federal court practice and NRC law we had a discretionary power to hear oral testimony on summary disposition motions. We declared unfounded the parties' concern that we would permit unfair surprise. We said that it was manifestly evident that if the Licensee was presented with an additional opportunity to meet its burden on the motions for

³ The Staff could have cited also 10 C.F.R. § 2.749(b), which empowers the board to "permit affidavits to be supplemented or opposed by deposition, answers to interrogatories or further affidavits," essentially the means the Licensee proposed of supplementing the record.

summary disposition through oral testimony, the other parties would be given an opportunity to respond or rebut. We also clarified what areas we were interested in pursuing and affirmed that oral testimony would be used solely to determine whether any genuine issues about material facts existed concerning Contentions (b) and (d).

The prehearing conference was held, as scheduled, on March 26, 1985. The Licensee's affiants, Messrs. Parvin and Dzenis, and Licensee's witness Michael Y. Young, Manager of the Thermal Hydraulic Applications Group in the Nuclear Safety Department of Westinghouse Corporation, gave didactic presentations on computer modelings of the thermal-hydraulic behavior of the core during reflood after a LOCA, and on how the steam which is formed in primary coolant during normal operation behaves. Each affiant then responded to issues the filings raised in his area of expertise, both the issues we had listed in our order establishing the conference and other issues of which the ones we had listed were examples.

About halfway through the conference, Intervenors began to object to the procedure. Tr. 152. At the point of the Intervenors' objection, the Licensee had completed its didactic presentation on Contention (b), and its response to the issues Ms. Lorion's affidavit had raised in connection with Contention (b), and had just begun to respond to issues raised in Dr. Edwards' affidavit. Apparently, the immediate occasion of the Intervenors' objection was that the Licensee had responded to two issues raised by Dr. Edwards that we had not listed in our order establishing the conference (*see* Tr. 156), though they were, clearly enough, the sorts of issues of which the ones we had listed we had said were examples. *See* February 2, 1985 Order. However, as the Intervenors' explanation of their objection took shape, it was clear that the objection was quite broad. They charged that the prehearing conference in fact amounted to a hearing in which the evidence presented had been one-sided and had gone beyond the scope of *any* question the Board had proposed (Intervenors' April 18, 1985 Comment on Prehearing Procedure at 1 (emphasis supplied)), that the Utility had been in control, presenting evidence on the merits of the contentions, going-down lists of the Intervenors' concerns, and providing no opportunity for cross-examination; the Intervenors claimed that the Board should have been asking all the questions during the conference, and confining the answers to the general issue of whether a genuine issue existed about any material fact. Tr. 154-55.

The Intervenors' objections during the conference culminated in, first, a refusal to avail themselves of the opportunity we gave them, as promised, to cross-examine the Licensee's witnesses (Tr. 170-71), and,

then, in a motion to strike *all* the testimony offered at the conference, whether didactic or not, and whether in response to the issues we had explicitly raised or not. Tr. 207-08. The Intervenors also asserted that only if we denied their motion to strike would they avail themselves of the opportunity we had promised them to rebut the testimony given at the conference. Tr. 212. They claimed that either to cross-examine or rebut during the conference was inappropriate, for it only contributed to turning the conference into an evidentiary hearing. Tr. 171, 203.

We denied the Intervenors' motion to strike the testimony received in the prehearing conference. Tr. 214. We were convinced that there had been no significant departure from the original aim of the prehearing conference, and no defect in fairness toward any party. In retrospect, we could see that some of the testimony appeared to go to the merits, rather than merely to the question of whether a genuine issue existed, and we have pointed out such testimony in our ruling on Contention (b). But we see here nothing which warrants the Intervenors' quite broad motion to strike. Less all-encompassing motions might have been appropriate. Apparently, however, the Intervenors did not want to make such discriminating motions. At no time have they pointed out what portions of the testimony they thought spoke to the merits, and, indeed, they appeared to be confident in our ability to discern such portions, for, despite their motion to strike, they proposed that "the Board take judicial notice and consider in an informal way this presentation by the Licensee; but that this testimony not come in for its truth. . . . But make no mistake about it, we ask it all be stricken." Tr. at 207-08.

We gave the parties fair warning about the issues we wanted treated in the conference: we listed several in the original order establishing the conference, calling them examples; we made clear both in that order and in the order affirming our decision to hold the conference that we were asking the Licensee to be prepared to respond didactically to all the issues raised in the Intervenors' affidavits, not just the few we had listed by page or paragraph number in the earlier order. We made equally clear, both before and during the conference, that the Staff and the Intervenors could cross-examine and rebut the Licensee's testimony. Tr. 170-71, 202-03. Indeed, we gave the Intervenors 3 weeks in which to respond to that testimony (Tr. 215) and made sure they understood the risk they ran if they did not respond. Tr. 202-03. By a filing dated April 18, 2 days after the end of the 3 weeks, the Intervenors announced that they would "not further dignify the procedure by submitting rebuttal or other testimony." In the same filing, they also asserted that "the net effect of the Prehearing Conference has been to firmly establish that

there are substantial disputed issues of material fact at issue regarding both Contentions (b) and (d).” Which issues they did not say.

STANDARDS FOR SUMMARY DISPOSITION

By and large, licensing boards, when considering motions for summary disposition under 10 C.F.R. § 2.749, will apply the standards established by the courts for considering motions for summary judgment under Rule 56 of the Federal Rules of Civil Procedure. *Alabama Power Co.* (Joseph M. Farley Nuclear Plant, Units 1 and 2), ALAB-182, 7 AEC 210, 217 (1974). Summary disposition is available in hearings on amendments to licenses. *Boston Edison Co.* (Pilgrim Nuclear Station, Unit 1), ALAB-191, 7 AEC 417 (1974). A motion for summary disposition will be granted when the record shows that there is no genuine issue as to any material fact, and that the moving party is entitled to a favorable decision as a matter of law. 10 C.F.R. § 2.749(d). The record must be viewed in the light most favorable to the party opposing the motion. See *Public Service Co. of New Hampshire* (Seabrook Station, Units 1 and 2), LBP-74-36, 7 AEC 877, 897 (1974) (citing federal court cases). The failure of the party opposing summary disposition to submit evidence against the disposition does not require that the motion be granted. The movant must still meet his burden of proof to establish the absence of any genuine issue of material fact. *Cleveland Electric Illuminating Co.* (Perry Nuclear Power Plant, Units 1 and 2), ALAB-443, 6 NRC 741, 753-54 (1977).

CONTENTION (b)

Paraphrased without technical language, the Intervenor’s Contention (b) says that the computer model used to make the most recent prediction of the temperature of the hottest spot on the hottest rod in the core after a loss-of-coolant accident (LOCA) during reflood of the core doesn’t meet the NRC regulations applicable to such models, that, in particular, the model does not adequately consider the effect even a slight decrease in the rate of reflooding can have on the temperature of the hottest spot in the core.

Certain aspects of the actual text of the contention, and of the Intervenor’s response to the motion for summary disposition of the contention, will be clearer if we first set out some technical matters.

General Design Criterion 10 (GDC 10) requires that

[t]he reactor core and associated coolant, control, and protection systems shall be designed with appropriate margin to assure that specified acceptable fuel design limits are not exceeded during any condition of normal operation, including the effects of anticipated operational occurrences.

10 C.F.R. Part 50, Appendix A.

The "fuel design limit" relevant under this contention is the temperature at which the integrity of the cladding of the fuel is seriously threatened. The "anticipated operational occurrence" relevant under this contention is a LOCA. The "appropriate margin" GDC 10 calls for in this case is established by 10 C.F.R. § 50.46(b)(1), "*Peak cladding temperature* [PCT]. The calculated maximum fuel element cladding temperature shall not exceed 2200°F." The PCT is not to be an average drawn from all the peaks on all the rods in the core, or even from all the peaks on a single rod. Rather the PCT is to be the temperature of the hottest region on the hottest rod in the core after a LOCA. 39 Fed. Reg. 1001 (Jan. 4, 1974). The cladding of the fuel in Units 3 and 4 at Turkey Point does not become embrittled until its temperature is somewhere between 2500° and 2700°F. Tr. 132-33. Thus the 2200°F limit established by § 50.46(b)(1) entails a safety margin of at least somewhere between 300° and 500°.

Before the amendments which are at issue in this proceeding could be issued, the Licensee had to show that the PCT in Units 3 and 4 under the operating limits to be imposed by the amendments would not exceed 2200°F. Usually a calculation of a PCT requires the use of several models, each one specializing in a different aspect of the behavior of core and coolant after a LOCA. One model will calculate the rate at which the emergency core cooling system refloods the core; another model, with reflood rates as input, will calculate certain numerical variables which specify heat transfer from the rods to steam from the water flowing in from the emergency core cooling system (ECCS). Yet another model will use these heat transfer coefficients as input for calculations of PCTs. The NRC requires that these models conform to the criteria in Appendix K of 10 C.F.R. Part 50. 10 C.F.R. § 50.46(a)(1).

The Licensee used two models to calculate heat transfer coefficients. The oldest of the two, the Full Length Emergency Cooling Heat Transfer (FLECHT) was accepted for use by the NRC at least as early as 1974. See 39 Fed. Reg. 1003 (Jan. 4, 1974). FLECHT is simply an equation which expresses a correlation of data points determined by experiment. The other model, "BART-A1: Computer Code for the Best Estimate Analysis of Reflood Transients" (BART), relies on principles of engineering rather than correlations based solely on experiment. Tr. 111-13.

On December 21, 1983, the NRC Staff accepted BART as being in conformity with Appendix K when applied under certain conditions, which included, most important among others, a certain range of operation of the core, a maximum on the distance between cladding points modeled, and a prohibition against the use of a grid-spacer model as part of the BART model. See Staff's Safety Evaluation Report on BART (BART SER), Dec. 21, 1983, at 16. The range of operation of the core was generous enough to include even the possibility of blockage of reflood by swollen or ruptured cladding. *Id.* at 9-10, 14-15. The Staff judged that the accuracy of the grid spacer model was not yet established. *Id.* at 9. Inclusion of the model would probably have lowered the calculated PCT, because the grid spacers can be expected to contribute to the transfer of heat from the core to the coolant. *Id.*

Applied under the conditions imposed by the Staff, BART, in conjunction with several other models — most particularly LOCTA, which performs the actual calculation of the PCT — yielded a predicted PCT of 1972°F, 228° under the regulatory limit of 2200°F. Parvin Affidavit, ¶ 5.

The Licensee revised the prediction upward to 2051°F when it was discovered that there existed a less-than-adequate connection between BART and the model which predicted the rates of reflood of the core. That rate varies, though not widely. Thus, a curve which charted that rate as a function of time would be gently rolling. The area under the curve would represent the total amount of water which had entered the core from the ECCS. However, a curve constructed from a small sample of points on the complete curve could miss some of the low points on the complete curve and thus, by overestimating the amount of water in the core, overestimate the amount of steam available for cooling, and, in turn, underestimate the PCT. Letter from E.P. Rahe (Westinghouse) to D.G. Eisenhut (NRC), March 22, 1985.

The Licensee has strengthened the connection between BART and the model which calculates reflood rates, WREFLOOD, so that the input to BART on rates of reflood matches the information available from WREFLOOD on rate of reflood, and so that the total amount of coolant in the core as calculated by BART from rate information equals the total amount of coolant as calculated by WREFLOOD. *Id.* The Staff has reviewed the Licensee's modifications and has revised accordingly its safety evaluations of the BART model and the amendments at issue here, but concludes anew that the BART model meets the criteria of Ap-

pendix K.⁴ Board Notification BN-85-055, May 16, 1985. This revision is the principal subject of the Intervenor's motion for suspension of the license amendments and will be considered by us again when we rule on that motion.

Sometime in 1983, the Staff asked the Licensee to calculate the PCT for Units 3 and 4 by using the older model of heat transfer coefficients, FLECHT. Staff Safety Evaluation Report on Amendment 99 to DPR-31 and Amendment 93 to DPR-41 (SER on amendments), May 14, 1985, at 5-6. The Licensee did so, and on December 17, 1983, submitted for Staff review a FLECHT-based PCT of 2130°F, higher than the modified BART figure, but still under the regulatory limit of 2200°F. *Id.* at 6. Thus, although the figure calculated using BART was sufficient to meet the 2200°F limit, it was not necessary. The Licensee could have met the limit using FLECHT alone. This fact is crucial to our disposition of the motion for summary disposition of this contention.

One small, short-term adjustment has had to be made in these two figures, the 2051°F predicted with BART and the 2130°F predicted with FLECHT. The Licensee's principal way of preventing embrittlement of the reactor vessel by neutron bombardment has been to replace part of the low-parasitic (LOPAR) fuel in the core with optimized fuel assembly (OFA) regions at each reloading of the core. Eventually the cores in Units 3 and 4 will consist wholly of OFA fuel, but for the next few years, the cores will contain a mixture of the two kinds of fuel. The PCTs calculated with BART and FLECHT are applicable to either kind of fuel, but not, without adjustment, to a core containing a mixture of the two.

⁴ By letter dated March 18, counsel for the Licensee informed us that on March 9 Westinghouse had discovered, in work unrelated to Units 3 and 4, that shortcomings in the procedures for transferring information from WREFLOOD to BART would entail an increase in the PCT predicted with BART. The Licensee's letter to us only briefly described the shortcomings in the procedures and could say about the revised PCT only that it would be less than the 2200°F limit imposed by regulation. On March 22, Westinghouse gave the Staff a full account of the shortcomings in the procedures and of how the shortcomings had been corrected, and reported that the revised PCT was 2051°F, to which, again, 10°F was to be added during the period of transition between fuel types. During the prehearing conference on summary disposition, Westinghouse witnesses largely repeated what Westinghouse had told the Staff on March 22. Tr. 124-30. The Staff volunteered that it would be appropriate for the Staff to provide the Board and the parties with its review of the information given it by Westinghouse, and we ordered that the Staff do so within 2 weeks of the conference. Tr. 204-05, 218-19. On April 10 the Staff submitted an affidavit from Summer B. Sun, whose qualifications we have noted, and Norman Lauben. Mr. Lauben is a Section Leader in the Reactor Systems Branch of the Division of Systems Integration of the NRC. He supervises the review of transient and accident analyses and analytical methods submitted by vendors and utilities. The affidavit reviewed the information Westinghouse had given the Staff on March 22, the related testimony the Westinghouse witnesses gave at the prehearing conference, and the affidavit Mr. Sun had submitted in response to the Licensee's motion for summary disposition of Contention (b). On May 16, 1985, in Board Notification BN-85-055, the Staff provided us with the revised safety evaluations of BART and the amendments at issue here.

Experimental work on full-size fuel assemblies of OFA fuel have shown that the OFA fuel causes a 4.5% greater resistance to the passage of fluids than does the LOPAR fuel. Tr. 115. This increased resistance, called hydraulic resistance, can affect the efficiency with which steam from the water flowing into the core after a LOCA cools the core. Engineering equations applied to the 4.5% figure for the increase in hydraulic resistance show that the velocity of steam going past a single OFA fuel rod surrounded by LOPAR fuel is reduced by 2.2% from what it would be were it surrounded by OFA fuel. Tr. 116. The reduction comes about because steam, following the path of least resistance, crosses over from the single OFA element to the LOPAR fuel, where the hydraulic resistance is less. Tr. 115. No single OFA fuel rod in Units 3 and 4 Turkey Point will be surrounded by LOPAR elements at any time during the transition between the two kinds of fuel, but on the conservative assumption that every OFA rod in Units 3 and 4 is surrounded by LOPAR rods, as was assumed in calculating the 2.2% reduction in velocity (Tr. 117, 123-24), then the predicted PCT for Units 3 and 4 must be increased by not more than 10°F. Parvin Affidavit, ¶ 5.

This 10°F was calculated in the following way: mathematical modeling of a three-loop plant like Units 3 and 4 shows that a 5% reduction in the velocity of steam during reflood entails an increase in the PCT of not more than 19°F. Tr. 116. A 2.2% reduction, therefore, entails a proportionately smaller increase in the PCT, namely, 8.4°F, which the Licensee and the Staff are treating as 10°F. Tr. 116-17. This increase applies to both the PCT as predicted with BART, and the PCT as predicted with FLECHT, despite the difference in the two predictions, for the 10°F is derived by simple proportion from the ratio of 5% to 19°F, and thus does not depend upon the temperature to which it is being added.

Therefore, for the period of the transition between types of fuel, the PCT predicted with BART is 2051°F + 10°F, or 2061°F, and the PCT predicted with FLECHT is 2130°F + 10°F, or 2140°F. Both predictions fall within the limit set out in 10 C.F.R. § 50.46(b)(1).

Now we have set out sufficient technical and regulatory background for understanding the contention and the Intervenor's response to the motion for summary disposition. The contention is as follows:

Whether the entirely new computer model used by the utility, for calculating re-flood portions of accidents meets the Commission's ECCS Acceptance Criteria; specifically, whether a 2.2% reduction in re-flood rate is misleading because for a small decrease in re-flood rate, there results a large increase in fuel temperature. Re-flood rates are critical if below 1 or 2 inches per minutes.

It will be immediately seen that the contention was drafted without a full picture of BART's uses, or the meaning of the 2.2% reduction. The contention thus contains certain errors of fact which render it incapable of raising any genuine issue of fact.

First, there is no basis for the claim in the contention that BART is "entirely new." Of course, BART is in some sense new, but many of its parts are old. The Staff repeatedly says in its safety evaluation of BART that this or that submodel within BART is "conventional," or "typical." See, e.g., §§ 2.1, 2.2.2, 2.4.⁵

Second, and more important, the 2.2% reduction is not in the rate of reflood, but in the velocity of steam passing by OFA fuel assemblies; it is a reduction only for the relatively short period of the transition from one fuel type to another; and BART had nothing to do with calculating either the 2.2% or the 10°F increase the 2.2% entails in the PCTs predicted with the aid of BART and FLECHT. As we reported, the 2.2% is the result of experiment and calculation exclusive of BART, and the 10°F follows from a simple proportion. Thus, insofar as one specific concern of the contention is that BART may not be taking adequate account of the 2.2% reduction, the concern is misplaced, for not only is the reduction not in reflood, neither BART nor FLECHT should take into account the reduction. The Intervenor has taken no issue with the way in which either the 2.2% or the 10°F was derived.

Last, and most important, the contention says nothing about the fact that the Licensee used FLECHT to predict a PCT that falls within the 2200°F established by § 50.46(b)(1). Dr. Edwards, in his affidavit in response to the motion for summary disposition, does mention FLECHT, not to argue any defect in FLECHT itself, though, but rather to argue that, given the uncertainties of mathematical modeling, it is a matter of political judgment whether the 2140°F predicted with the help of FLECHT, and adjusted for the transition core, can be said to fall within the 2200°F limit. Edwards Affidavit at 7, ¶ 9(e). Both the Staff and the Licensee construe Dr. Edwards' argument to be, in effect, an attack on the 2200°F limit (Licensee's Motion to Strike at 10-11; Staff's Response to Licensee's Motion to Strike at 9-10); but, construing the argument in the most favorable light, we view it as kin to a question we asked during the prehearing conference on March 26: whether the figures the models had predicted for the PCTs were significant to the four places being quoted us, or rather whether the 2130°F, for instance, ought to be rounded off to 2200°F. Tr. 130. More generally, we asked whether there

⁵ The language of the contention is general enough to permit one to think that the drafter thought that BART, all by itself, modeled reflood. As we have noted above, it does not.

was an error band of so many percent associated with the predicted PCTs. Tr. 131-32. The reply was that the models provide four figures, that the Staff required that the predictions be rounded off to the nearest 10°F, and that the figures we were shown were upper bounds, that realistic estimates would be lower. *Id.* The Intervenor's have not seen fit to raise any doubts about this reply to our questions, and ourselves seeing no doubt to be raised, we must conclude that the Intervenor's have raised no genuine issue about FLECHT, or about whether the PCT predicted with FLECHT meets the 2200°F standard.

Therefore, whatever may be the Intervenor's' concerns about the adequacy of BART, as long as the Licensee has met the standard in § 50.46(b)(1) using a heat transfer correlation which the Staff has long accepted, and whose conformity to the criteria in Appendix K of Part 50 is not in dispute in this proceeding, we are obliged to grant the Licensee's motion for summary disposition of Contention (b).

We are left then with the Intervenor's' criticisms of BART. Before the legal significance of the Licensee's having used FLECHT was clear to us, the concerns the Intervenor's had raised about BART seemed to us to be the most important aspect of the litigation of the contention, and it was largely to find out whether these concerns raised any genuine issues about material facts that we asked the Licensee to make a didactic presentation on March 26. Therefore, it is fitting that, rather than dismiss the Intervenor's' concerns simply with the observation that the Licensee has complied with the relevant legal standards, we make brief comments about the chief of these concerns.

Some of the Intervenor's' comments about BART are simply general cautions about the uncertainties of computer modeling. *See, e.g.,* Edwards Affidavit at 4, ¶ 7. We have taken note of those cautions and shall not further address them. Of the more than a dozen specific comments, most either misrepresent facts, or expect BART to do what only other codes or equations are to do, or seek to have imposed on BART burdens not imposed by law. A few of the claims appear to raise genuine issues, especially if we apply the rule that the record and affidavits are to be viewed in the light most favorable to the party opposing the motion. But since the Licensee has used FLECHT to predict a PCT which complies with the standard in § 50.46(b)(1), the few issues raised are not material and therefore do not justify the holding of an evidentiary hearing. We begin with those comments which raise no genuine issue.

1. “[T]he small break LOCA analysis did not give much weight to the mixed fuel core.” Lorion Affidavit at 4; *see also id.* at 5, item “e.”

Most of the Intervenor’s attempts to raise genuine issues paraphrase or quote from the Staff’s safety evaluation of BART, and this attempt quoted above purports to have the same source. However, the Intervenor’s affiants never cite the Staff’s evaluation by page, and we have been unable to find what Ms. Lorion is paraphrasing or quoting in the sentence above. Whatever her source, it is the task not of BART, but of other codes, to do small-break LOCA analysis. Tr. 135; SER on Amendments, § 4.3. Moreover, we do not know quite what “much weight” might mean here, nor why it is important that the small-break analysis did not give much weight to the mixed core.

2. “BART does not have a gap heat transfer model or cladding swelling model as required by Appendix K.” Lorion Affidavit at 4; *see also Edwards Affidavit* at 6-7.

This sentence is simply a quotation from § 3.0 of the Staff’s SER on BART at 13. As the sentence says, Appendix K requires both a gap heat transfer model and a cladding swelling model. *See* 10 C.F.R. Part 50, Appendix K, §§ A.1 and B. But the Appendix does not require that BART contain these models. They are, in fact, contained in LOCTA, the model which makes the ultimate calculations of PCTs. Tr. 135. Moreover, BART does reckon with the consequences of flow blockage caused by cladding swelling, bowing, and other phenomena. Tr. 159-60. Dr. Edwards implies, without citation to any document, that BART deals with such phenomena “simply by assigning a ‘numerical penalty.’” *Edwards Affidavit* at 7. The Licensee, however, reports that the penalty is calculated. Tr. 160-61.

3. “BART was accepted without a grid spacer model because it was still being reviewed by the NRC staff.” Lorion Affidavit at 4.

As we reported above, it was the Staff’s judgment that the accuracy of the grid spacer model for OFA fuel had not been established, and that therefore the grid spacer model should, for the time being, not be included in BART. However, as we also reported above, this exclusion only makes BART more conservative since the grid spacers increase the transfer of heat away from the rods. *See* BART SER § 2.6. The Licensee’s predicted PCTs are doubly conservative, in fact, for they do take account of the grid spacers in one way: Those spacers are largely responsible for the 4.5% increase in hydraulic resistance during the transi-

tion between fuel types, an increase which entails a 10°F increase in the PCTs for the transition. Thus the PCTs for the transition reflect a penalty for the increased hydraulic resistance caused by the grid spacers, but the PCTs do not reflect a credit for the increased heat transfer caused by the spacers. Tr. 137-38.

4. “The Flecht Seasta [sic: FLECHT-SEASET] data comparison were [sic] from a series of tests conducted on fuel rods in a 17 x 17 assembly and extrapolated to a 15 x 15 assembly.” Lorion Affidavit at 4.

Part of this sentence is drawn from § 2.7.4 of the BART SER. That section says nothing about “extrapolation,” a word more appropriate to prediction than to data comparison. The FLECHT-SEASET data were not used by BART to predict heat transfer coefficients for a 15 x 15 assembly. Rather, BART’s results for a 15 x 15 assembly were compared to the FLECHT-SEASET results for a 17 x 17 assembly. BART’s results were also compared to other test results for 17 x 17 assemblies. See BART SER § 2.7.2. The Intervenors do not say why such comparisons should not be made, or why, among the comparisons made with results for 17 x 17 assemblies, they chose to single out the comparisons with the FLECHT-SEASET data. We note that the BART results were also compared with FLECHT data for 15 x 15 assemblies. See BART SER § 2.7.1 at 10; see also Tr. 141.

The following concerns of the Intervenors are not drawn, as far as we can tell, from the Staff’s SER on BART.

5. “BART does not address or compute the probability that steam generator tube failure and steam binding could stall the reflood.” Lorion Affidavit at 5.
6. “BART does not compute the possibility or consequences of gross pressure vessel rupture.” *Id.*
7. “BART does not take into account the aging to the system and components at Turkey Point.” *Id.*

The Licensee reports that its predictions of PCTs do in fact account for steam binding, but that — and we agree — Appendix K, which sets the standards for evaluation models of the phenomena which determine PCTs, does not require that such models take into account the other factors mentioned in the three sentences quoted above.

8. “BART has not conducted actual experiments on a mixed transitional fuel core, and instead adopts a purely hypothetical percentage for thermal hydraulic resistance.” Lorion Affidavit at 5; *see also* Edwards Affidavit at 6, ¶ 9(b).

The truth is somewhere between the two extremes the Intervenor set out: No experiments have been done on the mixed transitional core, but the percentage increase in hydraulic resistance is not therefore “purely hypothetical.” As we explained above, the 4.5% figure for increase was established by experiment, the 2.2% figure for reduction in steam flow velocity this increased resistance causes was established by engineering equations, and the 10°F figure for increase in the PCTs was established by a simple proportion. BART had no part to play in establishing this 10°F.

The Intervenor’s remaining comments on BART appear to raise genuine issues, at least when the record and the affidavits are read in the light most favorable to the Intervenor. However, as we said, the facts about which these issues have been raised are not material, given the Licensee’s use of FLECHT to comply with the regulation on PCT.

9. Again, quoting the Staff SER without citation to a page, Intervenor Lorion says, “[t]he assumption of constant pressure made in BART may preclude consideration of the oscillating antigravity reflood phenomena.” Lorion Affidavit at 4, 5 (*quoting* Staff BART SER at 3, § 2.1). Dr. Edwards adds, likewise quoting without citation, that BART does not “encompass all possible expected flow patterns” even if the system pressure is relatively constant. Edwards Affidavit at 6, ¶ 9(c) (*quoting* Staff BART SER at 3, § 2.1).

The Licensee’s response to the comments on the assumption of constant pressure is not clear, but seems to be either that another computer code, WREFLOOD, takes variations in pressure into account (*see* Tr. 139-40, 158), or that BART’s assumption of constant pressure is, for various reasons, reasonable. *See* Tr. 140-41. This last alternative goes to the merits rather than to whether the Intervenor has raised a genuine issue. To Dr. Edwards’ report of the Staff’s comment about BART’s incomplete coverage of expected flow patterns, the Licensee replies merely that, in comparisons with FLECHT, BART has proved to be conservative. Tr. 158-59. This reply, rather than showing that the Intervenor raises no issue, avoids the issue they raise.

10. "Only one single test was performed in the BART topical as a basis for parameter assessment." Lorion Affidavit at 4 (paraphrasing Staff BART SER at 5, § 2.2.3).

Again the Licensee replies merely that BART has proved to be conservative in relation to FLECHT. Tr. 138-49.

11. "The BART code shows spikes in the calculated results of the heat transfer coefficients. The spikes are indicative of the discontinuous heat transfer regime transitions. However, the overall BART predictions are in good agreement with the heat transfer coefficient data." Of course, it is precisely where the "discontinuous heat transfer regime transitions" occur that cladding failure is likely to occur. Cladding failure generally begins as a local phenomenon, not necessarily as an "overall" phenomenon. Edwards Affidavit at 7, ¶ 9(g) (*quoting* the Staff SER at 10-11).

It is not clear from the Staff's SER on BART whether these spikes are a product of a discontinuity which actually would exist in the fuel assemblies during reflood, or a discontinuity which exists only in the model. Since BART uses only three heat transfer regimes (*see* BART SER at 3), there may be more discontinuity between them than there would be between the more numerous regimes in the actual fuel assemblies during reflood. Whatever may be the case, the Licensee replies that, because of the "thermal inertia" of the fuel rods, the spikes have little effect on the PCT predicted with the help of BART, and that even assuming these spikes could cause cladding failure, such failure is taken into account in the BART model. Tr. 165-66. The Licensee adds that, in the event of cladding failure, it is the average temperature in the hot assembly that matters, not the local temperature. Tr. 166. The Licensee thus implies that the model's "overall" agreement with the heat transfer coefficient data is sufficient. This reply appears to go to the merits.

THE INTERVENORS' MOTION TO SUSPEND OR REVOKE THE LICENSE AMENDMENTS

As we have reported, on March 18, 1985, Counsel for the Licensee informed the Board by letter that because of shortcomings in the procedures for transferring information from WREFLOOD to BART, the PCT predicted with BART would have to be revised upward. In our discussion of Contention (b) we dealt fully with this revised PCT, but must briefly consider it again now in another procedural context.

Toward the beginning of the March 26, 1985 prehearing conference on the summary disposition motions, the Intervenor delivered to the Board and the parties "Intervenor's Motion to Suspend or Revoke the License Amendments." Tr. 93-96. The heart of the motion was the claim that the Licensee's March 18 letter — which did not describe the shortcomings in the WREFLOOD-BART link, or say what the revised PCT would be, but only that it would be less than the 2200°F limit imposed by 10 C.F.R. § 50.46(b)(1) — showed that there was "no valid technical basis for the WREFLOOD-BART computer model," and that there was therefore "no valid legal, technical, or mathematical basis for operation of the Turkey Point nuclear power plants under the subject license amendments." Motion to Suspend at 1, 3. The Intervenor concluded that

the Board must now suspend or revoke these license amendments, with the requirement that the Licensee . . . operate the facility in accordance with the original technical specifications . . . until this board has determined that there exists a computer model that allows operation of the plant within the requirements of 10 C.F.R. 50.46 and 10 C.F.R. Part 50 Appendix K.

Id. at 2. The motion was accompanied by the same two affidavits which accompanied the Intervenor's response to the motions for summary dispositions. Of course, since these affidavits were written before the Licensee's counsel had informed us of the revision in the PCT, they could not support the Intervenor's claim in their motion that the Licensee's March 18 letter showed that the "WREFLOOD-BART computer model" had no valid technical basis. Neither did the motion contain any legal discussion of our authority to suspend or revoke amendments to an operating license.

At the prehearing conference on summary disposition, the Licensee gave the Board and the parties the new figure for the PCT calculated after the shortcomings in the procedure for transferring information from WREFLOOD to BART had been corrected. Tr. 124. The Licensee also explained what those shortcomings had been and how they had been corrected. Tr. 125-30. Later in the conference, on the basis of this new information, the Intervenor withdrew the motion to suspend or revoke the amendments. Tr. 216. Apparently, for the Intervenor, the mere specificity of the revised PCT was enough to put "a valid technical basis" under BART. Intervenor's counsel said, "I think that [the revised PCT] puts the BART model back into the realm of certainty, whereas there was no certainty at the time we filed the motion." *Id.*

Later in the conference, however, the Intervenor reinstated their motion, arguing that the Licensee's testimony on the circumstances sur-

rounding the revision in the PCT had not been full enough, that “all we have today is [Licensee’s March 18, 1985] letter saying those original values are no longer accurate.” Tr. 219-22. As we have noted, we also had the Licensee’s witnesses’ testimony about the revision in the PCT.

As we have described in our discussion of Contention (b), the Licensee had in fact even before the prehearing conference given the Staff a fuller account of the revision of the PCT. After the conference the Staff reviewed the account and revised its safety evaluations of both BART and the amendments accordingly. The Intervenor’s have not amended their motion to take into account either the testimony at the prehearing conference, or any of the further filings by the Licensee and the Staff.

The Licensee and the Staff filed in opposition to the Intervenor’s motion to suspend or revoke on April 4 and April 10, 1985, respectively. The Staff’s filing was accompanied by an affidavit.⁶ Neither the Staff nor the Licensee saw any merit in the Intervenor’s claim that the upward revision in the PCT meant that the BART code had no valid technical basis, but the Staff and the Licensee disagreed on whether we had the authority to suspend or revoke the amendments. The Licensee argued that the Intervenor’s should have filed a petition for suspension or revocation under 10 C.F.R. § 2.206 with the Director of the Office of Nuclear Reactor Regulation. The Staff argued that in amendment proceedings in which the Board will, in its initial decision, rule on the issue raised by the motion to suspend or revoke, suspension or revocation by the Board could be analogized to a temporary restraining order issued by a federal court, and could be based on the factors for stays of decisions (see 10 C.F.R. § 2.788(e)).

However, we need not reach the question of whether we have the authority to suspend or revoke the license amendments,⁷ since, as is clear from our discussion of Contention (b), the Intervenor’s motion is without substantive merit and must be denied. Whatever the shortcomings of BART may be — and the Intervenor’s motion, being wholly unresponsive to the Staff’s and the Licensee’s filings on the revised PCT pre-

⁶ This was the same affidavit which accompanied the Staff’s filing on the revision of the PCT. As we noted in our discussion of Contention (b), that latter filing also was on April 10.

⁷ We simply note that the Staff’s position on a Board’s authority has at least this advantage, that it is consistent with a recognition that in an amendment proceeding, in contrast to construction permit or operating license proceedings, the *status quo* is not necessarily benign in relation to public health and safety, and that the Board presiding over an amendment proceeding in which the issues raised by the motion to suspend or revoke are already issues in the amendment proceeding is likely to know more than any other Commission officer knows about the issues. Both the cases the Licensee cites in support of its claim that we would not have the authority to suspend or revoke the amendments involve construction permits, and in neither case did the Board have already in the ongoing proceeding jurisdiction over the substantive issues raised by the Intervenor’s filings, neither one of which was a motion to suspend or revoke.

dicted with BART, cannot possibly point to any shortcoming — BART is irrelevant to the resolution of either the Intervenor's motion to suspend or revoke, or the Licensee's motion for summary disposition of Contention (b), for, without using BART, the Licensee has met the legal requirements imposed on predicted PCTs.

Accordingly, Licensee's motion for summary disposition of Intervenor's Contention (b) is granted.

CONTENTION (d)

This contention, like Contention (b), is concerned with the effects of running the fuel in Units 3 and 4 at higher temperatures, principally with whether the integrity of the cladding of the fuel would be maintained at certain times. Contention (b) focuses on the integrity of the cladding during reflood of the core after a LOCA; Contention (d) focuses on the integrity of the cladding during normal operation and certain abnormal occurrences other than LOCAs.

In lay terms, the contention says that the license amendments in issue here make it significantly more probable that the temperature of the cores in Units 3 and 4 will reach the point where the fuel rods will become, in effect, insulated by films of steam, and thus will retain heat that would otherwise be transferred to the water flowing by the rods. The rods thus insulated, the cladding of the fuel is significantly more likely to fail. Moreover, the contention continues, failure of the cladding would release fission products into the coolant and thus make it more likely that there would be serious consequences from an accident.

The text of the contention, and the parties' arguments on summary disposition, cannot be understood without some explanation of how steam behaves during the normal operation of a pressurized water reactor. If the temperature of the fuel in the core of a PWR is high enough, but not too high, bubbles of steam will form on the surfaces of the fuel rods, and will be swept away from the rods by the flow of the coolant. Once in that flow, the bubbles will either condense and thus disappear, or, at some higher temperature, survive in equilibrium with the liquid coolant. The stage of boiling at which the bubbles form and leave the surfaces of the rods is called nucleate boiling. During nucleate boiling, the transfer of heat from the surfaces of the rods to the coolant is efficient and increases more or less in proportion to the increase in the temperature of the rods. The conventional numerical measure of the heat transferred in a given time from a given surface is called "heat flux." *See generally* Dzenis Affidavit at 3-4.

If the temperatures of operation are high enough, however, some bubbles of steam will remain on the surfaces of the rods, and on each rod adjacent bubbles will coalesce and thus begin to form a film of steam over the surface of the rod. The beginning of the formation of such films marks the beginning of what is conventionally called departure from nucleate boiling (DNB). Such films in effect insulate the rods, causing heat that would be lost to water at the surfaces of the rods to be retained in the rods. Thus, at whatever temperature films of steam begin to form on the rods, heat flux begins to decline. The heat flux at the beginning of this decline is called the critical heat flux (CHF). With the reduction in heat flux, a vicious circle forms, increasing the probability of failure of the cladding: Heat is trapped by the films, the temperature of the rods therefore increases, the films grow even larger, heat flux declines even further, more heat is trapped, and so forth. The heat flux from a given rod increases again only when the rod is completely covered by a film of steam, at which point, any further increase in the temperature of the rod increases the difference between the temperature of rod and the temperature of the liquid coolant on the other side of the film, and thus increases the amount of heat the film conducts. *See generally id.* at 4-5.

It is a long way, however, from DNB to a release of significant amounts of fission products to the environment. DNB does not necessarily lead to a breach in the cladding, and even if a breach were to occur, the fission products inside the cladding would be released only into the primary coolant system, which is itself a closed system. Nonetheless, prudence requires avoiding even the first step toward a significant release to the environment. Thus, during the operation of a reactor there must be some proper proportion kept between what the critical heat flux would be for a given set of operating conditions and what the actual heat flux (AHF) is under those same conditions.

It is, however, not possible to say with a high level of certainty what the CHF for a given kind of fuel, operating under a given set of conditions, in a given kind of reactor, would be. Different experimentally derived correlations between CHF and these other features afford different degrees of assurance about the CHFs they help predict. The choice of a proper proportion for a given core must be made, therefore, in the face of uncertainty. The choice can, nonetheless, be made prudently, and the NRC generally imposes on its applicants and licensees the following statistical measure of prudence: For a given plant, with a given kind of fuel, and a given set of operating conditions, the minimum ratio between CHF and AHF — called the minimum departure from nucleate boiling ratio (DNBR) — must afford at least a 95% confidence level that there

is a 95% probability that DNB will not be reached on the hottest rod in the core during either normal operation or certain abnormal occurrences other than LOCAs.⁸ This statistical measure of the prudence in the choice of a minimum DNBR, a measure we shall often call the 95/95 condition, is set out by the NRC Staff in its Standard Review Plan (SRP), NUREG-0800 at 4.4-2 to 4.4-3 (July 1981). The SRP is intended largely for the guidance of the Staff in its exercise of its licensing duties, and therefore does not have the status in law of Title Ten of the *Code of Federal Regulations*, which was the source of the regulation which guided our ruling on Contention (b). An applicant or a licensee need not conform with the standards set out in the SRP, if the applicant or licensee can persuade the Staff that it is conforming to a better standard, or even one just as good. *See id.* at 4.4-8. However, no party to this proceeding has argued that there is any defect in the 95/95 standard.

The license amendments at issue here impose a different minimum DNBR on each of the two kinds of fuel in Units 3 and 4. The difference between the two minimum DNBRs is a result of the differences between the ways the CHF's in the DNBRs were predicted. For the fuel which is being phased out in Units 3 and 4, the LOPAR fuel, the minimum acceptable DNBR is 1.3. Hsii Affidavit at 2; Dzenis Affidavit, ¶ 22. That is, operating conditions in those units must be chosen so that the predicted CHF's for the LOPAR fuel in those units is at least 30% greater than the corresponding AHF's for that fuel. The 30% reflects the uncertainty with which CHF's can be predicted for the LOPAR in those units. The prediction is accomplished using a correlation between CHF and operating conditions called the L-grid correlation, which Westinghouse established on the basis of an early set of experiments with coolant flowing inside isolated heated tubes, and a later set of experiments with coolant flowing in the channels between rods in rod bundles. Tr. 176-79. This L-grid correlation is used in analyses which model the operation of the reactor and yield predicted CHF's for various sets of operating conditions. These predicted CHF's vary enough from the CHF's measured in the experiments which established the L-grid correlation, that the predicted CHF's for LOPAR fuel must be at least 30% higher than the AHF's for that fuel, in order to achieve a 95% confidence that there is a 95% probability that DNB will not occur during either normal operation or certain abnormal occurrences other than LOCAs. Dzenis Affidavit at 8-9.

⁸ That is, there must be only a 5% chance that the probability that DNB won't be reached is less than 95%.

For the fuel which is being phased into Units 3 and 4, the OFA fuel, the minimum acceptable DNBR the amendments in issue here are imposing is 1.17, less than the DNBR being imposed on operations with the LOPAR fuel. Hsii Affidavit at 2. If the predicted CHF of the OFA fuel in those units is always at least 17% greater than the AHF for that fuel, then the 95/95 standard is satisfied. The 17% reflects the greater assurance with which the CHF's of OFA fuel can be predicted. This greater assurance comes from the use of a correlation called the WRB-1, developed by Westinghouse in an extensive program of experiments with the flow of cooling water through arrays of heated rods. The experiments more closely simulated the geometries and conditions of operating PWRs than did the experiments which established the L-grid correlation. Dzenis Affidavit at 6-7. The WRB-1 is known to apply reliably to OFA fuel arrayed in either 17 x 17 or 14 x 14 geometries. The geometry of the cores in Units 3 and 4 is 15 x 15. Hsii Affidavit at 5. The SRP has for some years expressed approval of both the DNBR of 1.3 for LOPAR fuel and of lower DNBRs for OFA fuel where circumstances permitted. SRP at 4.4-3.

The terminology of Contention (d), set out below, is drawn from the conventional terminology which deals with nucleate boiling:

The proposed decrease in the departure in the nucleate boiling ratio (DNBR) would significantly and adversely affect the margin of safety for the operation of the reactors. The restriction of the DNBR safety limit is intended to prevent overheating of the fuel and possible cladding perforation, which would result in the release of fission products from the fuel. If the minimum allowable DNBR is reduced from 1.3 to 1.7 [sic: 1.17] as proposed, this would authorize operation of the fuel much closer to the upper boundary of the nucleate boiling regime. Thus, the safety margin will be significantly reduced. Operation above the boundary of the nucleate boiling regime could result in excessive cladding temperatures because of the departure from the nucleate boiling (DNB) and the resultant sharp reduction in heat transfer coefficient. Thus, the proposed amendment will both significantly reduce the safety margin and significantly increase the probability of serious consequences from an accident.

The particular focus of the contention appears to be on the mere fact that the DNBR which the amendments apply to the new fuel in Units 3 and 4, the OFA fuel, is lower than the DNBR which has been applied to the older type of fuel, the LOPAR fuel.⁹ We would not be denying summary disposition on the motion if the Intervenors raised no issue other

⁹ The wording of the contention is imprecise enough to permit it to be construed to be saying that the amendments apply the DNBR of 1.17 to all the fuel in Units 3 and 4, even the LOPAR fuel. Such is not the case.

than the one of this mere difference between the two DNBRs, for, although under the amendments, the differences between AHFs and CHFs for the OFA fuel may be proportionately less than the same differences for LOPAR fuel, these differences are not the true measures of the margins of safety between AHFs and CHFs. The true measures are probability measures: If a lower DNBR, and, consequently, proportionately smaller differences between AHFs and CHFs, do not lessen the probability that a CHF will not occur in normal operation and certain abnormal occurrences, then the lower DNBR does not diminish the margins of safety between the AHFs and the corresponding CHFs.

If this last statement seems counterintuitive, it may be because it is not unusual for a decrease in some measurable magnitude to entail a decrease in safety. Usually, the closer one drives to the edge of a road, the more likely one is to go off the edge of the road. However, the behavior of a prudent driver depends on how clearly he can see the edge of the road. If the edge is shrouded in fog, the prudent driver will steer clear of where he thinks the edge might be, and the more in doubt he is about where the edge is, the more he is inclined to stay away from where he thinks it might be. If, however, the fog clears some, the driver, by moving closer to the edge of the now more visible road, does not increase his chances of going off the road.

Similarly with CHF in the operation of a reactor: The more doubt there is about what the CHF is, the greater will be the prudent minimum DNBR. But if increased precision in the models of the behavior of coolant flowing through bundles of heated tubes allows for increased accuracy in the predictions of CHF, then the minimum DNBR can be lowered without decreasing the probability that DNB will be avoided.

It is this stability in the measure of probability that the Licensee's affiant has in mind when he says that the lower DNBR applied to the OFA in Units 3 and 4 "in no way implies a reduction in the safety margin of a nuclear reactor." Dzenis Affidavit, ¶ 24. Here, by "safety margin," the Licensee's affiant means the 95/95 standard, which, according to the Licensee, is the standard applied to both kinds of fuel at Units 3 and 4.

The Intervenor's affiant Dr. Edwards, while entertaining the possibility that "the same margin of safety that was previously thought to exist can now be achieved at a higher operating temperature" (Edwards Affidavit, ¶ 9(j)), nonetheless asserts that "it is undoubtedly true that running at a hotter temperature materially increases the probability of DNB, and therefore reduces the safety margin of the nuclear reactor." (*Id.*; see also ¶¶ 9(i) and 10.) Paraphrased so as to remove the seeming self-contradiction from his remarks, and to bring into better focus the differences between his remarks and the Licensee's affiant's claim, what

Dr. Edwards says is that although a given probability measure of a margin of safety — in this case the 95/95 standard — may now be achievable at higher temperatures, the probability measure of the margin at those temperatures nonetheless is smaller than it would be at lower temperatures.

Dr. Edwards is, of course, right. If, for a given fuel, a DNBR of 1.17 gives a 95% confidence that there is a 95% probability that DNB will occur, then the imposition of the DNBR of 1.30 would no doubt increase either the measure of confidence, or the measure of probability, or both. Dr. Edwards is, in effect, asking for the imposition of a standard more stringent than the 95/95 standard. Yet he has nowhere argued, nor have the Intervenor argued, that there is any defect in the 95/95 standard.

However incorrect the Intervenor may be in thinking that it is imprudent to permit a lower minimum DNBR for OFA fuel than for LOPAR fuel, facts reported in the Staff's response to the Licensee's motion show that the Intervenor's principal allegation, namely, that there has been a lowering of a DNBR to the point of trimming a safety margin, raises a genuine issue concerning a material fact in the proceeding. Intervenor Lorion's affidavit claims, in particular, that two matters have not been adequately accounted for in setting a DNBR of 1.17 for the OFA fuel in Units 3 and 4: First, as we reported earlier, the experimental base for the WBR-1 correlation established that a DNBR of 1.17 for OFA fuel arrayed either in a 17 x 17 or a 14 x 14 geometry meets the 95/95 standard; however, the arrays in Units 3 and 4 are 15 x 15. Lorion Affidavit at 8. Second, during the years of transition between fuel types, the difference between the hydraulic resistance of the LOPAR fuel and the hydraulic resistance of the OFA fuel, a difference which was taken into account in predicting peak cladding temperatures, the subject of Contention (b), must be taken into account, Intervenor Lorion says, in determining a minimum DNBR. *Id.*

The Licensee's motion wholly ignores both of these matters. The Staff's affiant raises them briefly, and one other, which we shall discuss shortly, but brushes them aside, though not before making it appear that, in fact, the applying of a DNBR of 1.17 to the OFA fuel in Units 3 and 4 may well not satisfy the 95/95 standard.

On the next to the last page of his affidavit, the Staff's affiant reveals that in its Safety Evaluation Report (SER) on amendments 93 and 99, published December 23, 1983, the Staff relied on a DNBR of 1.34 for the OFA fuel in the cores in Units 3 and 4, a figure which the Staff says is 12.7% higher than the 1.17 figure applicable to a full core of OFA in an array either of 17 x 17 or 14 x 14. The Staff's affiant says that the 12.7% allowed room for several uncertainties, only the smallest of which

he notes in his affidavit, namely, a 2% uncertainty about the applicability of the WRB-1 correlation to OFA fuel arrayed in a 15 x 15 geometry. Hsui Affidavit at 5. The two larger uncertainties reported in the SER are associated with the difference between the hydraulic resistances of the two kinds of fuel (SER on Amendments at 4), and with the bending of the fuel rods during operation (*id.*), a phenomenon caused by, among other things, lengthwise expansion of the heated rods while they are anchored at their ends. This bowing can constrict the flow channels between the rods and thus can affect how efficiently heat is transferred from the rods to the coolant.¹⁰ The SER lists the uncertainty associated with the difference in hydraulic resistance as 3%, and the uncertainty associated with rod bowing as 5.5%. *Id.* That is, we take it, the DNBR of 1.34 which the Staff applied in its SER could have been 2% lower but for the 15 x 15 array, 3% lower but for the mix in the core, and 5.5% lower but for rod bowing.

The implication of the SER's discussion of DNBRs is that since a DNBR of 1.34 allows 12.7% for these three uncertainties, a DNBR of 1.17 does not. The question naturally arises then whether, if a DNBR of 1.17 does not take these three uncertainties into account, it does not amount, in fact, to a reduction in the safety margin the Standard Review Plan would ordinarily impose, that is, whether, under the amendments' imposition of a DNBR of 1.17 there can no longer be a 95% confidence that there is a 95% probability that DNB will not occur during certain specified operating conditions. The last sentence of ¶ 8 of the Staff's affidavit seems to say that there is no longer that confidence: After reporting that the 12.7% difference between the SER's DNBR of 1.34 and the more generally applicable DNBR of 1.17 compensated for the uncertainties identified in the SER, the Staff's affiant says, "[t]herefore, the DNBR limit of 1.17 for WRB-1 as applied to the Turkey Point 15 x 15 OFA does not result in significant reduction in safety margin." However, he explains neither his "therefore" nor his judgment that the reduction is not significant.

The Licensee sheds no light on whether the application of a DNBR of 1.17 to the OFA fuel in Units 3 and 4 in fact means that the 95/95 standard is not being met. As we said, the Licensee's pleadings on the motion do not even mention either the 1.34 DNBR used by the Staff in its SER on the amendments, or any of the three uncertainties for which the 1.34 was compensation. During the prehearing conference on March 26, 1985, the Licensee did discuss the two uncertainties which Intervenor Lorion raised in her affidavit. The Licensee did argue that the application

¹⁰ Intervenor Lorion does not mention this last uncertainty.

of the 1.17 DNBR to the Turkey Point arrays of 15 x 15 was justified (Tr. 180-81), but the Licensee did not say whether, or how, the 2% uncertainty the Staff assigns to such application was accounted for in the DNBR of 1.17. During the prehearing conference, the Licensee did report the 3% uncertainty associated with the difference between the hydraulic resistances of the two kinds of fuel, but simply asserted, without explanation, that the 3% penalty "does not cause any of the fuel to go below its appropriate safety limit as defined previously," by which, we take it, the Licensee meant that even when the 3% penalty is taken into account, the application of the 1.17 DNBR to the OFA fuel in Units 3 and 4 still meets the 95/95 standard. Tr. 189. The Staff would appear not to agree.

Under this contention three genuine issues as to material facts remain for litigation:

1. Whether the DNBR of 1.17 which the amendments impose on the OFA fuel in Units 3 and 4 compensates for the three uncertainties outlined by the Staff in its December 23, 1983 SER on the amendments, at 4.
2. Whether, if the DNBR of 1.17 does not compensate for those uncertainties, the SRP's 95/95 standard, or a comparable one, is somehow satisfied.
3. Whether, if that standard is not being satisfied, the reduction in the margin of safety has been significant.

The Licensee has the burden of showing in hearing either that the application of a DNBR of 1.17 to the OFA fuel in Units 3 and 4 satisfies the 95/95 standard, or that if such application does not, the reduction in the margin of safety is not significant.

Accordingly, Licensee's motion for summary disposition of Intervenor's Contention (d) is denied.

ORDER

For all the foregoing reasons and upon consideration of the entire record in this matter, it is, this 16th day of August 1985,

ORDERED

1. That the Licensee's motion to strike the Intervenor's response and affidavits in opposition to the Licensee's motions for summary disposition, and the Intervenor's motion to strike the Licensee's motion to strike, are denied;
2. That the Licensee's motion for summary disposition of Intervenor's Contention (b) is granted, and the Intervenor's related motion to

suspend or revoke the license amendments for Units 3 and 4 is denied; and

3. That the Licensee's motion for summary disposition of Intervenor's Contention (d) is denied.

APPEALABILITY

A denial of a motion for summary disposition is interlocutory and therefore cannot be appealed. *Louisiana Power and Light Co.* (Waterford Steam Electric Station, Unit 3), ALAB-220, 8 AEC 93, 94 (1974). Since this Order dismissed some, but not all, of the Intervenor's contentions, the Intervenor is still a party to this proceeding; therefore, the dismissal of Contention (b) is interlocutory, and any appeal the Intervenor may wish to take from that dismissal must await the issuance of an initial decision. See *Cleveland Electric Illuminating Co.* (Perry Nuclear Power Plant, Units 1 and 2), ALAB-736, 18 NRC 165, 166 (1983).

THE ATOMIC SAFETY AND LICENSING BOARD

Robert M. Lazo, Chairman
ADMINISTRATIVE JUDGE

Emmeth A. Luebke
ADMINISTRATIVE JUDGE

Richard F. Cole
ADMINISTRATIVE JUDGE

Dated August 16, 1985,
Bethesda, Maryland.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

**Ivan W. Smith, Chairman
Sheldon J. Wolfe
Gustave A. Linenberger, Jr.**

In the Matter of

**Docket No. 50-289-SP
(ASLBP No. 79-429-09-SP)
(Restart Remand on
Management)**

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

August 19, 1985

In this Partial Initial Decision, the Licensing Board resolves the re-
manded "Dieckamp mailgram issue" in favor of the Licensee.

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PARTIAL INITIAL DECISION ON THE REMANDED ISSUE OF THE DIECKAMP MAILGRAM

I. INTRODUCTION

This Partial Initial Decision disposes of the so-called "Dieckamp mailgram issue," a matter remanded by the Appeal Board to the Licensing Board for further proceedings in ALAB-772, 19 NRC 1193 (1984). The remanding order pertained to the Licensing Board's respective partial initial decision dated August 27, 1981. LBP-81-32, 14 NRC 381, 555-56.

On March 28, 1979, the day of the accident at Three Mile Island Unit 2, at 1:50 p.m. (approximately 10 hours after the initiation of the accident), there occurred a detonation of hydrogen in the TMI-2 containment building. It was later determined that the hydrogen had been produced by an interaction of zirconium alloy fuel cladding with steam in the reactor core, a phenomenon resulting from core temperatures greater than 2000°F. The core had necessarily been severely damaged by that time.

The hydrogen combustion produced a containment pressure "spike" or excursion recorded to be from about 3 to 28 psig, followed by an immediate decrease in pressure to 4 psig. The spike was recorded on both channels of the containment building pressure recorder strip chart which showed a sharp "spike" at the time. The pressure spike started the containment building spray pumps. Each pump required for starting that two out of three pressure sensors detect pressures of about 30 psig. Simultaneously a sound was heard described by some as a "thud" or a "whoomp," which was later determined to be water hammer in the containment spray system. The containment isolated on an engineered safety feature. Some alarms actuated. A few minutes after the pressure spike, the spray pumps were secured and the operators directed their attention to other matters. The hydrogen detonation was not reported by the Licensee until March 30. This is a matter of significance, because an earlier appreciation that the core was severely damaged would have been important to emergency actions in the vicinity of Three Mile Island.

On May 7, 1979, Congressman Morris K. Udall, Chairman of the Subcommittee on Energy and the Environment of the House Committee on Interior and Insular Affairs, other Congressmen, and NRC Commissioner Victor Gilinsky toured Three Mile Island. Mr. James Floyd, then TMI-2 supervisor of operations, conducted the tour. Mr. Herman Dieckamp, then and now President and Chief Operating Officer of General

Public Utilities Corporation, participated in the tour. Mr. Floyd mentioned the pressure spike and initiation of containment building spray. He identified the containment building pressure recorder and discussed the conclusion that the pressure spike was not a spurious electrical signal because spray initiation required coincidence of at least two pressure indicators. Mr. Floyd also stated that the pressure spike was in full view of an NRC inspector.

The tour was reported in the *New York Times* on the next day, May 8, 1979. The article was entitled "Lag in Reporting Reactor Damage Laid to Experts" and stated in its lead sentence:

A technician from Three Mile Island nuclear plant told Congressmen today that control room personnel and Federal inspectors knew the plant's fuel core was seriously damaged two days before the damage was formally reported and the seriousness of the accident made public.

The pressure spike was cited as the basis for this statement.

Mr. Dieckamp later explained that he was disturbed by the article because he believed that there was an actual delayed recognition of the pressure spike significance and of the severity of core damage that had occurred during the accident. On May 9 he sent a mailgram to Congressman Udall with a copy to Commissioner Gilinsky and other NRC Commissioners. The mailgram stated in pertinent part:

There is no evidence that anyone interpreted the "pressure spike" and the spray initiation in terms of reactor core damage at the time of the spike nor that anyone withheld any information.

In March 1980 NRC Chairman John Ahearne directed the Office of Inspection and Enforcement to conduct an investigation into suspected information-flow deficiencies during the accident. Included was the reportability of the pressure spike. The result of that investigation was published in NUREG-0760 (January 1981). NUREG-0760 reported that Shift Supervisor Joseph Chwastyk had stated that he was aware on March 28 that the pressure spike was real, that it was caused by hydrogen, generated by a zirconium/water reaction in the hot core, and that he had reported that information on March 28 to the TMI Station Manager and Emergency Director, Gary Miller.

NUREG-0760 also reported that another shift supervisor, Brian Mehler, had stated that hydrogen was discussed on March 28. This was in the context that electrical equipment should not be operated in the containment in order to prevent ignition. Theodore Illjes, a control room operator, made a similar statement, also reported in NUREG-0760. These statements by Messrs. Chwastyk, Mehler, and Illjes, were

largely discounted in NUREG-0760. But, even if the statements were not accurate, they could impugn Mr. Dieckamp's mailgram statement that no such evidence existed.

Then, turning their attention to Mr. Dieckamp's mailgram, the Staff investigators concluded that it did not constitute a false material statement because it was not a statement required to be made under the Atomic Energy Act.

The Licensing Board was then conducting hearings on Licensee's management, including integrity aspects, and, on March 18, 1981, Mr. Norman C. Moseley, the lead investigator in the information-flow inquiry, appeared as a Staff witness. We could not accept the Staff's simple test for "false material statement" under the statute, because our inquiry was a broader one into the integrity of Licensee's management. No party pursued the matter, however, and after brief questioning of Mr. Moseley, we allowed the matter to rest on NUREG-0760 and on Mr. Moseley's stated conclusion that Mr. Dieckamp had believed the mailgram to be true when sent.

The issue was appealed and the Appeal Board remanded the matter to the Licensing Board for further proceedings. The Appeal Board explained that our reliance upon NUREG-0760 and Mr. Moseley's testimony was misplaced. We erred primarily because that report was too summary; because our questioning of Mr. Moseley on the point was insufficiently penetrating; because there was then no firm record evidence that Mr. Dieckamp was ever interviewed on the matter; and because we should have examined Mr. Dieckamp on our own. ALAB-772, 19 NRC at 1266-67.

The Appeal Board defined the issues on remand as follows: (1) whether anyone interpreted the pressure spike and containment spray, at the time, in terms of core damage, and (2) who or what was the source of the information that Mr. Dieckamp conveyed in the mailgram. The Appeal Board also defined the first issue as "was there evidence that anyone interpreted the pressure spike in terms of core damage at the time of the spike, and was such information withheld." The Appeal Board characterized the scope of this inquiry as "relatively limited." ALAB-772, 19 NRC at 1267 n.103, 1268.

The Licensing Board added a third facet: whether, when, and how any such interpretation was communicated to Mr. Dieckamp. The Board also accepted as subissues: (1) whether Mr. Dieckamp took steps to correct any misstatement upon learning the facts; (2) did Mr. Dieckamp expect the mailgram to be relied upon and to be important to the regulatory process; and (3) should Mr. Dieckamp have known the facts and

did he make any effort to discover them. Memorandum and Order Following Prehearing Conference (July 9, 1984) (unpublished), at 8. However, the Board ruled that corporate agency and imputed scienter were not issues in this proceeding. Rather, the key subissue is whether anyone *actually* interpreted the pressure spike and spray initiation in terms of core damage, not whether anyone *should* have made that determination. With respect to whether Mr. Dieckamp should have known the facts, the Board ruled that the appropriate standard was whether he acted with careless disregard for the accuracy of the mailgram. Memorandum and Order Ruling on First GPU-TMIA Discovery Dispute (August 13, 1984) (unpublished), at 3-4.

In addition to the Licensee and NRC Staff, Intervenor Three Mile Island Alert (TMIA) and the Commonwealth of Pennsylvania (Commonwealth) participated in the remanded proceeding. The Commonwealth, however, elected not to file post-hearing proposals. There was extensive prehearing discovery.

Twenty-four witnesses testified at the hearing.¹ The parties also stipulated into evidence 144 prior interviews, depositions, and reports; and portions of a number of the TMIA depositions were admitted in lieu of live testimony.²

II. SUMMARY AND COMMENTS

Mr. Dieckamp came to the hearing to avow that he believed that the mailgram was true. We believe him. It was not until March 30, 1979, 2 days after the accident, that he learned about core temperature readings exceeding 2000°F, the zirconium/water reaction, the combustion of hydrogen, and core damage beyond local failed fuel. In fact, the evidence establishes that Mr. Dieckamp did not even know about the pressure spike until March 30. The real question was whether, in the following weeks and before his mailgram, he learned that others may have possessed that information on March 28. The issue of whether Mr. Dieckamp may have acted with careless disregard for the facts in sending the mailgram evaporated early in the hearing, because, beginning on

¹ Appendix A (not published) is a list of witnesses and transcript citations to their testimony, as well as a list of documentary material bound into the transcripts.

² Appendix B (not published) is a list of exhibits offered or received in this proceeding. The 144 prior interviews, depositions, and reports which were stipulated into evidence were marked as 144 items in Part C of Joint Exhibit 1. However, for simplicity we have cited the items in Part C of Exhibit 1 as prime exhibit numbers; e.g., the Joint Exhibit marked as 1(c)(35) is cited as "Joint Exh. 35." Appendix C lists the principal participants in the activities related to the mailgram issue and briefly describes the role of each.

March 31, he worked at Three Mile Island and was deeply involved in the recovery efforts.

Central to Licensee's case was its explanation of how GPU management, and Mr. Dieckamp, became aware of the significance of the pressure spike and containment spray actuation. Several individuals in the control room were aware of the pressure spike tracing and even more heard the noise. Most thought that the spike was an electrical anomaly if they had any perception at all. Two, however, Messrs. Chwastyk and Mehler, appreciated the fact that the spike was real because of the simultaneous initiation of containment sprays. The spike did not seem to have any lasting effect upon plant status at the time, and there were other matters to attend to. The incident seemed to pass from the operators' thoughts. But later, on evening of March 29, Richard Bensel, TMI-2 lead electrical engineer, and Ivan Porter, TMI-2 lead instrumentation engineer, and perhaps others, began to collect photocopies of plant parameter strip charts to begin the accident analysis. Mr. Bensel noted the pressure spike tracing, learned that the containment spray had actuated, and he too then realized that the spike was real. In the meantime, Mr. William Lowe, a highly respected nuclear engineer, and Chairman of the engineering firm of Pickard, Lowe and Garrick, was working with the recovery planning group of the GPU Accident Events Analysis and Recovery Planning Team. Mr. Bensel brought his information to Mr. Lowe.

Mr. Lowe's extensive background in nuclear engineering and chemistry enabled him to recognize that the spike might have been the result of a hydrogen ignition, in part, from the shape of the tracing. Other factors, subatmospheric containment pressure, for example, reinforced his analysis. He suspected immediately that there had been a zirconium/water reaction. Subsequent calculations that night confirmed his analysis. Mr. Dieckamp learned about Mr. Lowe's discovery the following day, March 30.

The Board found Mr. Lowe's testimony to be especially convincing — in part because of his demeanor, but more importantly, because of the inherent logic of his account. He had not been at the island on the 28th but had been in consultation since the early hours of that day. He arrived there in the early afternoon of the 29th. He had extensive communications with other members of the analysis and recovery task force and plant personnel. He believes that he was the first to identify the pressure spike as a hydrogen burn. He believes, as we do, that it is inconceivable that that information could have been concealed earlier.

But Joseph Chwastyk, TMI-2 Shift Supervisor, actually saw the pressure chart tracings rise and fall. He knew that the sprays had actuated

and he shared with Brian Mehler an early understanding that the pressure spike was real — not an electrical anomaly. In October 1979 Mr. Chwastyk told the Special Inquiry Group that he knew on March 28 that there had been a hydrogen explosion. In September 1980 he told the special NRC team investigating information flow that, not only did he know on the 28th that there had been a hydrogen explosion, but that he knew on the 28th that there had been core damage and heat sufficient to produce a zirconium/water reaction. He said that he promptly reported this information to the Station Manager and Emergency Director, Gary Miller, and imparted it to others that day.

The Board listened to Mr. Chwastyk over 2 days. We have read every relevant statement reported on his memory of March 28, 1979. Mr. Chwastyk simply is not to be believed on this subject. His memory became increasingly accurate over time, but then faltered at the hearing. There was no corroboration of his statements that he told others about hydrogen and zirconium/water reaction. His actions were not consistent with his asserted awareness of severe core failure. He had sharply varying accounts of his understanding of hydrogen and his reporting of it. In the findings below we explain that these conclusions are not intended to disparage Mr. Chwastyk's candor. He, more than any other witness to the events of March 28, has been confused by after-acquired information. He makes no allegations. He is, himself, concerned about his memory. He feels that his statements have been overanalyzed and that his meanings have not been fully and accurately understood.

Brian Mehler, on duty as a shift supervisor with Mr. Chwastyk at the time of the spike, was interviewed in August and October 1979. He stated with emphatic assuredness that an order was given on the evening of March 28 not to start electrical equipment in order to avoid igniting hydrogen. Subsequently, however, investigators pointed out to Mr. Mehler that his memory was at odds with log entries and the accounts of other participants. Mr. Mehler consulted the logs; compared his memory with others, including Mr. Chwastyk; engaged in some introspection; and came to the conclusion that it is more likely that the order not to operate electrical equipment was given on the 29th. He later explained that the days of the accident seemed to run together and that it was hard to recall what he remembered, compared to what he was told and what he read.

Mr. Theodore Illjes, a control room operator, stated on May 23, 1979, that, in the evening of March 28, a hydrogen explosion had been discussed as a possible cause of the pressure spike. As with Mr. Chwastyk, we came to the conclusion that Mr. Illjes' memory has been influenced by information acquired after the 28th. The most significant example of

this was that Mr. Illjes recalled a concern about a "hard" noncondensable bubble in the reactor vessel head on March 28. It is beyond any dispute that the existence of the noncondensable hydrogen bubble in the reactor vessel head did not become a matter of concern until Messrs. Lowe, Thomas Crimmins, and James Moore calculated the volume of hydrogen in the reactor vessel very late on March 29 and in the early morning hours of March 30. Mr. Illjes also believed that the containment pressure record tracings were photocopied on March 28, but the better evidence is that it was on the 29th that this was done. Mr. Illjes' testimony at the hearing demonstrated that he had a very unreliable memory.

It is also significant that, of the three individuals who stated that, on March 28, they were aware of hydrogen, only Mr. Mehler had been interviewed before Mr. Dieckamp sent his mailgram on May 9, 1979. In an April 25, 1979 interview, Mr. Mehler alluded to the pressure spike but made no reference to his later recollection that hydrogen ignition was a concern on March 28. Whatever the validity of the statements by Messrs. Chwastyk, Mehler, and Illjes, there is no reason to believe that Mr. Dieckamp had any evidence on May 9 that any of them knew about hydrogen on March 28.

The Board has pored over the statements of seventeen others who were in the control room at one time or another on March 28th (including two NRC inspectors) who, because of their duties, would probably have been aware that the pressure spike was recognized as a hydrogen explosion if such were the case. About half of them did not even know on March 28 that a pressure spike had been identified on the strip chart. The other half, those aware of the tracing on the 28th, were about evenly divided among those who thought it was an electrical anomaly, and those who simply did not understand it.

As noted, the Board discounts entirely the statements of Messrs. Chwastyk, Mehler, and Illjes to the effect that a hydrogen detonation was identified on March 28. With that, the case against Mr. Dieckamp becomes inconsequential. When considered with the additional fact that virtually no one else in the control room realized the spike was real, let alone a zirconium/water-hydrogen combustion, the case against Mr. Dieckamp vanishes.

We are left, then, to ponder how it could have been that an event of such significance was not appreciated at the time. In the first place, the pressure spike appeared on the pressure recorder at a time when operating and analysis personnel had their hands full trying to understand the conditions they were dealing with so that they could proceed with confidence to recover from the accident. The pressure trace rose and fell back almost to normal very quickly, with seemingly minimal consequences to

indicate any substantive change to the puzzling situation being confronted. It seems to be a normal response for the persons concerned to have concentrated on the puzzle-solving task before them, particularly since there was little appreciation that the spike actually represented a true pressure transient.

In the second place, for the significance of such an event to have been appreciated would have required a somewhat complex conceptual analysis involving such questions as (a) what substance (gas or steam?) could be available to raise the pressure of so large a volume to the value seen from the trace; (b) what mechanism could account for the rapid return of the pressure to a near normal value; and (c) what mechanism could have provided the source of such a substance whose behavior would be consistent with observations at the time? The passage of time has seen answers to these questions evolve. But at the time, the persons involved could not cope with such questions. The operational personnel of TMI-2 were not schooled in the chemical and thermodynamic properties of zirconium in a high-temperature steam environment, or the exothermic and autocatalytic nature of reactions that might result therefrom. It was known that hydrogen could be one of the reaction products. The Final Safety Analysis Report for TMI-2 analyzed hydrogen production following a postulated loss-of-coolant accident in terms of months before the flammability range would be reached. Two very experienced operations persons, Messrs. Michael Ross and William Zewe, on the day of the occurrence did not see how such a large buildup of hydrogen in the containment building (approximately 2 million cubic foot volume) could occur so rapidly. Mr. Moseley, who led the team that performed the information-flow investigation, testified:

I concluded that on March 28, 1979, it was beyond the range of credible operator knowledge to infer that amounts of hydrogen sufficient to reach a flammable concentration in a two million cubic foot containment might exist at 10 hours after the initiation of the event.

In addition to resolving the mailgram issue on our own, it was also our duty to hear and decide the cases presented by the Commonwealth and the Intervenor TMIA. The Commonwealth had no position. TMIA's case against Mr. Dieckamp rests on two theories. First, there is a very large body of data consisting of interviews, testimony, investigation reports and other records. From this pool of information, TMIA would have us believe only the small and unreliable portion indicating an awareness on March 28 of hydrogen. TMIA would have us disregard all evidence to the contrary. TMIA's selection from Mr. Chwastyk's varying accounts of the relevant events is a refinement of this strategy.

TMIA's other theory of the case is that there has been a criminal perjury and subornation-of-perjury scheme afoot in this proceeding. By our count TMIA, either directly or by strong implication, accuses fifteen of the twenty-four witnesses who testified before us of lying and invites an inference of perjury by even more witnesses. TMIA accuses GPU lawyers of pressuring company witnesses called by TMIA to lie, and suggests that the NRC Staff investigations have been deliberately restrained. In our Decision below we have alluded to TMIA's charges as disruptive, unfounded, and professionally reckless.

But TMIA's perjury theory is not merely reckless — it is logically absurd. The theory would have to depend upon a massive conspiracy to conceal a discovery on March 28th of the hydrogen detonation and its implications. Such a conspiracy would, of necessity, have been formed instantly among about twenty people present at the time, with either the acquiescence or the ignorance of NRC inspectors. The conspiracy would need to be expanded quickly to as many as a hundred individuals, perhaps even more. It would have to include, or be skillfully hidden from, the many engineers, scientists and the managers from other utilities who came to Three Mile Island following the accident to aid in the accident recovery and analysis. The conspiracy would have to escape the penetrating investigations of the Senate, the House of Representatives, the Kemeny Commission, the Special Inquiry Group, the multiple NRC inquiries, and our own proceedings with its thorough discovery opportunities. Finally, this conspiracy would have to be incredibly stable over 6 years.

In this remanded proceeding, and during the entire TMI-1 restart proceeding, this Board has not seen any evidence of even the slightest reliability to suggest that Mr. Dieckamp lied in his mailgram or evidence that in any way impugns his integrity.

Findings of Fact

III. ON WHAT INFORMATION WAS THE MAILGRAM BASED

A. Licensee's Case on Dieckamp's Knowledge

1. Introduction

1. Mr. Dieckamp came to the hearing to explain what he meant by the mailgram and how he arrived at the conclusions stated in it. He was supported in his testimony by those who were most intimately involved

in the recognition and interpretation of the pressure spike. Mr. Dieckamp and those reporting to him, together with their records, were subject to very penetrating and thorough prehearing discovery authorized by the Board. The cross-examination of those individuals reflected that discovery.

2. By way of background, Mr. Dieckamp explained that in using the term "core damage" in the mailgram, he was referring to the kind of significant damage that would be consistent with a major fraction of the zirconium having reacted with water or steam. Tr. 28,345 (Dieckamp). His frame of reference was the *New York Times* article, which he believed suggested that knowledge of the meaning of the pressure spike in terms of core damage could have influenced the decision to evacuate the populace from around Three Mile Island. For this reason, Mr. Dieckamp was referring to the degree of core damage sufficient to have cast doubt on the ability to cool the core with confidence. Tr. 28,948 (Dieckamp).

3. Mr. Dieckamp believed that, at the time he sent the mailgram, the pressure spike and its meaning were not understood on the day of the accident, and consistent with that belief, that no one made a conscious decision to withhold information about the spike. Dieckamp, ff. Tr. 28,316, at 18. The mailgram reflected Mr. Dieckamp's own understanding of the positive discovery *and* interpretation of the pressure spike — of the first recognition of its meaning on the night of March 29. *Id.* at 5, 9. Mr. Dieckamp first became aware of core damage *beyond local failed fuel* when he was informed of the pressure spike, the postulated mechanism of a hydrogen "explosion," and the reaction of zirconium and water as the source of the hydrogen. This information came to Mr. Dieckamp sometime on Friday, March 30, 1979.

4. His chronology of the events leading to this awareness began with a coincidence in that, on Wednesday, March 28, 1979, the day of the accident, Mr. Dieckamp had been in Harrisburg, Pennsylvania, attending a Pennsylvania Public Utility Commission meeting unrelated to TMI. Mr. Dieckamp had spoken with Walter Creitz (then Met Ed's President, who was in Reading, Pennsylvania) and with Robert Arnold (GPU Service Corp.'s Vice President of Generation, who was in Parsippany, New Jersey) on the morning of March 28. In the early afternoon of March 28, he had a very brief conversation on the steps of the Pennsylvania State Capitol with John Herbein (then Met Ed Vice President of Generation), Gary Miller (then TMI Station Manager), and George Kunder (then Supervisor of Technical Support-TMI-2), who were on their way to brief the Lieutenant Governor. Later on Wednesday evening after returning to his home in New Jersey where GPU's corporate offices are located, Mr. Dieckamp again spoke to Robert

Arnold. On Thursday morning, March 29, he met briefly with Mr. Arnold in order to review and sign a memorandum establishing a "Task Force" to investigate and analyze what was then thought to have been a severe plant transient. On Thursday afternoon, he attended a briefing for a group of Congressmen at the TMI visitor's center; and at this time, he spoke with R. Vollmer of the NRC and with some members of the Task Force. On Thursday evening, Mr. Dieckamp again spoke to Mr. Arnold. Mr. Dieckamp testified that at no time on March 28 or March 29 did anyone mention to him core temperatures in excess of 2000°F, the pressure spike, zirconium/water reaction, hydrogen, or core damage beyond failed fuel. *Id.* at 5-9. No witness suggested otherwise. TMIA, however, argues that Mr. Dieckamp had all of this information earlier in the accident.

2. The Task Force Investigation

5. On Thursday, March 29, 1979, the Task Force — designated the "Events Analysis and Recovery Planning Team" — met at the TMI site. The team members met at about 3:30 p.m. in the TMI supervisors' conference room and were assigned to either an Events Analysis group or a Recovery Planning group. Mr. William Lowe, founder and Board Chairman of the consulting firm of Pickard, Lowe and Garrick, was one of the team members and was assigned to the Recovery Planning Group. Lowe, ff. Tr. 28,151, at 3-4. As will be seen below, it was Mr. Lowe who first interpreted the pressure spike in terms of zirconium/water reaction and hydrogen combustion — a point very much in dispute in this proceeding. Other team members present were Messrs. Richard Wilson (the Chairman), Edward Wallace, Donald Reppert, Gary Broughton, George Kunder, James Moore, Lee Rogers, Ron Williams, Thomas Crimmins, and Robert Long. With the exception of Mr. Rogers, who was B&W's representative, all these individuals were engineers or managers from GPU system companies. TMIA Exh. 18, at 3.

6. The information available to those attending the Thursday afternoon Task Force meeting is an important issue in this proceeding. TMIA generally argues that the full significance of the accident, particularly the pressure spike and hydrogen combustion was understood and discussed. The reactor building pressure recorder strip chart was available to the Task Force and general knowledge of plant status and accident progression was excellent according to TMIA. *See* § III.B, *infra*.

7. Mr. Lowe had a recollection, imprecise as to time, that at some time on March 29th the containment pressure spike was mentioned

his presence and said to be a spurious indication — a voltage anomaly in instrumentation. Mr. Lowe remembers being skeptical of the explanation. Mr. Lowe, however, did not see the strip chart during the afternoon meeting and does not recall anyone analyzing or exhibiting recognition of the significance of the containment pressure spike. Lowe, ff. Tr. 28,151, at 10; Tr. 28,177-78 (Lowe).

8. However, Mr. Thomas Crimmins (a GPU system engineer who attended the meeting) has stated that he remembers seeing the pressure trace during the meeting, but he too states it was assessed to have been a spurious instrument problem. Mr. Crimmins remembers no mention of hydrogen. TMIA Exh. 32F.

9. Mr. Kunder recalls a side discussion during or after the Thursday afternoon meeting in which he was shown the strip chart or a representation of the strip chart. He thinks Gary Broughton showed the chart to him. Tr. 30,001 (Kunder). He believes that hydrogen, along with instrument malfunction, were offered as possible explanations — possibilities that needed to be examined. Mr. Kunder, however, remembers no discussion of the pressure spike during the main meeting. Tr. 30,005 (Kunder).³ Nor does he remember any discussion or concern about a zirconium/water reaction. Tr. 30,016-17, 30,074 (Kunder). Mr. Kunder does believe he mentioned long-term hydrogen generation at the meeting, but merely as a topic for subsequent recovery planning and without discussion. Tr. 30,007-08 (Kunder).

10. Mr. Gary Broughton, GPU Service Corp. manager, remembers no discussion of the pressure spike or a hydrogen explosion at the meeting and no observation of the strip chart. Tr. 31,159 (Broughton). His recollection was corroborated by Mr. Richard Wilson. Tr. 31,530-31 (Wilson). Mr. Broughton does not remember that conversation concerning the pressure spike recalled by Mr. Kunder on March 29th. Mr. Broughton remembers in detail that he first learned that there had been a hydrogen explosion on Friday morning, March 30. Tr. 31,166, 31,198-201 (Broughton). Moreover, Mr. Broughton stated that when informed on Friday of the pressure spike, he at first did not understand that the pressure spike had not just occurred. Tr. 31,199.

11. In sum, it is unclear whether there was discussion of the spike or of hydrogen during the afternoon Task Force meeting on March 29. Hydrogen may have been mentioned and a record of the pressure spike may have been available.

³ Licensee points out that Mr. Kunder exhibited uncertainty in his recollection as to what was said about the pressure spike, by whom, and when, citing his May 23, 1979 IE interview. Joint Exh. 37, at 50-51; *see also* Joint Exh. 80, at 74-75.

12. It is probable that Mr. Kunder's memory associating the pressure spike record with hydrogen is imprecise on that point. It is more likely that hydrogen was discussed as one of the many aspects of the transient which should be explored. The subissue has grown out of proportion to its importance, because, even if the pressure spike had been recognized as real, and, even if it had been attributed to hydrogen, those facts would not undercut the accuracy of the mailgram or the spirit of the mailgram. The only relevance is one argued by TMIA, i.e., that the evidence that it was Mr. Lowe who first identified the spike and hydrogen later that day is incredible — a matter we address below in § III.B.

13. Later that evening (March 29) the Recovery Planning group reassembled and Mr. Lowe told Mr. Herbein that the basic problem was plant stabilization, not recovery, and that several senior people should be immediately assigned to the control room to help with stabilization and damage control. Messrs. Lowe and Crimmins volunteered. They sought information about plant status and were told that the primary system was still "mushy"; that is, it was hard to control pressurizer level. The operators thought there might still be a steam bubble outside the pressurizer, but none of the many temperature readings were high enough for that. Lowe, ff. Tr. 28,151, at 5-6.

14. In the meantime in the evening of the 29th, Met Ed engineers Richard Bensel, Ivan Porter, and others had begun to pull together and photocopy strip charts of various plant parameters during the accident in order to begin the event analysis. Mr. Bensel recalled that he began to review these charts to familiarize himself with them. Upon reviewing the reactor building pressure chart, Mr. Bensel found the 28-psig pressure spike. Joint Exh. 107, at 54 (SIG Report).

15. Mr. Bensel showed the spike to a number of other individuals who were in the control room area and who were concerned with operations. Mr. Bensel learned that the spray system had come on at the same time. Looking at the alarm printer, he also discovered that all six pressure switches had activated. This led Mr. Bensel to conclude that there had actually been an increase in reactor building pressure. *Id.* Mr. Bensel then showed the pressure spike to Mr. Lowe at about 11 p.m. on the 29th.

Mr. Lowe's Discovery of the Significance of the Pressure Spike

16. Mr. Lowe's background in chemistry and nuclear power plant accident analyses led him to the intuitive judgment from the shape of the spike that it had been caused by the ignition of hydrogen in the containment building and that the hydrogen had been generated by the in-

teraction of zirconium with steam in the reactor vessel. He postulated that the presence of hydrogen in the reactor vessel could explain the inability to stabilize the plant, the "mushiness," and could offer a potential for hydrogen expansion in the core that might prevent maintaining water coverage of the core. Mr. Lowe concluded that it was urgent to determine how much hydrogen was present and to eliminate it. Lowe, ff. Tr. 28,151, at 4-10.

17. At about 11:30 p.m. (on March 29, 1985) Mr. James Moore, an experienced GPUSC engineer arrived. Messrs. Moore, Crimmins and Lowe set about calculating the volume of hydrogen in the primary system above the core and ultimately determined (at about 3:30 a.m. on March 30) that the hydrogen volume was approximately 1100 cubic feet at 875 psi absolute (psia). B&W supplied them with the information that the free volume within the reactor vessel above the outlet nozzles is 1129 cubic feet. This comparison, plus the fact that the one primary pump that was running was functioning normally, led to the conclusion that the core was covered, but generated the concern that further depressurization of the reactor vessel could uncover the core and prevent core cooling. *Id.* at 10-12.

18. Shortly before 4:00 a.m. (on March 30), Mr. Lowe attempted to calculate the amount of zirconium that would have had to react with steam in order to account for the burned hydrogen in the containment plus the then-existing amount of hydrogen in the reactor vessel above the core. This led him to conclude that a large part or perhaps all of the zirconium had reacted and hence the core was seriously damaged. After discussions with Messrs. Crimmins and Moore, Mr. Lowe then recommended an approach toward removal of hydrogen from the reactor vessel while maintaining sufficient pressurization so as not to impede core cooling. Removal of the hydrogen from the reactor vessel was subsequently accomplished and confirmed, as was Mr. Lowe's interpretation of its significance. *Id.* at 13-14.

Mr. Dieckamp's Awareness of Core Damage

19. On Friday, March 30, and continuing for the next several days, Mr. Dieckamp gained an explicit understanding of this first recognition of the meaning of the pressure spike, the confirmation of hydrogen, and a rough quantification of the degree of core damage suggested by analysis of the zirconium/water reaction. Mr. Dieckamp recalls that his awareness of core damage increased abruptly on Friday, March 30, when he was informed of the pressure spike. In telephone conversations with personnel at the site, most likely Robert Arnold, Mr. Dieckamp was told of the

pressure spike recording being brought to the attention of the GPU Task Force during the night of March 29. Dieckamp, ff. Tr. 28,316, at 9; Tr. 28,348 (Dieckamp). Mr. Dieckamp also talked to Mr. Lowe by telephone several times near midnight on Friday, March 30. Lowe, ff. Tr. 28,151, at 15; Joint Exh. 86, at 22-23.⁴

20. Mr. Dieckamp learned that the Task Force had postulated a zirconium/water reaction as the source of the hydrogen and that the presence of hydrogen was recognized as being consistent with the abnormal pressure-volume behavior in the primary system. The postulate caused the plant staff to take steps to take a containment building gas sample and to take steps to permit operation of the hydrogen recombiner. Dieckamp, ff. Tr. 28,316, at 5, 9-10.

21. Mr. Dieckamp moved to the site on the afternoon of Saturday, March 31. He then became aware of the confirmation of hydrogen through analysis of the containment building gas sample, and thus the first quantitative indicator of the degree of core damage. *Id.* at 10.

22. During the first few weeks of April, Mr. Dieckamp remained at the site. He availed himself of early GPU interviews of operators, sat in on preliminary reviews of the sequence of events, participated in status reviews with the onsite NRC Staff, coordinated the activities of the Industry Advisory Group, and generally participated in managing the response to the accident. *Id.* at 10-11; Van Witbeck, ff. Tr. 28,261, at 2-3; Zebroski, ff. Tr. 28,441, at 11-12.

23. During the third week in April, Mr. Dieckamp assembled testimony for presentation to the Nuclear Regulation Subcommittee of the Senate Committee on Environment and Public Works (Hart Committee). Dieckamp, ff. Tr. 28,316, at 11.

24. Mr. Dieckamp did not conduct or cause to be conducted any additional inquiry into the facts beyond his own knowledge before sending the mailgram, nor does he remember consulting with anyone. He had neither heard nor seen any indication that on March 28 the pressure spike had been properly diagnosed as the product of a zirconium/water reaction or that the pressure spike caused the plant staff to change or adopt a strategy for bringing the plant to cold shutdown that recognized the presence of hydrogen or noncondensable gas. His examination of operator interviews and his involvement in development of the sequence of events revealed nothing to indicate that anyone had on the 28th

⁴ Mr. Dieckamp was also briefed on Friday by Robert Keaten, who had that morning obtained from Gary Broughton a sequence of events and update on the current status of the reactor. The update contained information on the explosion in containment and the bubble in the reactor. Joint Exh. 45, at 7; Tr. 31,247-49 (Keaten); TMIA Exh. 10, at 10-12. Mr. Dieckamp no longer remembers this briefing. Tr. 28,646 (Dieckamp).

identified the meaning of the spike and taken actions in response. *Id.* at 12.

25. Mr. Dieckamp believes that had operators and plant management correctly interpreted the pressure spike, they would have immediately turned on the high-pressure injection pumps and left them on. However, this action was not taken until around 5:30 p.m. — several hours after the pressure spike — at the direction of management that was unaware of the pressure spike and for reasons unrelated to the pressure spike. Tr. 28,901 (Dieckamp); Tr. 28,542-44 (Zebroski). *See also* Tr. 30,324-26 (Herbein) (referring to Joint Exh. 82, at 38-40); Joint Exh. 63, at 7 (NSAC-1 (July 1979)). In addition, they should not have left the block valve open, as it was, for more than an hour after the pressure spike. Tr. 28,842 (Dieckamp). Finally, Mr. Dieckamp believes that had the pressure spike been understood, Gary Miller and Jack Herbein would not have left the plant to brief the Lieutenant Governor. Tr. 28,906 (Dieckamp). This belief was confirmed by Mr. Miller in this proceeding. Tr. 30,239-42 (Miller).

B. TMIA's Case on Dieckamp's Knowledge

1. Introduction

26. TMIA attacks Licensee's position on the basis for the mailgram on four grounds. *See generally* TMIA Proposed Finding 241. (1) TMIA first argues that Dieckamp's belief that William Lowe was the first to interpret the pressure spike the night of March 29th/30th was not reasonable. (2) Second, TMIA argues that Dieckamp knew better because Herbein and Miller briefed him on plant status on March 28th, including the fact that a hydrogen burn had occurred. (3) Third, TMIA contends that Robert Keaten, on the basis of information obtained from Gary Broughton at the site the morning of March 29th, briefed Dieckamp on plant status and informed Dieckamp at that time of the hydrogen burn. (4) Finally, TMIA argues that Dieckamp's understanding of the degree of core damage on the 28th or early on the 29th implied that he was aware of the hydrogen burn at that time.

2. Mr. Lowe's Discovery

27. TMIA asserts that Mr. Lowe's testimony contains many contradictions. Its first example of such derives from a comparison of Mr. Lowe's testimony, regarding his being the first to understand the significance of the pressure spike, with the information contained in a memo

of December 4, 1979, written by Mr. Lewis Battist of the NRC/TMI Special Inquiry Group, Group #3. This memo states that during a telephone conversation (date not documented) with Mr. Lowe, the latter stated that he did not know that he was the first to have understood the spike's significance. TMIA Proposed Finding 287; Joint Exh. 104. We find no contradiction between Mr. Lowe's telling Mr. Battist that he did not know that he was the first such person and his testimony that he has no evidence to indicate otherwise. As Licensee points out:

Lowe was not present at TMI on March 28th and does not claim to *know* what people believed on that day. He did testify, however, that he "believed" he was the first to recognize its significance. Tr. 28,154-55 (Lowe). *See also* Tr. 28,216-17 (Lowe). This testimony presents no contradiction. As he testified, "*I find it inconceivable that if anyone had known hydrogen was present in containment and had ignited, they would have concealed that knowledge from peers or managers and that the on-site technical support team would not have been told of it.*" Lowe, ff. Tr. 28,151, at 14. [Emphasis added.]

Licensee Reply Finding 14.

28. On March 28, 1979, Mr. Lowe documented by memo a telephone conversation between himself and Mr. Jack Thorpe, at TMI, that took place at about 4:20 p.m. that day. The memo stated that Mr. Thorpe told Mr. Lowe: "Plant thinks core is recovered, but proof not yet established." TMIA Exh. 1. In his testimony, Mr. Lowe stated that: "He [Thorpe] reported the plant thinks core cooling is recovered." Lowe, ff. Tr. 28,151, at 3. TMIA interprets this as a misleading contradiction indicating in reality that Mr. Lowe knew on March 28 that the core had earlier been uncovered and subsequently covered again. Thus, reasons TMIA, Mr. Lowe knew of the seriousness of the accident on that date. TMIA Proposed Findings 288, 289.

29. Upon being questioned about this, Mr. Lowe testified that the term "recovered" is commonly used to mean that core cooling has been returned to some understandable state; and that it was much later when he made the shocking discovery that the core may have been uncovered. Tr. 28,161, 28,163 (Lowe). We find no basis in this situation to impugn Mr. Lowe's credibility. TMIA is making too much of a play on the word "recovered." Granting for sake of argument that both Messrs. Thorpe and Lowe had been thinking in terms of a core previously uncovered by coolant, there is no evidence to negate the conclusion that it was not until near midnight on March 29 and during the early morning hours on March 30 that Mr. Lowe's analysis of the pressure spike trace led him to conclude that the core had been seriously damaged.

30. TMIA also opines that Mr. Lowe's testimony is incredible because it appears that there were general discussions about the pressure

spike and hydrogen buildup during the afternoon meeting of the Task Force on March 29 well before Mr. Lowe's analysis of their significance. According to TMIA, Mr. Richard Wilson (GPU Service Corporation)

opened the meeting by stating that the company had assumed there had been core damage in the range of \$20 to \$30 million, and that a one-year outage was anticipated. Although different individuals attending the meeting have differing recollections about the meeting, what is striking is that the pressure spike, hydrogen burn, or production of hydrogen to flammable limits was discussed in some manner.

TMIA Proposed Findings 290, 291.

31. However, Mr. Wilson's one page of prefiled testimony and his answers to many questions subsequent thereto indicate that he based his core damage concept solely upon his awareness of radiation and that that concept was of several or perhaps many failed fuel pins in the core. It was in that context that the dollar and downtime estimates were made and discussed with the Task Force. Wilson, ff. Tr. 31,504; Tr. 31,505-44, *passim* (Wilson); *see also* Licensee Reply Findings at 16, 17. We find nothing to support TMIA's statement that the significance of the pressure spike, hydrogen burn, or production of hydrogen to flammable limits were recognized or discussed during the Thursday Task Force meeting.

32. TMIA refers to statements by Mr. J.D. Abramovici (GPU Service Corporation) that there was concern expressed about hydrogen building up to a 4% concentration and a discussion of hooking up a hydrogen recombiner, both occurring during the afternoon Task Force meeting on March 29. TMIA reasons that such a magnitude of hydrogen buildup in so short a time since accident initiation could only have derived from a zirconium/water reaction and, hence, at the subject meeting, there had to have been a recognition that a zirconium/water reaction had occurred. TMIA Proposed Findings 292-293.

33. However, Mr. Abramovici stated that George Kunder raised the concern about hydrogen but that Abramovici did not recall a discussion of how the hydrogen originated. Mr. Abramovici thought that Mr. Kunder had the results of a containment atmosphere sample. TMIA Exh. 32H, at 43-44. But such a sample was not taken until March 31, and showed 1.7% hydrogen. Lowe, ff. Tr. 28,151, at 13; *see also* Dieckamp, ff. Tr. 28,316, at 10. Mr. Kunder testified that he did not have any knowledge of hydrogen concentration until the weekend following accident initiation; and that his concept of hydrogen formation was in terms of a long-term effect rather than a short-term zirconium/water reaction. Tr. 30,011, 30,016 (Kunder). Attempts to contact Atomic International personnel to assist in setting up recombiners did not occur until Friday,

March 30. Tr. 31,010-11, 30,018-19 (Henrie). Thus, any discussion on March 29 about setting up a hydrogen recombiner was not in reference to a zirconium/water reaction source of hydrogen.

34. TMIA references two written comments by Mr. Crimmins (from Jersey Central Power and Light) for the proposition that the containment building pressure recorder spike was viewed and discussed at the Task Force meeting on the afternoon of March 29, and that Lowe should have immediately recognized its significance. TMIA Proposed Findings 294-296. Our own review of Crimmins' comments reveals his saying that: "The assessment at that time was that it must have been a spurious instrumentation problem." Mr. Crimmins did not recall any mention of hydrogen until late evening of the 29th or early morning of the 30th. TMIA Exh. 32F.

35. Finally, making references to notes, depositions and testimony, TMIA states that information derived from Messrs. Abramovici, Broughton, Kunder, and J.E. Henrie (Rockwell Hanford) supports TMIA's thesis that a hydrogen burn was discussed at the afternoon Task Force meeting on March 29, 1979, that spark-generating equipment was ordered not to be started because of the hydrogen concern, and that efforts to set up and operate hydrogen recombiners were initiated because of an awareness of a serious hydrogen problem. TMIA Proposed Findings 297-302. The Board has carefully reviewed the citations in TMIA's proposed findings and concludes that they do not support a finding that a consideration of the possible presence of hydrogen by any of the named individuals was in the context of a large amount of hydrogen deriving from the interaction of significant amounts of zirconium fuel cladding with water. This is consistent with Mr. Henrie's testimony that three successive inquiries (on March 28, 29 and 30, 1979) by Atomic International to GPU regarding the need to set up the recombiners met with negative responses. Tr. 31,011 (Henrie). Thus, we cannot accept TMIA's assertion that Mr. Lowe's testimony is not credible on that account.

36. Mr. Lowe's closing comments regarding this matter deserve special attention:

To recapitulate, no recognition of or even speculation about the significance of the pressure spike was expressed or implied in all of the extensive and intensive communications I heard or was party to from early morning of 28 March until the spike's significance was recognized at about 2300 on 29 March as I have described. These communications were with both senior and junior engineers, operators and managers, probably more than 50 in all. Nor did I hear about any such prior recognition from the hundreds of people I dealt with subsequently while on duty at TMI for nearly a month. Furthermore, the people I know and dealt with would not have

deliberately concealed such knowledge. And I state that judgment with emphasis and without qualification.

Lowe, ff. Tr. 28,151, at 15. When asked during the hearing whether he presently knows that he was the first person to recognize the significance of the pressure spike, Mr. Lowe testified that “all the evidence I’ve got so indicates.” Tr. 28,217 (Lowe).

3. Mr. Dieckamp’s Information from Miller and Herbein

37. As we noted at the outset, on Wednesday, March 28, Mr. Dieckamp was in Harrisburg for a meeting with the Pennsylvania Public Utility Commission unrelated to TMI-2. At about 2:30 p.m. on the steps of the Pennsylvania State Capitol, Mr. Dieckamp encountered Messrs. Herbein, Miller, and Kunder, who were on their way to a briefing of the Lieutenant Governor. Mr. Dieckamp had been excluded from that briefing session. Their conversation was very brief — Mr. Dieckamp expressed his concern about senior personnel being absent from the plant. Mr. Dieckamp testified that he could not recall any detailed discussion of plant parameters or conditions but that he gained the impression that the plant was stable. Dieckamp, ff. Tr. 28,316, at 5, 7. Mr. Herbein only recalls in pertinent part that Mr. Dieckamp asked who was “minding the store” at TMI-2. Tr. 30,378 (Herbein). Like Mr. Herbein, Mr. Miller could only recall Mr. Dieckamp’s question about “who is minding the store.” Tr. 30,214 (Miller). Mr. Kunder recalls a sense of urgency on the part of Mr. Dieckamp that they should promptly proceed to brief the Lieutenant Governor. Tr. 30,071 (Kunder).

38. Having gained the impression from these three men that the plant was stable, Mr. Dieckamp felt no need to contact either these men or other personnel at the site on March 28th after the briefing of the Lieutenant Governor. Tr. 28,403-05 (Dieckamp).

39. TMIA asserts that it is not credible that none of the four participants during the course of the encounter on the steps of the State Capitol could remember anything other than an offhand remark by Mr. Dieckamp. It argues that it is reasonable to conclude that Messrs. Herbein and Miller briefed Mr. Dieckamp on the status of the reactor at some time during the afternoon of March 28, and that this briefing necessarily would include informing him of incore thermocouple temperature readings greater than 2200°F, the pressure spike, and the hydrogen burn. TMIA Proposed Findings 195-202.

40. In § IV below, we discuss at considerable length the evidentiary record that establishes that neither Mr. Miller, Mr. Herbein, nor Mr. Kunder was aware of the pressure spike on March 28. We also find there

that, while Mr. Miller and Mr. Herbein were informed about preliminary incore thermocouple readings exceeding 2200°F on March 28, they did not regard those readings as reliable because of their improbable scatter. Mr. Kunder testified that he did not even know about incore temperatures in that range until weeks after the accident. Therefore it would have been impossible for any of those individuals to impart information about the pressure spike and its significance to Mr. Dieckamp during the encounter on the State Capitol steps.⁵

4. *Mr. Dieckamp's Information from Keaten*

41. On the morning of March 28, Mr. Robert Keaten, then Manager of Systems Engineering, GPU Service Corporation, located in Parsippany, sent Mr. Gary Broughton, then Control and Safety Analysis Manager, as well as a group of other engineers to investigate what had occurred at TMI-2.⁶ Tr. 31,238-39 (Keaten). On Friday morning, March 30th, Mr. Keaten telephoned Mr. Richard Wilson, then Director of Technical Functions, GPUSC, who had been at the plant site for over 12 hours. This was the first time that Mr. Keaten heard about a hydrogen bubble in the reactor. Later that morning, pursuant to a prior arrangement that Mr. Keaten in turn would brief Mr. Dieckamp, Mr. Broughton telephonically briefed Mr. Keaten. Tr. 31,131-32, 31,149 (Broughton); Tr. 31,246, 31,248-49, 31,255 (Keaten); Joint Exh. 45, at 7. Prior to placing this telephone call, on the morning of March 30th, Mr. Broughton was told for the first time by one of GPUSC's Task Force interviewers, Mr. Robert Long, that there had been a hydrogen explosion or burn on March 28th. Tr. 31,147, 31,170-71 (Broughton).

42. The notes made by Mr. Keaten, to record the information obtained from Mr. Broughton on the morning of March 30th, were set forth in five pages of a notebook. TMIA Exh. 10, unnumbered pp. 11-15; Tr. 31,263 (Keaten). These notes reflect *inter alia* that Mr. Broughton spoke about the sequence of events which had taken place on March 28th. Thereafter, under a separate heading, "Present Status," the following appears in the notebook:

⁵ It is by design, not oversight, that we have not followed TMIA's theory about the so-called "time gap." In essence TMIA argues that Messrs. Miller, Herbein and Kunder cannot account for their time between the briefing at the State House and their return to Three Mile Island and that Mr. Dieckamp cannot recall details of his trip back to New Jersey. TMIA Proposed Findings 187-188, 200-202. It is not as clear as TMIA would have us find, that there was a time gap in the return trip to the Island. But that is not the important point. We can find no basis to infer, from the void of information about the return trips, that any such time was used to inform Mr. Dieckamp about conditions back at the plant. Having found that Messrs. Herbein, Miller and Kunder did not have the information in the first place, it is pointless to unscramble TMIA's involved analysis.

⁶ See § IV.1, *infra*, re: GPUSC Engineers' Knowledge.

Bubble in reactor

Non-condensibles in Pressurizer

-lots-

Explosion in containment

1000 ft.³ at 1000 psi 280 degrees F260-280

Could be 100,000 ft.³

TMIA Exh. 10, at 13.

43. On the basis of his earlier conversation with Mr. Wilson and the subsequent one with Mr. Broughton, Mr. Keaten for the first time became fully aware on March 30th that the transient had been very severe in terms of damage to the reactor, that there was still a hydrogen bubble, that the plant was not in a stable configuration and that a lot of work remained to be done. Joint Exh. 45, at 7, 8; Tr. 31,292 (Keaten).

44. Shortly after the briefing by Mr. Broughton, at about 10:45 a.m., Mr. Keaten contacted and personally briefed Mr. Dieckamp at Parsippany. Tr. 31,248, 31,624 (Keaten). Mr. Dieckamp has no recollection of the content of the briefing but his notes indicate that he talked to Mr. Keaten on March 30th. Tr. 28,645-46 (Dieckamp).

45. TMIA contends that the Broughton-Keaten telephone conversation took place on the morning of March 29th because of the following:

- (a) The reporting procedures had been changed in that, as of the time Mr. Wilson arrived at the site during the afternoon of March 29th, Mr. Broughton was to report directly to Mr. Wilson, and thus Mr. Broughton's phone call to Mr. Keaten must have taken place on the morning of March 29th rather than on the morning of March 30th.

TMIA Proposed Findings 207-210. However, we are convinced that the Broughton-to-Keaten phone call was held on the morning of March 30th because, as found above, there was in place a prior arrangement that Broughton would contact Keaten and because we have found that both men were credible witnesses. Moreover, we are persuaded by the fact that as early as June 1, 1979, during the course of an interview with NRC personnel, Mr. Keaten stated that the phone conversation had been on Friday morning, the 30th (Joint Exh. 45, at 7).

- (b) The first of the pages of Mr. Keaten's notebook recording the conversation with Mr. Broughton bore the date of "3/29/79" but, sometime prior to October 19, 1979, when a copy of his notes was turned over to NRC investigators, Mr. Keaten inserted in red ink both a question mark after the date of "3/29/79" and a date of "3/30" below the date of "3/29/79." TMIA

urges that the date of "3/29/79" was correct because it was written initially, and because the first two entries related to Mr. Dieckamp's activities on March 29th and thus would not have been reported by Broughton or recorded by Keaten on March 30th.

TMIA Proposed Findings 214-215, 222-223. Again we found Mr. Keaten to be a credible witness when he testified that he inserted the question mark and the date of 3/30 because he deemed the date of 3/29/79 to have been an error (TMIA Exh. 10, at 11; Tr. 31,260-61, 31,271) and we see nothing unusual about Mr. Broughton fulfilling his duties by making a complete report upon Mr. Dieckamp's previous day's activities. (In passing, absent more, we cannot but conclude that Mr. Broughton erred in reporting that a Congressional briefing had taken place at 1:00 p.m. on March 29th when, in fact, it began at 2:30 p.m.) Finally, we are persuaded that the Broughton-Keaten telephone call took place on the morning of March 30th because Mr. Keaten's recording in his notes reflecting that a specific primary core coolant sample and its reading had been taken "last night" (TMIA Exh. 10, at 14) was confirmed subsequently in NUREG-0600 as having been conducted at 4:15 p.m. on March 29, 1979. Joint Exh. 62, Appendix II-A, at II-A-59.

- (c) There were discussions among the GPUSC engineers on March 28th indicating that they suspected a bubble somewhere in the system and discussions on March 29th indicating that the bubble was noncondensable gas rather than steam. TMIA alleges that the references to a bubble in the reactor and to noncondensibles in Mr. Keaten's notes evidence that the telephone conversation with Mr. Broughton took place on March 29th.

TMIA Proposed Findings 220-221. However, TMIA's citations to the record do not show that Mr. Keaten had been informed prior to March 30th about a hydrogen bubble in the reactor.

- (d) The 1000-ft³ calculation in the notes was an earlier, rougher calculation than the 1500-ft³ calculation made by Messrs. Lowe and Moore on the night of March 29th.

TMIA Proposed Finding 221, n.3. This is erroneous. Mr. Lowe initially calculated a bubble size of 1568 ft³ at 2:45 a.m. on March 30th and thereafter, at 3:30 a.m. on March 30th, calculated a bubble size of 1100 ft³ Lowe, ff. Tr. 28,151, at 12. It appears that Mr. Keaten's notes reflected a rounding off of this second calculation.

- (e) The primary system pressure and temperatures recorded in Mr. Keaten's notes were measured at 6:30 p.m. on March 29th as is evidenced by TMIA Exh. 2 at 5.

TMIA Proposed Finding 221, n.23. However, as the Licensee points out, no evidence was adduced showing that these temperatures were unique to March 29th and did not exist also on March 30th as well.

46. We conclude that the probative evidence establishes that Mr. Broughton briefed Mr. Keaten on the information contained in the latter's notes on the morning of March 30, 1979, and that Mr. Keaten relayed this information to Mr. Dieckamp that same morning.

5. *Mr. Dieckamp's Understanding of Core Damage*

47. We are convinced from the findings of this section, *supra*, and § IV, *infra*, that Mr. William Lowe was the first person to recognize the significance of the March 28, 1979 containment building pressure spike; and that that recognition occurred during the late evening of March 29 and the early morning hours of March 30, 1979.⁷ But TMIA argues that Mr. Dieckamp's awareness of core damage on March 28 and 29, 1979, demonstrates his early awareness of a hydrogen burn in the containment building. TMIA Proposed Findings 228-236.

48. Mr. Dieckamp testified that he met with Mr. Arnold on the morning of March 29 for the purpose of formally establishing the Task Force to investigate the TMI-2 event of the previous day. Dieckamp, ff. Tr. 28,316, at 8. TMIA characterizes that meeting as one in which Dieckamp advised Arnold of serious core damage. TMIA Proposed Finding 228. Mr. Arnold substantiated that such a meeting and discussion took place, but with respect to serious core damage stated: "If someone wanted me to quantify it, I would say half a percent or a percent failed fuel type situation." Joint Exh. 84, at 25. The Board finds this to be far short of the extent of awareness on the part of Messrs. Arnold and Dieckamp alleged by TMIA.

49. TMIA refers to the briefing given to the Task Force on the afternoon of March 29, 1979, by Mr. Wilson, in which Wilson tells the Task Force of core damage to the extent of \$30 million. Since the chain of command was Wilson to Arnold to Dieckamp, TMIA concludes that Mr. Wilson's knowledge could only have come from Messrs. Dieckamp and Arnold. Hence, according to TMIA, Mr. Dieckamp must have been

⁷ In § IV.B, *infra*, we find incredible Mr. Chwastyk's statement of September 4, 1980, to the effect that on March 28 he quickly identified the pressure spike as a hydrogen explosion produced by a zirconium/water reaction. See Joint Exh. 117, at 27.

aware of the true seriousness of the core damage. TMIA Proposed Finding 231. We have previously dealt with each of these communication scenarios. We conclude that they are not supportive of TMIA's position regarding Mr. Dieckamp's awareness.

50. Finally, TMIA asserts further corroboration that Mr. Dieckamp understood the serious nature of the accident on March 28, 1979, from the contents of a memorandum written to Dieckamp on March 29 by Mr. B.H. Cherry, who was then Vice President for Planning of the GPU Service Corporation, and who reported directly to Dieckamp. TMIA Proposed Findings 232-235. Licensee points out that the Cherry Memorandum (TMIA Exh. 5) focuses primarily upon Mr. Cherry's perception of communication inadequacies on the day of the accident. Licensee Reply Findings 55 and 56. We agree.

51. The Cherry Memorandum stated that the communication difficulty persisted "until I spoke to you and got your view of the state of the reactor, etc. I think it was really only at that point that I had the full understanding of the situation and the condition of the plant." TMIA Exh. 5, at 2. TMIA would have us conclude from this statement of Mr. Cherry that: "This would be true only if Dieckamp were in fact informed of the high incore temperature readings and the hydrogen burn which would lead him to the correct assessment that TMI-2 had suffered serious core damage." [Footnote omitted.] TMIA Proposed Finding 235. The most that the Board can conclude from this is that Mr. Cherry believed that Mr. Dieckamp had provided Cherry the best account that Cherry had been able to obtain by the time the memorandum was written. We can find no probative evidence here or elsewhere to establish that the Dieckamp-to-Cherry communication reflected an awareness on Mr. Dieckamp's part of the true and actual extent of core damage on March 28, 1979. In fact, Mr. Dieckamp's own account of his awareness of core damage, as of March 29, concludes with the statement: "I certainly had no sense at all of massive reaction of zirconium with the water, oxidation and scalding, falling apart." Tr. 28,344 (Dieckamp). We find nothing that impugns the credibility of that statement and we accept it as fact.

IV. WHETHER ANYONE ON MARCH 28, 1979, INTERPRETED THE PRESSURE SPIKE AND CONTAINMENT SPRAY ACTUATION IN TERMS OF REACTOR CORE DAMAGE

A. Introduction

52. In this section we deal with the second prong of TMIA's case which, in effect, alleges that the significance of the pressure spike and the initiation of the containment spray pumps was well understood at the time of the spike and throughout the day on March 28, and that this understanding was widespread among the people gathered on the island that day. Here too we comply with the Appeal Board mandate to determine "whether *anyone* interpreted the pressure spike and containment spray, at the time, in terms of core damage [emphasis in original]" and whether "any such information [was] withheld." ALAB-772, 19 NRC 1193, 1267 n.103, 1268.

53. Our emphasis is on those who were working in the control room at the time of the pressure spike at 1:50 p.m. and during the following hours. We focus on four persons in particular whose early statements or role in the accident, more than any other factors, gave rise to the issue of whether Mr. Dieckamp was truthful in his mailgram: (1) Joseph Chwastyk, a shift supervisor, who once stated that, on March 28, he interpreted the pressure spike and spray actuation in terms of hydrogen combustion, zirconium/water reaction and core damage; (2) Brian Mehler, another shift supervisor, who realized that the pressure spike was real soon after it occurred, and who once stated that, on March 28, an order was given to avoid starting electrical equipment to prevent the ignition of any combustible gas (presumably hydrogen); (3) Theodore Illjes, a control room operator, who once stated that a hydrogen explosion had been discussed on March 28; and (4) Gary Miller, TMI Station Manager and Emergency Director at the time of the spike, to whom any such information might be imputed, and who was in direct communication with Mr. Dieckamp within an hour after the pressure spike.

54. We conclude below that Mr. Chwastyk's memory has been hopelessly influenced by after-acquired information; that Mr. Mehler, after careful reflection, came to the conclusion that the order to avoid ignition of hydrogen was not issued on the 28th; that Mr. Illjes has a very poor memory of the timing of events; and that there is no reliable evidence that Mr. Miller was even aware of the pressure spike, let alone its significance on March 28.

B. Joseph J. Chwastyk

55. Mr. Joseph J. Chwastyk is very important to the resolution of the mailgram issue. A TMI-2 shift supervisor with 10 years' TMI experience in 1979, Mr. Chwastyk was present in the control room at 1:50 p.m. on March 28 and actually observed the rise and fall of the containment pressure strip chart recorder pen at the time of the pressure spike. Mr. Chwastyk is the only person to claim that on March 28, 1979, he knew that the pressure spike and containment spray actuation were caused by hydrogen combustion and that the hydrogen was generated by a zirconium/water reaction and that the zirconium/water reaction meant damaged zirconium cladding and core damage. Moreover, Mr. Chwastyk states that he imparted a substantial amount of this information to Station Manager Gary Miller soon after the pressure spike. If Mr. Chwastyk's account of these events is correct — or more precisely, if TMIA's selection of Mr. Chwastyk's several accounts, is correct — it would be likely that Mr. Dieckamp had knowledge of some evidence that the pressure spike and containment spray actuation was, on March 28, 1979, thought to be indicative of core damage. Mr. Chwastyk's various accounts of the pressure spike and its implications cover virtually every area of dispute about the knowledge possessed by those in the control room on March 28.

56. By way of background to the findings in the following paragraphs, Mr. Chwastyk testified that he saw the actual pressure recorder going straight up, but that initially he did not know what was happening. He noted that the containment spray pumps came on. The pressure came back down and looked like it was staying there, so he ordered the spray pumps secured. Then he ordered an external check of the reactor building and ordered the control room operators to verify containment integrity. He testified that "eventually" he came to the conclusion that the pressure spike did in fact indicate a real increase in pressure after discussing the cause of the spike with Brian Mehler. He then discussed the pressure spike with Station Manager Gary Miller. He testified that he told Mr. Miller that he thought there had been a real pressure increase. He does not now recall mentioning hydrogen or core damage to Mr. Miller and is uncertain whether he mentioned that there had been an explosion. Nevertheless, Mr. Chwastyk testified that at the time of his conversation with Mr. Miller, Mr. Chwastyk's understanding of the pressure spike was that it was caused by a hydrogen buildup from zirconium/water reaction in the core. According to Mr. Chwastyk, he asked and shortly thereafter received permission from Mr. Miller to "draw a bubble" in the pressurizer. Mr. Chwastyk also testified that, to avoid

sparks, he ordered that the electrically operated pressurizer relief valve not be operated and testified that a similar but general order was given later in the evening. Mr. Chwastyk also testified that he discussed the pressure spike with an NRC representative, but cannot recall if he told him that there had been a hydrogen explosion. He stated that he discussed the pressure spike with operators who later came on shift. He believes he told them the pressure spike indicated a real increase in pressure and may have discussed hydrogen and zirconium/water reaction with them.

Before the Pressure Spike

57. On March 28, 1979, Mr. Chwastyk was a shift supervisor licensed on both units and was scheduled for the three-to-eleven shift at TMI-2. He came to the station early, about noon, because he had heard about the accident. He received an informal briefing when he reported to the Unit 2 control room sometime before 1:00 p.m. His testimony is vague on the point, but he believes that the prevailing impression at that time was that there was some "sort of core damage" based upon temperature and radiation readings. Tr. 29,112-13 (Chwastyk). Mr. Chwastyk, himself, did not know "for a fact" that there was core damage, but believed that there had been. Tr. 29,189 (Chwastyk);⁸ see also Tr. 29,325-26 (Chwastyk).

58. In any event, Mr. Chwastyk did not think in terms of zirconium/water reaction prior to the pressure spike (Tr. 29,346 (Chwastyk)).

59. Mr. Zewe was the shift supervisor on duty at the time of the accident that morning and was still on duty when Mr. Chwastyk arrived at Unit 2. Mr. Chwastyk saw that Mr. Zewe was very busy on other matters, so Mr. Chwastyk took over the actual direction of the operators. Mr. Gary Miller was in overall charge of Unit 2. Mr. Chwastyk could not describe the direct reporting line, but there was a standing order that Mr. Miller was to approve any changes in operation. Tr. 29,118 (Chwastyk). There were no existing procedures to govern the plant status. Tr. 29,124 (Chwastyk).

⁸ Later in his testimony, Mr. Chwastyk was much more explicit about his appreciation of core damage before the pressure spike. He specifically recalled radiation levels, specifically in the reactor building; water that had flooded into the auxiliary building was radioactively "hot"; and that there had been a loss of the reactor coolant pumps. Those signs, and others, according to his later testimony, indicated to Mr. Chwastyk that "in fact there was core damage" prior to the spike. Tr. 29,366 (Chwastyk).

The Pressure Spike

60. Something, perhaps alarms, alerted Mr. Chwastyk and he happened to be standing near the reactor building pressure recorder at 1:50 p.m., the time of the spike. He saw the recorder indicator go straight up and then down again. Some alarms went off, but Mr. Chwastyk cannot recall which. He does, however, recall that the reactor building spray pumps came on. Tr. 29,124-26 (Chwastyk). Prior to the spike everything had been fairly quiet, but with the alarms and operator actions connected with the spike, Mr. Chwastyk assumed that everyone (as many as twenty people) in the control room was aware of the pressure spike. Tr. 29,124-27, 29,174 (Chwastyk). One or two others may have actually seen the strip-chart pen rise and fall. Tr. 29,175 (Chwastyk). Mr. Chwastyk did not hear the "thud" heard by others at the time of the hydrogen detonation. Tr. 29,132 (Chwastyk).

61. The timing of the awareness that there had been a real rise in the reactor building pressure (as compared to signal anomalies) at the time of the strip-chart indication and the spray pump initiation is the first of several events giving rise to the question about the accuracy of Mr. Chwastyk's memory of the relevant episodes. Those who doubt Mr. Chwastyk's accounts suggest that his memory has become suspiciously and increasingly sharper with the passing of time.

62. At the time of his first interview on May 21, 1979, there was not the same focus on the pressure spike and its significance as there was after the issue of information flow had surfaced. At the beginning, Mr. Chwastyk stated that he did not know initially whether the spike existed in the sensors or in the building itself. He recognized, however, that the spray pumps had come on. Since he did not know what caused the spike indication, he delayed securing equipment, particularly the spray pumps. Joint Exh. 35, at 9. During the May 21 interview he did not state how long after the spike before he came to the realization that it was real.

63. Interviewed again on the point on October 11, 1979, Mr. Chwastyk stated again that he did not know at the time that the spike was an explosion.⁹ It was not until "sometime later" but on the same shift, that he associated the noise heard by others with the pressure spike on the strip-chart recorder. Then he knew there had been some "kind of explosion in the building." Joint Exh. 88, at 19. And, consist-

⁹ Mr. Chwastyk has used the terms "detonation," "explosion," and "combustion" interchangeably since he first began discussing the matter. We see no significance in the varying use of the terms, and we differ with Licensee on that score. Mr. Chwastyk is not certain whether the term "explosion" was ever used on March 28. Joint Exh. 117, at 105-06.

ently, on October 30, 1979, he told the Special Inquiry Group that he initially did not attribute the spike to a real pressure excursion and that he had considered the possibility of an electrical malfunction. Joint Exh. 117, at 5. Again, Mr. Chwastyk believed he became aware that the spike was real "sometime later." As between afternoon or evening, it was, he thought, "before the evening" when he "put it together." *Id.* at 11.

64. At the hearing, Mr. Chwastyk testified that he "eventually" came to the conclusion that the spike was real. But he said that, in terms of "real time," it was not very long after the event that he appreciated that it was an actual pressure spike. Tr. 29,130 (Chwastyk). Later, on cross-examination, Mr. Chwastyk explained that he became aware that the spike was real apparently sometime during the 6 minutes he allowed the containment sprays to operate. He reported to Mr. Miller just after securing the spray pumps. Tr. 29,318-19 (Chwastyk).

65. The Board has difficulty reconciling Mr. Chwastyk's use of the term "sometime later" in his October 11, 1979 interview, his October 30, 1979 recollection that it was "sometime later" but "before the evening," and his testimony that he "eventually" realized the spike was real, with his final testimony that the realization came within a few minutes after the strip-chart indication. Even allowing for a distortion of time perception because of excitement, his earlier statements are inconsistent with his final testimony at the hearing.

66. We have even greater difficulty reconciling Mr. Chwastyk's final testimony that, not only did he know the spike was real within a few minutes, but he also knew it was a zirconium/water, hydrogen explosion that early (Tr. 29,372 (Chwastyk)), as we discuss below.

67. The Board noted other inadequacies in Mr. Chwastyk's memory as to how he became aware that the spike was real. His early memory, on October 11, 1979, was that he "put two and two together," i.e., the pressure spike and the noise, and then he realized there had been a detonation. He also believed that the detonation correlated with the actuation of one of the valves, which valve he could not then specify.¹⁰ Joint Exh. 88, at 19. At the hearing, he initially, and for the first time, explained that the actuation of the spray system and its "two-

¹⁰ Even though, on October 11, 1979, Mr. Chwastyk could not identify the valve he thought corresponded to the detonation, earlier, on May 21, he referred to it as an "electromagnetic relief valve." Mr. Chwastyk has frequently referred to the now-famous pilot-operated relief valve (PORV) as an "electromagnetic relief valve" or "EMOV." Others have referred to the same valve (operated by a solenoid) as an "electromagnetic operated valve" (also "EMOV") or "motor-operated valve" ("MOV"). Tr. 29,334. We have generally used the somewhat redundant term "EMOV valve." This valve has a downstream block valve. We interpret Mr. Chwastyk's October 11 statement to mean that he did not know whether it was the actuation of the EMOV or its block valve which corresponded to the detonation. At other times, he was more confident that it was the EMOV valve.

out-of-three" logic (two of three pressure sensors are required to actuate each pump) convinced him that the spike was real. Tr. 29,130 (Chwastyk). The sensor-logic explanation materialized in a conversation with Mr. Mehler. Tr. 29,317 (Chwastyk).

68. Later in his testimony he believed that it was the combination of the noise and the actuation of the EMOV or its block valve, that led him to the conclusion that the spike was real. Tr. 29,319, 29,331 (Chwastyk).

69. The varying accounts of how Mr. Chwastyk concluded that the pressure spike was in fact some sort of detonation are confusing, but an explanation could be that the seemingly different accounts are each incomplete. Our greater concern is that, in his four interviews and in his hearing testimony, Mr. Chwastyk may have accepted incomplete and not fully accurate statements of the events put to him by his questioners.

Identification of Hydrogen and Core Damage

May 21, 1979 Interview

70. In his May 21, 1979 interview by the NRC, Mr. Chwastyk made no mention of hydrogen. Joint Exh. 35. He later explained that he simply was not asked about hydrogen then. This is true. However, he was asked to express himself about any observations from his experience which might be helpful to other plants. He had nothing to say. Joint Exh. 35, at 54-55. The Board has carefully read Mr. Chwastyk's May 21 statement. If, as Mr. Chwastyk later testified, he fully understood the implications of the failed fuel cladding, zirconium/water reaction on March 28, 1979, that understanding should have been apparent on May 21. In fact, one cannot determine from his May 21 statement that Mr. Chwastyk inferred anything at all about core damage from the pressure spike. But the question never came up.

71. On the other hand, by that time Mr. Chwastyk probably knew, as did many people, that there had been a hydrogen detonation and that the hydrogen had been produced by failed zirconium cladding in the core. Therefore, at least as of May 21, 1979, Mr. Chwastyk's memory did not seem to be influenced by any after-acquired knowledge.

72. Mr. Chwastyk's May 21, 1979 interview is significant to the Board in several respects:

- (a) Although not beyond belief, it is unlikely that, if on March 28, 1979, Mr. Chwastyk possessed all of the information concerning zirconium/water reaction and hydrogen buildup to the extent that he later recalled, some of that information should have appeared in the May 21 interview;

- (b) Assuming that Mr. Chwastyk did in fact possess such knowledge, it is unlikely that he had communicated it to the extent he later recalled because, by May 21, 1979, the NRC had already interviewed most of those present in the control room on March 28 (e.g., Joint Exh. 12 — 33). Yet the three NRC inspectors who interviewed Mr. Chwastyk on May 21, 1979, did not allude to the very important information that Mr. Chwastyk today believes he possessed and communicated on March 28.
- (c) The first recorded statement by Mr. Chwastyk was made after the mailgram and even then it provided no information inconsistent with the mailgram.

73. We believe that it is also significant that, on May 21, Mr. Chwastyk provided no more information about his report to Station Manager Gary Miller, other than Mr. Chwastyk's suggestion to Mr. Miller that the "electromagnetic relief valve" not be cycled. Joint Exh. 35, at 18.

October 11, 1979 Interview

74. Mr. Chwastyk was interviewed by four members of the Special Inquiry Group on October 11, 1979. For the first time Mr. Chwastyk alluded to "the hydrogen detonation or combustion." He referred to the phenomenon in a context which assumes that the interviewers already were familiar with it; not in the context that on March 28 Mr. Chwastyk had been aware of hydrogen combustion. Joint Exh. 88, at 6.

75. Later in the October 11 interview, Mr. Chwastyk stated that "I again went to Gary Miller and explained what I thought had happened as far as hydrogen detonation and the simultaneous opening of the valve. . . ." *Id.* at 18. This suggests that, on October 11, Mr. Chwastyk recalled that, on March 28, he informed Mr. Miller about Chwastyk's awareness of a hydrogen detonation. However, immediately after that statement, Mr. Chwastyk stated that he "just can't remember" whether he related to Mr. Miller his thoughts at the time about correlating the pressure spike with the valve operation. *Id.* at 22.

76. Mr. Chwastyk explained during the October 11 interview that he was "not that well acquainted with hydrogen or any other gases for that matter" and that, because he had seen the initial spike, he was nervous about hydrogen gases. *Id.* at 36. Indeed, we cannot discern from the October 11 interview that Mr. Chwastyk understood the zirconium/water reaction at that time, let alone on March 28. He does not refer to it.

77. The Board has compared Mr. Chwastyk's statement on October 11, 1979 to the effect that he had explained his thoughts about hydrogen detonation to Mr. Miller on March 28 with other portions of his statement that day and with his testimony later. We believe that the most logical explanation is that, by October 11, 1979, Mr. Chwastyk had begun referring retrospectively to the pressure spike as the "hydrogen detonation" or "hydrogen explosion."

October 30, 1979 Interview

78. The Special Inquiry Group interviewed Mr. Chwastyk again on October 30, 1979, after having reviewed his October 11 statement. This time there was no question about Mr. Chwastyk's assertion. In response to specific questions, he stated in certain terms that he knew there had been a hydrogen explosion on March 28 before he reported his concerns about the pressure spike to Gary Miller. Joint Exh. 99, at 14-15. Mr. Chwastyk felt sure that he had discussed hydrogen with Brian Mehler on March 28 but doesn't remember the conversation. *Id.* at 17. He recalled on October 30 that he mentioned "some sort of explosion" to Gary Miller at the time but was not sure that he attributed it to hydrogen. *Id.*

79. Then the Special Inquiry Group, apparently aware of the special importance of Mr. Chwastyk's statement about hydrogen, came directly to the point. The interviewer explained to Mr. Chwastyk that the Group had not discovered any general appreciation on Wednesday, March 28, of hydrogen, and that the general appreciation did not materialize until Thursday afternoon or night or Friday morning. *Id.* at 17-19. In fact the Special Inquiry Group apparently had not found anyone with an understanding on March 28 of the fact that there had been any sort of explosion, let alone one produced by hydrogen. Yet, as the interviewer pointedly explained, Mr. Chwastyk seemed to have arrived at the hydrogen conclusion on Wednesday afternoon. The interviewer further observed that Mr. Chwastyk had stated that others about him probably knew about the hydrogen then. *Id.*

80. Mr. Chwastyk conceded that he may not have told Mr. Miller about the hydrogen explosion or any explosion at the time of his report to Miller on the 28th. *Id.* at 20, 28. Mr. Chwastyk nevertheless insisted that he told others in the control room about it — probably counterparts to Chwastyk himself. *Id.* at 20. He also stated that he had reported to someone from the NRC that day that there had been some sort of explosion. *Id.* at 21. He was not, however, able to state the names of those with whom he discussed hydrogen or the explosion (Joint Exh. 99, *passim*) with the possible exception of Brian Mehler (*e.g.*, *id.* at 17, 19).

September 4, 1980 Interview

81. At the direction of NRC Chairman Ahearne, the Office of Inspection and Enforcement (IE) began an investigation into questions about the adequacy of information transfer between the Licensee and the NRC following the accident. NUREG-0760. The IE team, headed by Mr. Norman Moseley, interviewed Mr. Chwastyk on September 4, 1980. Joint Exh. 117. The IE team focused sharply on Mr. Chwastyk's asserted knowledge on March 28 of a hydrogen explosion.

82. Mr. Chwastyk's memory of the event appeared to be sharper than ever before, especially respecting his understanding on March 28 of the significance of the pressure spike. He stated that, after the explosion, it dawned on him that "we did, in fact, have some core damage in there because zirconium/water reaction created the hydrogen." This is the first mention by Mr. Chwastyk of the zirconium/water reaction. He recalled that it made him nervous. *Id.* at 24. Mr. Chwastyk said he knew on the afternoon of March 28 that the core had heated up enough to cause the zirconium/water reaction. *Id.* He knew also that the hydrogen came from one place — the zirconium/water reaction in the core. Mr. Chwastyk imputed to Gary Miller a serious attitude about the matter based upon Chwastyk's report to Miller. *Id.* at 26. Most importantly, Mr. Chwastyk told the IE team:

It was shortly after the actual explosion and the pressure spike in the building that I surmised that it was, in fact, an explosion and probably a hydrogen explosion, and I related that to Gary. This was prior to Gary leaving for the Governor's office, as far as I can remember.

Id. at 27.

Testimony at the Hearing

83. At the hearing, Mr. Chwastyk was examined extensively by the parties about what he knew on March 28, 1979, about the pressure spike, hydrogen, zirconium/water reaction and core damage; at what time he knew about them and to whom he imparted this information. He testified over 2 days. He had not read the transcripts of his previous interviews before his testimony on the first day. After the Board had concluded that his unaided memory of the events on March 28, 1979, had been tested sufficiently, we requested that he review the transcripts over the recess before appearing for the second day. He reported that his memory had been refreshed by his reading. Tr. 29,286 (Chwastyk).

84. Consistent with his September 4, 1980 statement to the IE team, Mr. Chwastyk stated that he understood when he reported to Mr.

Miller that the spike or explosion had been caused by a hydrogen buildup; that he knew there had been core damage; that the core damage produced a zirconium/water reaction in which hydrogen is freed. Tr. 29,141 (Chwastyk).

85. Mr. Chwastyk provided his final version of how thoroughly on March 28 he appreciated the significance of the pressure spike near the end of his testimony. He was queried by Licensee's counsel as to whether the combusted hydrogen could have been thought to be from a source such as the hydrogen used to scavenge oxygen in the reactor coolant water, Mr. Chwastyk immediately discounted that possibility by pointing out that the makeup tank, where scavenging hydrogen could be found, was in the auxiliary building, not in the reactor building where the detonation occurred. Tr. 29,372 (Chwastyk).

86. Then Mr. Chwastyk explained once again his version that he knew there was an explosion when the pressure spike indication happened simultaneously with the operation of the EMOV or block valve. *Id.* Simultaneously with that realization, Mr. Chwastyk knew that the explosion was from hydrogen, and, once he knew that it was a hydrogen explosion, he knew that it had to be from the zirconium/water reaction and *not* from the makeup tank. *Id.* If the Board were to accept this version of Mr. Chwastyk's account, we would then have to impute to Mr. Chwastyk a very thorough appreciation of the zirconium/water reaction and core damage within a few minutes after the pressure spike.

87. Mr. Chwastyk also testified that the zirconium/water reaction was an indication to him on March 28 that the core was damaged more than he thought was the case before the spike. Tr. 29,354-55 (Chwastyk).

Report to Gary Miller

88. With his analysis that there had been a zirconium/water reaction, a hydrogen explosion, and core damage fresh in his mind, Mr. Chwastyk reported to Station Manager Gary Miller.

89. As is well recognized, Mr. Chwastyk's report to Miller about the pressure spike would be the closest link connecting Mr. Chwastyk's March 28 understanding of hydrogen and core damage on that day to Mr. Dieckamp. Mr. Miller encountered Mr. Dieckamp soon after that report. There are two aspects to Mr. Chwastyk's testimony on this issue: (1) If, in fact, Mr. Chwastyk made any report to Mr. Miller, what does his report tell us about Chwastyk's understanding of the pressure spike; and (2) what did Mr. Miller understand from Mr. Chwastyk's report?

90. To revisit the sequence of events: The pressure spike happened at 1:50 p.m. Mr. Chwastyk allowed the containment spray pumps to run until he was satisfied that they should be secured. The time of securing the pumps has been established as 5 to 6 minutes after the spike by the Nuclear Safety Analysis Center. Joint Exh. 63, at 44, 45. Then Mr. Chwastyk discussed the two-out-of-three logic for spray pump actuation with Mr. Mehler. *E.g.*, Tr. 29,166 (Chwastyk). It was during this conversation that Mr. Chwastyk, in one of his accounts, came to the conclusion that the spike was real. Tr. 29,130, 29,317 (Chwastyk). Mr. Chwastyk then reported to Mr. Miller, who had to leave shortly thereafter to brief the Lieutenant Governor. Tr. 29,159 (Chwastyk).

91. The Special Inquiry Group estimated from the State log entry of his 2:30 p.m. arrival at the Lieutenant Governor's office that Mr. Miller left for the 30-minute trip soon after the spike. Joint Exh. 106, at 906. Mr. Miller believes he left the Unit at about 1:55 p.m. (Tr. 30,246 (Miller)), and Mr. Herbein believes he may have left (from off site) with Mr. Miller at 2:00 p.m. (Tr. 30,343 (Herbein)). Mr. Chwastyk believes that Mr. Miller left 15 minutes to a half-hour, perhaps less, after the spike. Joint Exh. 117, at 27.

92. By any account, Mr. Chwastyk's report to Mr. Miller was necessarily a short one. Mr. Miller does not remember Mr. Chwastyk's report. Tr. 30,204 (Miller). The report to Mr. Miller, according to Mr. Chwastyk, was after Chwastyk made a "bee line" to Miller's office. He followed Miller back to the control room in what has become known as the "moving conversation." *E.g.*, Tr. 29,170, 29,320 (Chwastyk).

93. Mr. Chwastyk testified that he told Mr. Miller that the spike was real and that it was primarily the spray pumps that supported that conclusion. Curiously, contrary to his repeated testimony at other times, he stated that he did not report the noise or thud heard simultaneously with the spike to Mr. Miller. Tr. 29,131 (Chwastyk). Nor did Mr. Chwastyk, during the account just cited, testify to his oft-repeated statement that he reported to Mr. Miller his view that the simultaneous operation of the EMOV or its block valve provided the basis for believing the spike was real. *Id.*

94. Contrary to his important September 4, 1980 deposition, Mr. Chwastyk testified that he could not recall whether he told Miller about his understanding that there had been a hydrogen explosion (Tr. 29,141, 29,358), or any explosion (Tr. 29,153 (Chwastyk)). *But see* Tr. 29,358 (Chwastyk). Mr. Chwastyk may not even have mentioned "hydrogen" to Miller, relying on the assumption that both he and Miller understood the presence of hydrogen. Tr. 29,154 (Chwastyk). But Mr. Miller said nothing to Chwastyk to indicate that he, Miller, understood

that the spike was caused by a hydrogen burn. Tr. 29,281 (Chwastyk). Mr. Chwastyk testified that he could not recall telling Mr. Miller about core damage during his report and doesn't believe that he did. Tr. 29,180, 29,281 (Chwastyk).

95. According to Mr. Chwastyk, whatever it was that he reported to Mr. Miller, it was not serious enough to distract Mr. Miller from other thoughts. Miller, getting ready to report to the Lieutenant Governor, was very busy. He responded to Mr. Chwastyk with the advice that they should not get excited. Tr. 29,159 (Chwastyk).

96. As noted, Mr. Miller said nothing to indicate an appreciation that the pressure spike was caused by hydrogen or that it indicated core damage. Tr. 29,281 (Chwastyk). In fact, Mr. Chwastyk never received any acknowledgment from Mr. Miller that Miller believed the pressure spike was real. Tr. 29,282 (Chwastyk). When questioned whether Mr. Chwastyk believed Mr. Miller was absorbing Chwastyk's report, or whether Miller may have been preoccupied with other things, Mr. Chwastyk explained that Mr. Miller was preoccupied and that Chwastyk was sure that Miller was thinking about other things. Tr. 29,321 (Chwastyk).

Chwastyk's Communication with Others

97. Mr. Brian Mehler, another shift supervisor at TMI-2, was also on duty at the unit at the time of the pressure spike. His account of the events is covered below in the next section. Here we are concerned with whether Mr. Chwastyk communicated to Mehler his understanding on March 28 of the hydrogen explosion and zirconium/water reaction.

98. Mr. Mehler was in the shift supervisor's office at the time of the spike, but left to go to the control console when he became aware of the increased activity and alarms. Tr. 29,475-76 (Mehler). In the important minutes that followed the spike, Mr. Mehler had a close working relationship with Mr. Chwastyk. As we noted above, it was Chwastyk's conversation with Mehler that, in one of Chwastyk's versions, led Chwastyk to realize the spike was real because of the two-out-of-three sensor logic for the containment spray pumps. *E.g.*, Tr. 29,166-67 (Chwastyk).

99. When interviewed on October 30, 1979, Mr. Chwastyk could not remember having a conversation on March 28 with Mr. Mehler about the causes of the spike, i.e., whether it could have been caused by a chemical explosion or by hydrogen. He believed then that he may have had such a conversation, and that, because Mehler was present, they probably did confer. Joint Exh. 99, at 7-8, 17.

100. By the time Mr. Chwastyk was interviewed by the IE team on September 4, 1980, he recalled definitely that, after the spray pumps were secured and matters had returned to a relatively normal state, he discussed the pressure spike with Mehler and that Mehler agreed with Chwastyk that there had been an explosion. Joint Exh. 117, at 6, 9-10, 26. There was, however, no reference to hydrogen or zirconium/water reaction in Chwastyk's 1980 account of his conversation with Mehler. *Id.*

101. At the hearing, Mr. Chwastyk testified again that he believed on March 28 that Mr. Mehler understood that there had been a real pressure spike. And again Mr. Chwastyk could not recall any discussion about hydrogen with Mehler. Tr. 29,167, 29,317 (Chwastyk).

102. In his testimony at the hearing, Mr. Mehler recalled a conversation of a few words with Mr. Chwastyk right after the spike. He corroborates Mr. Chwastyk's statement that he, Mehler, soon knew that the spike was real but does not recall that it was described as an "explosion." Mr. Mehler was quite specific in his belief that hydrogen was not discussed with Chwastyk on that date. In fact, Mr. Mehler recalls that he first learned about hydrogen in the newspaper. They discussed a possible chemical reaction but could not identify any source. Tr. 29,486-87 (Mehler). Nor was a zirconium/water reaction discussed at that time. Tr. 29,566 (Mehler).

103. Mr. Chwastyk testified that he discussed the pressure spike with members of the oncoming shift the afternoon or evening of March 28. These were Theodore Illjes, John Kidwell, and Chuck Mell.¹¹ While he cannot recall specifically, he thinks that he discussed hydrogen. Tr. 29,167-68, 29,337-38 (Chwastyk); *see also* Tr. 29,349-51 (Chwastyk). He may also have discussed the zirconium/water reaction with them. Tr. 29,356 (Chwastyk). Messrs. Illjes, Mell, and Kidwell have also been interviewed.

104. On July 14, 1979, Mr. Charles Mell stated that during the shift turnover they were shown the spikes and told that both building spray pumps had come on. He stated, however, "at that time they . . . hadn't really postulated why they had come on yet. No one really had the time to think about it." Joint Exh. 60, at 7. Mell stated that there was no discussion of hydrogen burn the first night and that it was not until the

¹¹ Mr. Chwastyk also indicated that either Bill Conaway or Carl Guthrie also came on shift with Illjes, Kidwell and Mell. Tr. 29,167 (Chwastyk). Mr. Conaway came on duty at 11 p.m. on March 28. We do not know when Mr. Guthrie came on duty. Mr. Chwastyk is probably mistaken about Conaway and Guthrie.

next day or night that someone postulated one. *Id.* at 11-12; Joint Exh. 69, at 17-18.

105. In a May 23, 1979 NRC interview, Mr. Theodore Illjes stated,

when it [the shift] was turned over it was mentioned that we did have a pressure spike, when we turned over. That was the only thing that was mentioned, and that they had recovered from a reactor building isolation.

Joint Exh. 36, at 8. Mr. Illjes, who testified, could not remember Mr. Chwastyk's briefing. Tr. 29,644-46, 29,653-54 (Illjes).

106. Mr. John Kidwell was interviewed by the Special Inquiry Group. The SIG Report, March 4, 1980, indicates that Kidwell's memory of Wednesday, Thursday, and Friday was blurred. Mr. Kidwell recalled that there was discussion late one night about the pressure spike and what caused it, but he did not know which day. Joint Exh. 107, at 61.

107. In his September 4, 1980 deposition, Mr. Chwastyk identified Donald R. Neely as the NRC inspector whom he had told the spike was real. He could not recall Neely earlier. Joint Exh. 117, at 104-05; *see also* Tr. 29,166 (Chwastyk). Mr. Neely, however, is certain that he was not informed of the pressure spike. Joint Exh. 130, at 8-13.

Draw a Bubble

108. Since as early as his October 11, 1979 interview, Mr. Chwastyk has maintained that, immediately after the pressure spike, and as a result of his understanding of it, he sought and received permission from Mr. Miller to "draw a bubble" in the pressurizer. Joint Exh. 88, at 7, 18. As Mr. Chwastyk later explained, drawing or establishing a bubble in the pressurizer would mean closing the pressurizer EMOV valve or block valve so that the water would not escape and by turning on the pressurizer heaters so that a steam bubble would form. Makeup flow would be increased. The purpose, according to Mr. Chwastyk, was to establish a familiar mode; to know with confidence from the pressurizer level what the coolant level in the system was; and to assure that the core was covered. This mode was contrasted by Mr. Chwastyk with cycling the EMOV or block valve, allowing water (or steam) to escape, thus not allowing a bubble to form in the pressurizer. Tr. 29,142-50, 29,288 (Chwastyk).

109. Drawing a bubble is not the same as the so-called "repressurization strategy" (Tr. 29,291 (Chwastyk)), a theory of the case much favored by TMIA. Mr. Chwastyk's request to draw a bubble, and Mr. Chwastyk's statement that Mr. Miller authorized that tactic is advanced

by TMIA as evidence that the significance of the pressure spike was fully appreciated by Chwastyk, Miller, and, in general, by others on March 28.

110. The difficulty with the theory is that no special relationship between drawing a bubble and the pressure spike has been demonstrated. Moreover, as Mr. Chwastyk himself concedes, he had requested permission to draw a bubble before the pressure spike and could not explain why the request after the spike differed from earlier requests except that he perceived a more pronounced need. Tr. 29,322-25 (Chwastyk). Also, as Licensee points out, at the time of the pressure spike, people were already working on the pressurizer trying to draw a bubble and to establish a level. Joint Exh. 2, at 11 (Faust); Joint Exh. 24, at 12-13 (Wright).

Chwastyk Prevents Sparks

111. At least one order, perhaps more, was given following the accident not to operate electrical equipment in the containment in order to prevent sparks which could ignite combustible gas. TMIA argues that the first order was given on March 28 soon after the pressure spike and that, therefore, there must have been an appreciation of hydrogen at that time. We discuss the spark-prevention strategy in greater detail in the section below on Mr. Mehler's testimony (where we find that the first order was given on March 29). In the following paragraphs we address Mr. Chwastyk's memory of the first spark-prevention order.

112. Beginning with his very first interview on May 21, 1979, Mr. Chwastyk alluded to his idea of the relationship between the "electromagnetic relief valve" (EMOV) and his assumption that there had been an explosion. Mr. Chwastyk stated then that he suggested to Miller that the valve no longer be cycled. Joint Exh. 35, at 18. During his second interview, October 11, 1979, the interviewers pressed Mr. Chwastyk to be careful about whether he told Miller that he, Chwastyk, thought that opening the valve had caused an explosion. Mr. Chwastyk responded that, while he was sure that he had that cause and that effect in mind at the time, upon thinking about the matter, he could not remember telling Miller about his theory. Mr. Chwastyk may have stated to Miller only another request to draw a bubble. Joint Exh. 88, at 21-22.

113. A few weeks later, during his third interview, Mr. Chwastyk was again requested to state his best recollection about what he told Mr. Miller about his spark theory during that report. On this occasion, Mr. Chwastyk stated that he had thought about that matter, and that he did go to Mr. Miller with his thoughts about the sparks and the valve operation. Joint Exh. 99, at 13-14.

114. The question arose again during the September 4, 1980 interview by the IE team where the team alluded to Mr. Chwastyk's first testimony on May 21, 1979 (when Chwastyk had recommended that the EMOV not be operated). The interviewers wanted to know why Mr. Chwastyk's recommendation was limited to the EMOV. Mr. Chwastyk responded that in fact there had been an order put out not to operate other equipment and that he "sort of kicked" himself "for not thinking of it." Joint Exh. 117, at 15-16.

115. At the hearing, Mr. Chwastyk testified, for the first time, that the first order not to operate equipment was issued by Chwastyk himself after a discussion with Mr. Miller and that the order pertained to the EMOV or block valve. Tr. 29,152-53, 29,285 (Chwastyk); *see also* Tr. 29,332 (Chwastyk). He explained also that his "kicked myself" statement was not inconsistent with his current testimony. According to Mr. Chwastyk, his first order was limited to the EMOV because that was the only item being operated. Tr. 29,332 (Chwastyk). When the later order covering all electrical equipment came out, Mr. Chwastyk realized that he should have anticipated that other equipment might be used. Therefore, he "sort of kicked myself." Tr. 29,344-45.

116. The Board disagrees with Licensee's proposed findings on this point. Licensee Reply Findings 92, 93. Mr. Chwastyk's explanation about overlooking other electrical equipment, thinking only about the EMOV, is consistent with his earlier interviews as he explained during the IE interview of September 4, 1980. Joint Exh. 117, at 15-16, *supra*.

117. We are, however, troubled by the recurring phenomenon of Mr. Chwastyk's memory improving over time. From no early mention of the fact that he, Chwastyk, had given the order not to cycle the EMOV, and uncertainty whether he had even discussed the matter with Mr. Miller, Mr. Chwastyk came to the hearing confident that the order was issued by Chwastyk himself after consultation with Mr. Miller.

118. When deposed before the hearing on September 24, 1984, Mr. Chwastyk stated that it was Mr. Miller, not Chwastyk, who gave the order not to operate the EMOV. Tr. 29,284-87 (Chwastyk) (deposition not in evidence). But having since refreshed his memory by reviewing all of the depositions (at the Board's request), Mr. Chwastyk arrived at his present view that the order was given by Chwastyk after consultation with Mr. Miller. Yet, as we have recounted above, Mr. Chwastyk's earlier depositions and interviews were much less specific on the matter than is the memory they refreshed. And of course, we must consider the fact that no one else has ever mentioned Chwastyk's order not to

operate the EMOV or block valve. Mr. Miller does not recall any discussion of Mr. Chwastyk's account. Tr. 30,204 (Miller).¹²

Board Conclusions on Mr. Chwastyk's Testimony

119. The Board concludes that, on March 28, 1979, Mr. Chwastyk did not interpret the pressure spike and the actuation of the containment spray pumps in terms of hydrogen combustion and core damage. His testimony and previous statements to that effect are not reliable. We also conclude that Mr. Chwastyk's testimony is probably consistent with his understanding of the truth. But his memory of events has been influenced by after-acquired information.

120. Mr. Chwastyk probably understood on March 28 that the pressure spike was real. Mr. Mehler corroborates this. As of May 21, 1979, his first statement on the matter, he had already associated in his memory the cycling of the EMOV (or the block valve) with the pressure spike. Therefore, by that time, he may have had a memory that on March 28 he knew that there had been an explosion or detonation. But the record is not reliable on that point, because he refers solely to the simultaneity of the spike and the valve cycling without reference to sparks.

121. The Board was influenced by the fact that, as a trend, Mr. Chwastyk's memory seemed to improve over time. But this was not always the case. For example, he was less certain about what he had reported to Mr. Miller and to the oncoming shift in his hearing testimony than in some earlier statements. Nevertheless, there were too many inconsistencies in Mr. Chwastyk's accounts of the relevant episodes for the Board to accept any of the various versions over any other. His account that he understood on March 28 that there was a hydrogen combustion which derived from a damaged core and degraded zirconium cladding and that he communicated the essence of this information to others is not corroborated by those to whom he believes he spoke. Nor is it corroborated by the record of events.

122. In sum, we find that on March 28, 1979, Mr. Chwastyk did not believe, as an interpretation of the pressure spike and spray actuation,

¹² In two early interviews, Mr. Mehler stated that "either the same day or two days later" there was a discussion of the source of ignition. First he thought it had been the pressurizer vent valve (Joint Exh. 32, at 32) and later the pressurizer block valve (Joint Exh. 68, at 8). But Mr. Mehler has never mentioned Mr. Chwastyk's order not to cycle the EMOV or block valve in his several statements about when the first order not to operate electrical equipment was issued. See the discussion of operating electrical equipment in connection with Mr. Mehler's testimony below; see also Joint Exh. 36, at 9-10 (Iljes).

that there was core damage (more severe than believed before the spike), *nor* did he believe that any such core damage produced hydrogen by a zirconium/water reaction, *nor* did he then believe that the pressure spike was a hydrogen combustion. *Nor* did he communicate any such information to anyone on March 28. Since we do not find that any of those links occurred, the possibility that they all occurred is extremely remote.

123. Moreover, even if we were to believe that Mr. Chwastyk appreciated the full significance of the pressure spike, and, assuming further, that he spoke about some or all of this information to Mr. Miller, Mr. Chwastyk's testimony was that Mr. Miller was not paying attention to Mr. Chwastyk during the report. Indeed, Mr. Miller's immediate departure to brief the Lieutenant Governor after Chwastyk's report is a strong indication that Mr. Miller had not received any such information from Chwastyk.

124. It is not necessary that we understand why Mr. Chwastyk made statements inconsistent with the reliable evidence. However, since those statements constitute the main collection of accusations — by others, not Chwastyk — against Mr. Dieckamp, some additional observations about Mr. Chwastyk might be helpful.

125. He was not a volunteer. He appeared under subpoena. He carries no brief against Mr. Dieckamp. He stated that he is sure that Mr. Dieckamp did not know what Chwastyk knew during the accident. Tr. 29,421 (Chwastyk).

126. The Board and the parties have had the opportunity to ponder deliberately the transcripts of Mr. Chwastyk's testimony and various statements. We have read exquisite analyses of virtually every subtlety and nuance in the differing accounts. Yet, Mr. Chwastyk's testimony and depositions have been on-the-spot oral answers months and years after the events.

127. As Mr. Chwastyk explained, there has been an overanalysis of his answers. He does not have the verbal skills of the lawyers who have questioned him. His meanings have not always been accurately understood by his questioners. Tr. 29,420-21 (Chwastyk). He points out that information is missed in transcribing the depositions; the tone of the question; some possible facial expressions. Tr. 29,420 (Chwastyk). We are sympathetic to that observation. As we noted during the hearing, his demeanor was frequently consistent with uncertainty — a shrug of the shoulders for example. Tr. 29,190-91. Yet this uncertainty may not be evident in the raw language of the transcripts.

128. Mr. Chwastyk acknowledged that he has learned a lot since the accident and doesn't know how much of that information could have

become confused with his memory of events. Tr. 29,314 (Chwastyk). He also acknowledged that he probably had less confidence in his understanding of the events on the day of the accident than he did during his testimony. Tr. 29,352-53 (Chwastyk).

129. He appeared to be cooperative with all participants regardless of their positions on the issues. He tried to provide information as best he could. This we see as a possible part of the problem — a willingness to provide information even though uncertain about it. All in all, we thought his summary advice to the Board was very constructive. He is not sure that 5½ years after the accident anyone can make total sense out of the events of March 28, 1979. Tr. 29,420 (Chwastyk).

C. Brian Mehler

130. As noted above Mr. Brian Mehler was, with Mr. Chwastyk, also a TMI-2 shift supervisor on duty at the time of the pressure spike. Noticing increased activity and the actuation of some alarms, Mr. Mehler went to the console. Tr. 29,475-76 (Mehler). The pressure recorder looked to him as if there had been an electrical fault, but shortly thereafter he saw that both containment spray pumps were running. Based upon the two-out-of-three sensor logic for the pumps (and an engineered safeguard (ES) signal), Mr. Mehler realized the spike was real. Tr. 29,479 (Mehler). After the equipment was secured, Mr. Mehler and Mr. Chwastyk “looked at each other” and mutually agreed that there had been a spike. They didn’t know the cause — perhaps a chemical reaction. It was over, and there was no more that could be done about it. They went on with their work. Tr. 29,562-63 (Mehler); *see also* Tr. 29,487 (Mehler).

131. Mr. Mehler was examined thoroughly at the hearing about whether he appreciated or discussed the fact that there had been a hydrogen explosion on the 28th and he was quite specific that neither hydrogen nor explosion was understood or discussed on March 28th. Tr. 29,487, 29,563-66. Nor, of course, was zirconium/water reaction. Tr. 29,566 (Mehler).

132. Mr. Mehler has been interviewed or deposed at least six times since the accident.¹³ His earlier statements contain many references to the hydrogen explosion and other core damage indicators on March 28. Mr. Mehler has repeatedly explained that these references are products

¹³ These statements are in evidence: Joint Exh. 17, Met Ed interview (April 25, 1979); Joint Exh. 32, NRC interview (May 17, 1979); Joint Exh. 68, Hart Committee interview (August 22, 1979); Joint Exh. 89, NRC deposition (October 11, 1979); Joint Exh. 98, NRC deposition (October 30, 1979); and Joint Exh. 115, NRC interview (September 3, 1980).

of knowledge gained after March 28. Tr. 29,488, 29,490, 29,514, 29,564, 29,581 (Mehler). The Board has examined these statements, particularly the portions cited by the parties. With one exception, we find nothing inconsistent with Mr. Mehler's assertion that, on March 28, 1979, he did not know that the pressure spike and containment spray actuation was caused by a zirconium/water reaction, hydrogen explosion, or that anyone interpreted the spike or spray actuation in terms of core damage on that day.¹⁴

133. The exception we allude to is Mr. Mehler's prior statements concerning the timing of an order not to actuate electrical equipment.

Electrical Equipment

134. There is no dispute that, once hydrogen or an explosion was identified as the cause of the pressure spike, an order was given not to operate electrical equipment to prevent ignition by sparking. To support the theory that zirconium/water reaction, hydrogen and core damage were understood on March 28 TMIA cites statements by Mr. Mehler that the order not to operate electrical equipment was issued on March 28. We consider the entire subissue in the context of Mr. Mehler's statements.

135. When interviewed on August 22, 1979, by the Hart Committee, Mr. Mehler was asked if he heard anyone express any concern about energizing the block valve just prior to the pressure spike. He replied:

No. After the pressure — don't know exactly what the time element was after that. Since we did have an explosion, it needed a source of ignition. We assumed the ignition source could have been the block valve. If it was that same day or two days later I can't tell. I know it was discussed at some time or another.

Joint Exh. 68, at 8.

136. Mr. Mehler was again interviewed about the spark potential by the Special Inquiry Group on October 11, 1979:

Q What I'm trying to do is key in to some events on 3/28.

¹⁴ TMIA points to Mr. Mehler's August 22, 1979 interview by the Hart Committee (Joint Exh. 68, at 12) for a proposed finding that Mr. Mehler had indicated that he may have discussed hydrogen with Mr. Chwastyk. TMIA Proposed Finding 45. In that interview, Mr. Mehler stated "we were concerned but we couldn't determine if it was hydrogen or maybe we had some kind of chemical reaction that time." Joint Exh. 68, at 12. The entire discussion however indicates that hydrogen was not, as might be inferred, discussed as a possible source of the spike. Mr. Mehler stated in that same interview that no one realized that there could have been so much hydrogen; and that neither he nor anyone else had any idea at the time that the temperatures were high enough to produce a zirconium/water reaction. *Id.*

- A Yes, you are trying to figure out if they told us not to operate [lift pumps] why we did.
- Q Not really, I'm trying to figure out if someone told you not to operate electrical equipment in the containment, was that on 3/28 or 3/29?
- A That was 3/28.
- Q Why are you so sure?
- A Because it was prior to the reactor cooling pump starting and we started that at 3/28 in the evening.
- Q So that was contrary to the instruction that was issued?
- A It was after the hydrogen burn and we had to get some kind of pump running, you know, you had the lesser of two evils.
- Q Okay, well, I admit it has been six months ago since this occurred, but the last question on this is, is that in the control room log, it was on the three to eleven shift on the 29th, on swing shift around 2114 [9:14 p.m.] when the entry was made to place the pumps in the off position (minimize spark potential at reactor building). And as I understood, that in your memory, that is about when that instruction was given to you. So do you see why I have the question?
- A I understand and I can say for a fact and I will go under oath and I will take a lie detector test, prior to running the reactor core pumps, someone did tell us not to start anything and I remember telling Gary, it's too late now I have already started them. And that was after the hydrogen spike.
- Q Now the reason why you were not to start anything —
- A Was a spark in case we did have hydrogen in there.
- Q Okay. And you did not know who advised you of that?
- A No, I don't.
- Q Where did they think the hydrogen came from at that point in time?
- A I don't know.

Id. at 24-25.

137. We have considered the possibility that, in the passage just cited, Mr. Mehler was attempting to explain that the order not to start electrical equipment came after the spike rather than before it, and that he was thinking of the starting of the reactor coolant pumps rather than the date. But other portions of the October 11 interview support the conclusion that Mr. Mehler then believed that, in fact, the order was given on the 28th. *See id.* at 15, 16.

138. On October 30, 1979, Mr. Mehler was interviewed again by the Special Inquiry Group about the order not to start electrical equipment. This time Mr. Mehler believed that the order was given by Mr. Miller from his office, but that he, Mehler, did not know what day the order

was given. He recalled that the order followed Mr. Mehler's testing of the lift and backstop pumps, a step necessary before actuating the reactor coolant pumps. The comment was made to the effect that since those pumps had been started (already sparked) there would not be any hydrogen left. Joint Exh. 98, at 11-12.

139. Referring back to the October 11 interview, Mr. Mehler was asked about what had made him then believe that the order was given on March 28. He responded that "because I remember starting the lift pumps and backstop pumps on March 28." However, he recalled starting those pumps also on the 29th. *Id.* at 13-14. Mr. Mehler explained that since the earlier interview, upon "thinking back upon it" he had become less certain that the order had been given on the 28th. He had talked to Messrs. Miller, Ross, Zewe, and Chwastyk, none of whom recalled the instruction being given on the 28th. He stated that Mr. Chwastyk in particular recalled the instruction being given on the 29th. *Id.* at 15-16.¹⁵ Mr. Mehler summarized the matter by stating that his own memory standing alone had been that the instruction was given on the 28th but that, in talking to the others, it is more likely to have been given on the 29th. *Id.* at 16-17.

140. On November 1, 1979, Mr. Mehler provided to the Special Inquiry Group transcript corrections to his October 11, 1979 deposition in a cover letter informing the Group that he was unable to state that the instruction not to operate electrical equipment occurred on March 28, 1979, or at some later date. Joint Exh. 89 (cover page).

141. Mr. Mehler was interviewed for the last time by the IE team on September 3, 1980. Mr. Mehler stated that the change in his opinion concerning the instruction not to operate electrical equipment was the result of having talked to people, having had the chance to review logs, and having had a chance to sit down, talk to his wife, and figure out where he was. Joint Exh. 115, at 23. He stated that, after 6 months, the 28th, 29th and 30th ran together. *Id.* at 21.

142. The control room log tends to support the position that the order not to activate electrical equipment remembered by Mr. Mehler and others was given on March 29. TMIA Exh. 16. The entry for 2114 hours (9:14 p.m.) on March 29 noted "Placed RCP [reactor coolant

¹⁵ Mr. Chwastyk remembered the conversation. He stated that he didn't want to talk to Mr. Mehler about it. He thinks that he may have made a comment to Mr. Mehler that he, Chwastyk, didn't think it happened on the 29th (in one answer) and that it didn't happen on the 28th (in another answer), but Mr. Chwastyk could not remember either way. Joint Exh. 117, at 38. Mr. Chwastyk was willing to defer to Messrs. Zewe and Miller on the point. *Id.* at 41. In an earlier interview, Mr. Chwastyk stated that he didn't believe that the order not to operate electrical equipment, particularly the lift pumps, was given on March 28th. Moreover he provided his reasons for tending to think the order was given later than the 28th. Joint Exh. 99, at 15-17.

pumps] lift pumps in off [position] (minimize sparking potential in RB).” TMIA Exh. 16, at 87. This entry indicated to Mr. Mehler that the lift pumps had been started in case it became necessary to start a reactor coolant pump. Tr. 29,531-33 (Mehler). Mr. Mehler acknowledged that this could have been the event that occasioned the instruction he remembered, though he is not certain. Tr. 29,578 (Mehler). No similar entry can be found in the log for March 28th. TMIA Exh. 16.

143. Mr. Mehler’s testimony at the hearing was not very helpful, but, in general, it was consistent with his last two interviews. Tr. 29,507-34, 29,567-79 (Mehler). As he explained:

As time goes on, you know, from March 28th, it became harder to recall what actually I remembered, and what I was told about, read about, or found out about. It is very hard to differentiate between them.

144. Others who had a good opportunity to hear about any spark prevention strategy recalled either that it took place after the 28th or could not recall that it happened on the 28th.

145. Mr. Kunder testified that he gave such an order — to deenergize unnecessary equipment in the reactor building — to Mr. Bensel after the Thursday meeting. Tr. 30,028-33 (Kunder); Joint Exh. 118, at 51-53. Mr. Zewe specifically recalled that the order was given sometime on the 29th. Joint Exh. 119, at 46. Mr. Ross stated that he was sure that the order was not given on the 28th; it was given either on the 29th or 30th. Joint Exh. 124, at 66-67.

146. NRC Inspector, Mr. Neely, present on March 28, did not hear any such order that day and it was not until much later that he heard about it. Joint Exh. 130, at 9-10. Similarly, NRC Inspector, Mr. Higgins, also present, did not learn about the spark prevention strategy until much later. Joint Exh. 129, at 30. Mr. Faust guessed that any such order would have been given on the 29th. Joint Exh. 133, at 17-18. Mr. Porter does not recall such a discussion on the 28th, but recalls that preventing sparks was a consideration later. Joint Exh. 70, at 19-20. Mr. Logan recalls such an order but cannot recall whether it was given on the 28th. Joint Exh. 136, at 47. Shift foreman Adam Miller, when asked if he recalled whether there was a concern about sparking on the 28th replied: “No, not on the 28th.” Joint Exh. 137, at 13. Mr. Frederick seems unable to recall anything about such an order on any date. Joint Exh.

132, at 8. Nor does Mr. Illjes. Joint Exh. 127, at 10-11.¹⁶ Nor does Mr. Conaway. Joint Exh. 136, at 47.

Conclusions on Mr. Mehler's Testimony

147. Even though Mr. Mehler realized rather promptly that the pressure spike on March 28 was a real pressure increase, he has never wavered in his belief that there was no appreciation or discussion of hydrogen or hydrogen explosion on that date. The only thing remarkable about Mr. Mehler's testimony is the firmness of his initial belief that the instruction not to operate electrical equipment came on March 28 just prior to operating the reactor coolant pumps that evening.

148. It is not clear that Mr. Mehler "retracted" his earlier statement to that effect as Licensee suggests. Licensee Reply Finding 8. A better interpretation is that he deferred to what he regarded as better evidence that the order came on the 29th and that Mr. Mehler recognized that his earlier statements were probably wrong. Mr. Mehler's revised opinion was not a simple change of mind, he came to the conclusion that the order was probably given on the 29th only after a thoughtful approach to the matter — studying the log, talking to his colleagues and thinking it over. He does not claim that his memory was refreshed by those steps, a restraint that enhanced his credibility.

149. In any event, we cannot accept TMIA's argument (not without its logic) that Mr. Mehler's earlier statements, closer to the events, should be accepted over his later statements. Mr. Mehler himself lost confidence in the earlier statements. Given the large amount of reliable evidence that the order not to operate electrical equipment came after March 28, and no reliable evidence that it came on the 28th, we accept Mr. Mehler's revised opinion. The order was not issued on March 28. It was issued first on March 29.

150. Mr. Mehler's interview with Mr. O'Connor of Metropolitan Edison took place on April 25, 1979 — before the mailgram. Joint Exh. 17. It reflects Mr. Mehler's awareness then that the spike was real — a point not in dispute. *Id.* Other than the pressure spike itself and the reference to the actuation of the containment sprays, the April 25 interview provided no information that would have alerted Mr. Dieckamp to any possibility that anyone appreciated a hydrogen detonation on March 28. In fact, Mr. Mehler's April 25 interview and others conducted before May 9, 1979, are interesting in that the pressure spike seems to

¹⁶ But Mr. Illjes stated on May 23, 1979, that there had been a discussion of the arcing potential of the EMOV which could ignite hydrogen, but he could not say that it was discussed on March 28. Joint Exh. 36, at 9-10.

have a rather low priority in the discussions. Even weeks after the accident the importance of the spike was not apparent in the interviews.

D. Theodore Illjes

151. Mr. Theodore Illjes was a control room operator working the three-to-eleven shift under Mr. Chwastyk on March 28. By the time he was briefed and made other preparations it was not until about 6:30 p.m. that he began working at the console. Joint Exh. 36, at 2-5. Mr. Illjes was interviewed twice before the hearing. In the first interview, by the NRC on May 23, 1979, Mr. Illjes stated that, upon initial briefing, he was told that there had been a spike and containment isolation. Later in the evening a "hydrogen explosion" was discussed as a possible cause. *Id.* at 6.

152. Pressed as to when the hydrogen explosion was discussed, Mr. Illjes explained:

If I want to relate it, I would say it was after we drew the bubble in the pressurizer which we did after that. As far as what time that was mentioned, as far as we discussed it, *I know it was discussed when we turned over* [shift change], when we came in, but we didn't make any bones about it because we were interested in getting flow through the reactor and the bubble in the pressurizer and so. They had recovered from the building isolation high pressure injection. They had recovered from that situation, and our concern was cooling the reactor and insuring it had flow. Later on when we had things stabilized, we had a bubble in the pressurizer and had a reactor coolant pump running and that term area, we were discussing with, I can't remember if it was one of our engineers. *But we did have a pressure spike.* We pulled it out and I don't know who wanted a copy but we made a couple copies of the chart.

Id. at 7 (emphasis added).

153. Mr. Illjes had recalled clearly that when the shift "was turned over" he learned only that there had been a pressure spike and the unit had recovered from containment isolation, with no mention of hydrogen at that time. *Id.* at 6, 8-9. Therefore, we posit from the passage just cited that Mr. Illjes on May 23 had begun retrospectively to refer to the pressure spike as the hydrogen explosion, and *vice versa*, as we have noted in accounts by other commenters.

154. The NRC interviewer may also have fallen into the same pattern as the following exchange indicates:

FASANO: So a pressure spike was discussed at the turn over, when you first came in, about 3:45. And then somewhere about 8:00 further discussion and also xerox copies [of the containment pressure strip-chart recorder]?

ILLJES: Right.

FASANO: And apparently . . .

ILLJES: I think we remembered the xerox machine wasn't working too good.

FASANO: At this time you discussed what and with whom, if you can remember?

ILLJES: We talked, I talked about it with the trainee on our shift, who was Chuck Mell. And the person that asked for the information, and I don't remember who that was, whether it was an NRC inspector or a B&W representative.

FASANO: Was any discussion related to this? Was the hydrogen burn or was a real spike or was this discussed as an electrical spurious signal possibly?

ILLJES: This was discussed that evening but we also talked about it several times after that and I cannot separate the two different discussions but as far as I remember we related it to a cycling of the electromatic relief isolation, which is a DC operated valve I believe and that has a contact in there which will cause arcing which possibly could ignite the hydrogen. That was discussed, but I can't say we discussed it that night. We didn't really have that much time to do a lot of discussion, but we talked about it and when I walked away from the panel, the guy that wanted the copy, you know, he wanted it now, and I had to walk away from the panel to make sure that the other guy, my shift supervisor, was there while I walked away so . . .

FASANO: On the first evening, can you recall if on that first evening you were discussing after 8:00 that it was possibly a hydrogen burn?

ILLJES: As far as I know that possibility was discussed that evening.

Id. at 9-10.

155. From the foregoing one could, and perhaps should, conclude that as of May 23, 1979, Mr. Illjes' best memory was that a hydrogen explosion was discussed as the cause of the pressure spike the evening of March 28. But as the interview continued, Mr. Illjes introduced a new factor into his memory of the events:

ILLJES: It was also that night, you know, that we determined *that we had a hard bubble and what that bubble was*, you know, we had talked about that too, you know . . . What is the gas and is it hydrogen or other and all that water that went through the reactor and out into the RC drain tank and out into the reactor building.

Id. at 10 (emphasis added).

156. The "hard bubble" comment was not pursued on May 23. The question would arise again as to whether the "hard bubble" to which Mr. Illjes refers was related to a real pressure spike on March 28 or to the widely publicized concern of some days later that there was a hydrogen bubble trapped in the head of the reactor vessel.

157. Mr. Illjes was interviewed again on September 24, 1980, by the special IE team investigating the information-transfer matter. Joint Exh. 127. The team was very interested in Mr. Illjes' earlier statements about hydrogen:

Q Is it still your recollection that hydrogen was discussed on March 28th, 1979, as a possible cause of the pressure spike?

A To my recollection, we discussed the pressure spike.

Q Do you recall who you discussed it with?

A The other two men in the control room at the time, and Joe Chwastyk was sitting behind us, or in the near vicinity. I don't remember if he was in the conversation or not. But the other two men on the shift —

Q That would be Mell and Kidwell?

A Yes.

BY MR. HOEFLING:

Q Was hydrogen a part of those discussions, do you recall?

A I don't remember.

Q When you said "pressure spike," you used that intentionally? You were talking about the pressure spike?

A Yes.

Q And not necessarily hydrogen?

A It's hard for me to separate all the discussion that was made on that night. I can't really say, because it was discussed how many times thereafter, and that far apart I can't relate the difference.

Id. at 6-7.

158. This passage suggests again that Mr. Illjes had begun retrospectively and generically equating hydrogen with pressure spike.

159. The IE team also attempted to resolve with Mr. Illjes his memory on May 23, 1979, that there had been a "hard bubble" determined on March 28:

Q ... The other investigations to date have concluded that it was not until subsequent to March 28th, 1979 — either late Thursday evening or early Friday morning sometime — that a realization took place that a hydrogen bubble existed in the primary system in the reactor vessel head, this noncondensable bubble.

You have previously testified that the reason you recall that you knew of the spike on March 28th, the evening of March 28th, was that that same evening

you became aware that there was a hard bubble of hydrogen — using your words there — which was in the reactor vessel head.

The discrepancy which I'm trying to resolve is the contradiction in when you knew of the hydrogen bubble and when the other investigations have concluded that there became general knowledge of the fact that a hydrogen bubble, or noncondensable gases still existed in that reactor system.

Can you explain the discrepancy between that?

A No.

Q Is it still your recollection that you were aware of a bubble of hydrogen, or non-condensable gases, which remained in the reactor vessel head on March 28th, 1979?

A I can remember the bubble and the problem that we had which we were trying to resolve at the time. I can remember the bubble being in the "noncondensable bubble," so to put it. I do remember that.

Joint Exh. 127, at 8-9.

160. When pressed on the point he remained of the opinion that the "hard bubble" was identified on the 28th because he associated it with trying to establish a bubble in the pressurizer. *Id.* at 9. Mr. Illjes also consistently remembered in both interviews that the pressure spike had been xeroxed on the 28th, a point we return to later. Joint Exh. 36, at 7-8; Joint Exh. 127, at 5-6.

161. At the hearing Mr. Illjes had almost no recollection of conversations on the day of the accident. To the best of his recollection, he does not remember a discussion of hydrogen on the evening of the 28th. Tr. 29,595 (Illjes). He could not recall discussing the pressure spike with Messrs. Chwastyk, Mell and Kidwell that evening. Tr. 29,597 (Illjes). He does not recall any discussion correlating the spike with the operation of the relief valve. Tr. 29,600 (Illjes). He could not recall any discussion about hydrogen in the reactor vessel. Tr. 29,610 (Illjes). He had no recollection of being told by Mr. Chwastyk that the pressure spike was real, that it represented an explosion, that the explosion was due to hydrogen, or that the source of the hydrogen was a zirconium/water reaction in the reactor core. Tr. 29,652-53 (Illjes). He didn't seem to recall his previous interviews. He simply acknowledged that the transcripts say what they say. *E.g.*, Tr. 29,607 (Illjes).

162. Mr. Illjes tried to be helpful by his analyses of the log and knowledge of procedures. On that basis, Mr. Illjes believes now that the realization that a hydrogen burn had actually occurred was later, probably Friday, March 30. He believes that if the pressure spike had been attributed to a hydrogen burn or hydrogen explosion on Wednesday,

March 28, there would have been corrective measures taken and perhaps a log entry made. Tr. 29,650-51, 29,745 (Illjes).

163. Mr. Illjes also testified that he remembers Steve Pogi as one of the engineers who was present when the spike was attributed to hydrogen. Mr. Illjes recalls that Mr. Pogi was not present on the day of the accident. Tr. 29,657-59 (Illjes). Mr. Pogi was a Penelec Former GPUSC startup engineer who arrived at TMI on Friday, March 30, 1979. TMIA Exh. 11, at 2.

164. The Board has no reason to believe that Mr. Illjes' loss of memory was simply a convenience. He was no more helpful with his memory to counsel for Licensee than he was when cross-examined by Intervenors. *E.g.*, Tr. 29,642 (Illjes, Blake). We conclude that Mr. Illjes simply does not have a good memory. By the time of his first interview, May 23, 1979, he had already begun to show signs that his memory was influenced and confused by after-acquired information. His recollection of a "hard bubble" of hydrogen in the head of the reactor vessel on March 28 is a very good example of this. Today he acknowledges that, during his earlier interviews, he had difficulty keeping his days straight. Tr. 29,637 (Illjes).

165. In sum, and without disparagement to Mr. Illjes, we conclude that the better course is to give little weight to Mr. Illjes' testimony from memory at the hearing or in earlier interviews. His analyses of the log and procedures, however, are credible. In any event, Mr. Illjes' first interview, on May 23, occurred well after the May 9 mailgram.

E. Gary P. Miller

166. On March 28, 1979, Mr. Gary P. Miller was the TMI station manager in charge of both units through their respective superintendents. He arrived at the station at about 7:00 a.m. on March 28 and, because of radiation indications, he soon became aware of the need to initiate the emergency plan. Mr. Miller served as emergency director. He assembled his senior and most qualified people into what was later labeled the "think tank." He placed Mr. Michael Ross, operations superintendent of TMI-1, in charge of operations (Mr. James Floyd, operations superintendent of TMI-2 was away on a training assignment). Mr. George Kunder, TMI-2 Technical Support Superintendent, was placed in charge of engineers. As we have noted throughout, SRO shift supervisors Chwastyk, Mehler, and Zewe, and perhaps other shift supervisors, were also present during much of the day and at the time of the pressure spike.

167. Mr. Miller testified from a mixture of his own memory and his understanding of events from transcripts of his previous statements. He testified that, on March 28, he heard a "thud" which was subsequently correlated to the time of the spike; that he asked others in the control room what the sound was; and that he was told something to the effect that it was the ventilation damper.¹⁷ Tr. 30,186-87 (Miller).

168. Mr. Miller testified further that today he cannot recall that he was aware on March 28 of either the pressure spike or the actuation of spray pumps. Tr. 30,190, 30,200 (Miller). He seemed to place greater reliance on previous statements to the effect that he was not aware of those events on March 28 than on his present memory. *Id.*

169. On April 14, 1979, Mr. Miller organized a taped, group discussion with key personnel on his own initiative to discuss and record the events of March 28. Mr. Miller prepared a statement from the transcript of that discussion. Joint Exh. 10.

170. Subsequently Mr. Miller was interviewed or deposed seven times, by our count, ending with the September 5, 1980 interview by the IE team investigating information flow. The Board has reviewed each passage cited to us by the parties (and two identified by the Board) relevant to whether on March 28th Mr. Miller was aware of the pressure spike and the containment spray actuation.¹⁸

171. On the whole his statements support his present testimony that he cannot recall being aware on March 28 of the pressure spike and the actuation of the spray pumps. Each of the statements is consistent with that position, but two of them raise questions about the matter. First, TMIA points to Mr. Miller's report of the group discussion of April 14, 1979, where he stated:

It should be noted that at approximately 1400 I heard a loud deep noise *and at that time the Reactor Building spray pumps* started and subsequent to the events of this day I learned that this was a 30 lb. pressure spike which occurred in the Reactor Building due to hydrogen.

Joint Exh. 10, at 21-22 (emphasis added).

172. Licensee responded by noting that Mr. Miller stated only that he heard a noise, not that he became aware of the spray. Licensee also

¹⁷ The Special Inquiry Group reported on the nature of this sound. It has also been referred to as "a thump," "a bump," "a whoomp" and the "popping" shut of the ventilation damper. The SIG states that the sound was most likely water hammer in the reactor building spray system piping. We are not aware of any other reliable explanation. Joint Exh. 106, at 42; (SIG Report, Vol. I).

¹⁸ Joint Exh. 10, at 21-22 (April 14, 1979); Joint Exh. 23, at 26, 70-71 (May 7, 1979); Joint Exh. 39, at 57-58, 63 (May 31, 1979); Joint Exh. 83, at 31-32 (September 20, 1979); Joint Exh. 85, at 25 (September 28, 1979); Joint Exh. 93, at 28-29 (October 18, 1979); Joint Exh. 95, at 18-22 (October 29, 1979); and Joint Exh. 122, at 26, 111-23 (September 5, 1980).

asserts that Mr. Miller used the pronoun “I” throughout the group report, when in fact the report undertakes to record the knowledge of the entire group. We agree that Mr. Miller misused “I” in the report where he seems to have embodied the entire TMI-2 emergency team into his own person. See Licensee Reply Finding 77, n.46 for examples.¹⁹

173. When questioned on September 5, 1980, about the cited portion of his April 14, 1979 report, Mr. Miller explained that the statement in question was the result of the meeting with his key people. Joint Exh. 122, at 114. At the hearing Mr. Miller testified that he had intended the April taping to record the combined recollections of all the participants for Mr. Miller’s own use in the investigations which were then just beginning. Tr. 30,261 (Miller).

174. A similar ambiguity appears in the transcript of Mr. Miller’s May 7, 1979 interview with the NRC:

The containment, we felt, was stable. The reasoning there would be that, up till 2 o’clock, and I’m aware we had a hydrogen excursion, *I was aware at 2 o’clock we had an excursion*, but up till that point, we had not seen anything above 4-5 pounds in the building. . . .

Joint Exh. 23, at 26 (emphasis added).

175. Later, on September 5, 1980, when the IE team was specifically concentrating on information flow, Mr. Miller’s May 7, 1979 statement was brought up. Joint Exh. 122, at 119. Mr. Miller explained that he had not intended to state on May 7, 1979, that on Wednesday, March 28, he was aware that there had been an excursion. He did not gain that awareness until Thursday or Friday, and the passage in question simply reflected that after-acquired knowledge. *Id.* at 120. In another portion of the same May 7, 1979 interview, Mr. Miller clearly indicated that he did not have knowledge on March 28 that the spike was real. Joint Exh. 23, at 71. The statement in question could easily be the result of a transcribing error or a misstatement by Mr. Miller. When considered in light of the many other statements made by Mr. Miller on the matter, we conclude that it is of no importance.

176. We have already discussed Mr. Chwastyk’s communication — or noncommunication — with Mr. Miller about the pressure spike. TMIA states that Mr. Mehler also testified that Mr. Miller was aware of

¹⁹ The Board noticed this tendency at the hearing, too. *E.g.*, Tr. 30,256, lines 18-20 (Miller). We also noticed several occasions when Mr. Miller awkwardly used the third person, “Gary Miller” where one would normally say “I,” “me,” “we” or “us.” *E.g.*, Tr. 30,133, 30,147, 30,152, 30,153, 30,192, 30,195, 30,254, 30,263 (Miller). Mr. Miller does not have the communication skills that might be expected in a person with his background.

the pressure spike on March 28. TMIA Proposed Finding 75, *citing* Joint Exh. 89, at 29 (Mehler) and Tr. 29,483 (Mehler). However, Mr. Mehler testified only that he assumed that Mr. Miller knew of the spike because he, Mehler, assumed that everyone in the control room knew about it, particularly those who were up at the console. Tr. 29,483 (Mehler). Moreover, Mr. Mehler had no recollection of discussing the pressure spike with Mr. Miller. Joint Exh. 115, at 14 (Mehler).

177. Mr. Marshall also assumed that Mr. Miller would be aware of actuation of the spray pumps from his position in the control room. TMIA Exh. 32G, at 10, 15-16. Mr. Zewe stated that he had found it hard to believe that anyone who was in the control room observing anything would have missed the spike, the turning off of the pumps, or the discussions. Joint Exh. 75, at 260.

178. TMIA also states that NRC Inspector James Higgins "testified that he believed Miller told him that he knew of the pressure spike on March 28." TMIA Proposed Finding 76. However, Inspector Higgins' statement (on June 21, 1979) was not that clear:

And, on Friday, people, I guess, were going over the charts and were looking at that and I started, picked it up and started to discuss it with plant management and came out and talked to Gary Miller about it and at that point he said that, in discussing at that point, he realized that he had heard it and that he had recognized it on Wednesday but that was the first time he had thought of it since then, that he had completely forgotten about it in the whole rush of events that occurred, and he stated at that point he remembered, clearly saying to the operators what was that, and looking over and the operators securing the building spray pumps and it was at that point on Friday that I believe, that plant management really realized that they had that pressure spike.

Joint Exh. 19, at 24-25.

179. In later interviews, Mr. Higgins stated that he believed that Mr. Miller had become aware of the spike either on Friday morning or a couple of hours before then. Joint Exh. 79, at 50-51 (Higgins). In any event, the impression Mr. Higgins gained was that Mr. Miller had heard something on March 28; it had registered momentarily on his mind; but that it was past history seconds later; and that it wasn't until Friday that Mr. Miller, looking back, understood its significance. Joint Exh. 199, at 23-24 (Higgins).

180. TMIA also mounts a circumstantial argument that Mr. Miller had been informed of a complete set of fifty-one incore thermocouple temperature readings taken on March 28 from which Mr. Miller properly interpreted the pressure spike as a hydrogen burn at the time it occurred. TMIA Proposed Finding 81.

181. Incore thermocouples were installed at TMI-2 to support the startup and test program. Although they were neither utilized by plant operating personnel nor relied upon in any procedures, incore thermocouple temperatures could be printed out on the control room alarm computer printout. The computer's range was limited to 700°F. Readings in excess of 700°F were printed out as question marks. Joint Exh. 106, at 898 (SIG Report). Mr. Miller, however, did not understand the significance of question marks on March 28. Tr. 30,133 (Miller).

182. Soon after he began the initial assessment of the plant's status, Mr. Miller directed Mr. Ivan Porter, the lead instrument engineer, to take incore thermocouple readings at a point at or before the computer inputs. Tr. 30,133 (Miller). This tactic was based in part upon Mr. Miller's experience from the Navy and the TMI test program. Tr. 30,138-39 (Miller). Mr. Porter reported back to Mr. Miller after the first set of readings were taken. At the hearing, Mr. Miller's memory of the report was poor. Tr. 30,143 (Miller). In an early interview, May 7, 1979, he stated that:

[T]he other thing is that I had Ivan Porter read out the thermocouples on the incores which are not a device that are extremely accurate, but they are an indicator, it came out question mark on the computer. He sent an instrument tech down, the instrument tech came back and Ivan told me that some read 200 some read 400 and some read 2500 and some didn't read. Then he explained to me that if they were really hot they would melt and form other junctions and that the calibration wouldn't be good anymore. So, you know, the bottom line here was that they're hot, they were hot enough that they scared you, as far as what you're looking for. It told me the reason the computer was off scale at 700 degrees. So I came in at 15 after 7, T_h was pegging high, T_c was pegged low. The in-cores were reading anywhere from 2500 or so, and I picked 2500 it could have been higher than that. But that, you know, I was looking for a gross indicator and I had it. Our goal was to maintain HP injection, maintain steaming, core cooling and attempt to go solid. I know that we were super heated and all that sort of thing, I don't think we tumbled to that kind of [logic] but we just knew we didn't have a control, we were out of control. We knew the situation was one we hadn't anticipated too many times here.

Joint Exh. 23, at 55-56.

183. Despite his poor present memory of the thermocouple results, Mr. Miller seemed positive in his testimony that on March 28 he regarded the results as unreliable. Tr. 30,144-45, 30,151, 30,152 (Miller).

184. Mr. Porter testified that from his knowledge of the condition of the thermocouples since the accident he would not agree that the millivolt readings from the thermocouples (the method used by his technicians) would represent actual temperatures. His particular concern on the 28th was that the temperature readings should have been very close to each other, but that he recalled readings scattered from 200° to

2200°F and that 200°F was unreasonable for that time. Tr. 31,484-86 (Porter).

185. Mr. Miller stated that he did not have the complete set of fifty-one thermocouple readings (with six readings exceeding 2200°F) available to him until a matter of weeks after the accident. Tr. 30,171 (Miller). But TMIA imputes knowledge on March 28 of all fifty-one thermocouple readings to Messrs. Porter and Miller based upon the deposition of Mr. Richard Lentz, a General Public Utility Service Corporation (GPUSC) engineer. TMIA Exh. 32. The Lentz deposition does not support TMIA. In fact, it appears that the opposite is true; the complete sets of readings did not become available until after March 28. *Id.* at 118-22.

186. TMIA also asserts that Mr. George Kunder's prior testimony indicates he knew that Mr. Porter had relayed incore temperature readings greater than 2200°F to Miller on March 28. TMIA Proposed Finding 94. Mr. Kunder testified in this proceeding, however, that he was not aware of incore temperature readings in that range until weeks after the accident. Tr. 30,060 (Kunder). Mr. Kunder testified that his knowledge concerning what information Porter had relayed to Mr. Miller was derived from having heard testimony on this point in hearings before the Kemeny Commission. Joint Exh. 59, at 13 (Kunder); *see also* Tr. 30,065-68 (Kunder). Mr. Kunder recalled that the temperatures data available to Mr. Miller on March 28 were not useful in diagnosing what was going on in the plant. Tr. 30,067 (Kunder).

187. Mr. Ross, deposed by the Special Inquiry Group, stated that the thermocouple readings provided to Mr. Miller, because of their very wide range, were not taken in a "serious vein." Joint Exh. 81, at 23-24; *see also* Joint Exh. 124, at 45-46 (Ross). Mr. Leland Rogers made a similar statement. Joint Exh. 87, at 29-30 (Rogers). TMIA cited a string of some twenty citations to the effect that temperatures greater than 2200°F were known in the "think tank" on March 28 and communicated to Mr. Miller. TMIA Proposed Finding 95. We checked each of the citations and could find none to the effect that readings of temperatures greater than 2200°F were believed to be reliable on March 28.²⁰

188. Finally, TMIA argues that Mr. Miller's earlier statements that he was unaware of the alarms and the engineered safeguards (ES) signal at the time of the spike are not credible. TMIA Proposed Finding 75. Mr. Miller's testimony was that he cannot recall the alarms. Tr. 30,199

²⁰ However it is clear that the instrument technicians actually measuring the incore signals believed at the time that the high readings accurately indicated high temperatures. Mr. Yeager stated "Christ, this thing is melting down!" Both Mr. Yeager and Instrumentman Wright believed that the core was uncovered. TMIA Exh. 32(c) (Yeager).

(Miller). Apparently the ES signal correlated to the pressure spike was the third ES signal of the day (Tr. 30,195 (Miller)), and there had been many alarms throughout the day (Joint Exh. 136, at 53-54). We cannot find either way whether Mr. Miller heard the alarms and was aware of the ES signal at the time of the spike.

Board Conclusions on Mr. Miller

189. Mr. Miller's testimony at the hearing was not very instructive to the Board. We have relied more upon his previous statements, the statements of others, and the circumstances in our effort to determine whether on March 28 Mr. Miller interpreted the pressure spike and containment spray actuation in terms of hydrogen combustion and core damage.

190. The question of whether Mr. Miller, on March 28, knew about the pressure spike and the containment spray actuation is a legitimate one. There are several circumstantial factors indicating that he should have been aware of those events. Others, similarly situated, were aware of the spike. There were alarms and the relatively rare engineered safeguard (ES) signal. There was increased activity among the operators. Mr. Miller heard the noise, which was remarkable enough to prompt him to ask about it. He was actually in the process of gathering data for the impending report to the Lieutenant Governor, thus, presumably, he was sensitive to changes in plant status.

191. On the other hand, we place little significance in the early reports of incore thermocouple readings exceeding 2200°F. These readings were not then believed. In any event, high incore thermocouple readings would not tell Mr. Miller that the pressure spike was real if he did not even know about the pressure spike. Those who knew the spike was real, Mr. Mehler for example, did not dwell on it, and immediately went to other tasks. Mr. Chwastyk was rather certain that Mr. Miller was preoccupied with his preparation for the trip to the State Capitol. His departure for the State Capitol is inconsistent with an appreciation that there had just been a real pressure spike sufficient to actuate the spray pumps.

192. As improbable in retrospect as it might seem that a containment pressure spike of some 30 pounds would not be noticed by Mr. Miller, it is no more improbable — again in retrospect — than the fact that other severe plant conditions were not understood on March 28. Finally, in his early statements on the matter, he has consistently and believably asserted that he did not know about the pressure spike on March 28.

193. The preponderance of the evidence is that Mr. Miller did not know about the spike or spray actuation on March 28. The most we could find from the evidence is the possibility, averred to by NRC Inspector Higgins, that Mr. Miller, on March 28, may have recognized a pressure spike (perhaps the securing of spray pumps); put it out of his mind until the morning of March 30; then recalled it when the hydrogen burn was understood. In any event, there is no reliable evidence that on March 28, 1979, Mr. Miller interpreted the pressure spike and containment spray actuation in terms of hydrogen combustion and core damage.

F. John G. Herbein

194. Mr. John G. Herbein was Vice President of Generation, Metropolitan Edison Company, at the time of the accident. He arrived at the observation center (also known as the "Visitors' Center") near Three Mile Island at about 11:45 a.m. on March 28 and remained at the observation center. He was in radio contact with the TMI-2 control room throughout the day. His primary contact was with his subordinate, Gary Miller. Mr. Herbein testified that he was not aware on March 28 of incore thermocouple temperature readings in the range of 2400°F. Tr. 30,299-301 (Herbein). Nor was he aware on March 28 of a pressure spike, having become aware of it through Mr. Lowe on the 30th or 31st of March. Tr. 30,418 (Herbein).

195. TMIA alleges that Mr. Herbein's testimony is incredible because Mr. Miller passed such information on to Mr. Herbein. TMIA Proposed Findings 96, 100, 101. Since we find that Mr. Miller did not know about the pressure spike and hydrogen burn on March 28, we cannot, of course, find that he passed this information on to Mr. Herbein. However, as we noted above, Mr. Miller and others had the early thermocouple readings and they could have passed this information to Mr. Herbein. TMIA Proposed Findings 96-98.

196. Mr. Herbein testified before the Kemeny Commission on July 29, 1979, that the high incore temperature readings were relayed to him on March 28, but because of the question marks, zero readings and some readings as high as 2400°F, the readings looked as though they were "woefully inaccurate." Joint Exh. 61, at 15 (Herbein). At the hearing, however, Mr. Herbein testified that he had not intended to tell the Kemeny Commission that on March 28 he had information to the effect that incore readings were as high as 2400°F. Tr. 30,304 (Herbein). He stated that he has been asked that question "again and again" but nowhere did he indicate that he had that knowledge on March 28. *Id.* Contrary to his testimony, however, the Board can identify only one other

statement by Mr. Herbein on the incore temperature readings — his deposition to the Special Inquiry Group on September 19, 1979. Joint Exh. 82, at 17-18 (Herbein). There his testimony was much the same as to the Kemeny Commission. He thought that he had had a conversation with the control room on March 28 about Mr. Miller seeing a few incore thermocouple readings — some question marks, some zeros, some high, and some very low. The range of data and missing points indicated to Mr. Herbein that the data were basically unreliable and inconclusive. *Id.*

197. The Board concludes that Mr. Herbein's testimony that he did not know about the early high incore temperature readings is, as alleged by TMIA, not credible, in light of his two earlier statements. While we do not understand how Mr. Herbein could have been so positive about the matter in his testimony (Tr. 30,304-05), the matter is not important and does not reflect upon his candor. His earlier statements were about the same as every other informed person, i.e., the scatter of thermocouple readings was illogical and the readings were thought to be unreliable.

198. The preponderance of the evidence establishes that Mr. Herbein did not know about the pressure spike on March 28, much less that he correlated it with hydrogen burn and core damage. He possessed about the same information as did Gary Miller about the early incore thermocouple readings.

G. Knowledge of Other Individuals

199. Virtually every individual in a position to have relatively direct knowledge of the pressure spike and containment spray actuation has been interviewed, some many times, since the accident. As far as we can determine, statements from each of them have been received into evidence. There has been almost an open-ended opportunity for the parties in this proceeding to discover and to present such information.

200. Mr. Hugh McGovern, a control room operator, dictated a chronology of events to Mr. Marshall, operations engineer, at about 3:00 p.m. on March 28th. As relevant, he noted:

1400 Had a [loss] of 2-32A and 2-42A[,] loss of radiation area monitors and an RX building pressure spike that went off scale on narrow range meter — definite spike straight up, straight back down ... had full Rx building (spray pumps and [BS-V1's], DH-V8's) isolation and cooling. Someone secured spray pumps, shut BS-V1's and DH-V8's (Hugh did) and unisolated equipment for building.

Joint Exh. 1, at 2, 5. Licensee correctly notes that this statement indicates only an awareness that the spike had occurred; it attributes no significance to the spike.

201. In a May 4, 1979 Met Ed interview, Mr. McGovern explained the appreciation that he and others had of the significance of the spike:

[I]t was exactly when we had the reactor building pressure spike. At the time I don't think anybody thought it was an explosion. We thought that we just lost a bus. . . . At the time we thought the spike on the recorder was an electrical spike and not an actual pressure spike.

Joint Exh. 21, at 7-8.

202. The best inference to be drawn from Mr. McGovern's statements is that he regarded the spike at the time of its occurrence to be a signal anomaly.²¹

203. Mr. Craig Faust, a control room operator, stated in an April 6, 1979 interview with Met Ed:

Q What about the reactor containment building spike?

A We probably had some sort of explosion because that's what it looked like; shock waves.

Q Did you hear anything?

A No I didn't.

* * *

Q The spray pumps came on automatically?

A Right.

Joint Exh. 8, at 5-6.

204. Licensee argued that Mr. Faust's statement that they probably had "some sort of explosion" should be read as a retrospective observation, and that it provides no basis for a belief that Mr. Faust understood the spike to represent hydrogen generation or zirconium/water reaction. This reading is probably correct because, in an NRC interview of Mr. Faust on April 21, 1979, he stated:

²¹ Licensee offered into evidence portions of a TMIA deposition of Mr. McGovern tending to corroborate the statement that the spike was regarded as electrical, but the Board Chairman vaguely "accepted" the deposition as compared to receiving it into evidence. Tr. 29,542. TMIA now objects to Licensee's citation to the deposition on that basis. We see no need to enter that fray. The problem with both the deposition and the May 4, 1979 statement is that neither indicates when Mr. McGovern later became aware that the spike was real.

The only other thing we had was this spike in the building, which I believe we are *now* interpreting *possibly* to a hydrogen explosion.

Joint Exh. 12, at 82-83 (emphasis added).

205. The best inference to be drawn from Mr. Faust's statements is that on March 28 he understood that there was an actual pressure spike and containment spray actuation but that he did not then understand the significance of those events. See Joint Exh. 2, at 11 (Faust); *but see* Joint Exh. 28, at 145; Joint Exh. 133, at 7 (Faust alludes to instrumentation problem).

206. On April 21, 1979, Mr. Donald Berry, an engineer who was maintaining a log of events in the control room at the time of the pressure spike, was interviewed by the NRC:

A People didn't really, I don't think, understand at that point [spike] what happened. I didn't understand at that point what happened. Sprays came on. We know that and then they, as I logged there, they turned the sprays off, you know, the pressure had spiked up and came back down.

Q Why did they stop the sprays?

A The pressure was back down to normal or close to normal level and they turned the spray off. So at that point I don't think anyone really realized and it wasn't *until we were reading about the spike in the paper* that there was a possible hydrogen, and I am going back things through my mind, when it could happen, I was there from 7:00 in the morning until 6 o'clock the next morning and then it dawned on me that we had the building spike. And that was the only way I could see that people must have later realized and that is what they tied it to.

Joint Exh. 13, at 17-18 (emphasis added).

207. Mr. John Flint, a B&W employee who was in the control room throughout the 28th, in an April 23, 1979 NRC interview, stated:

In this range of time, heard a double thump, and at the time we had been in and out of respirators. I assumed that the sound I heard was just a ventilation cycling at this time. There appears to be a correlation with this and *the reported* hydrogen detonation in the building at that time.

Joint Exh. 14, at 6 (emphasis added).

208. In an April 23, 1979 NRC interview, Shift Supervisor William Zewe stated:

I was right on the recorders themselves and they just went (whistle) up and right down. And I said, "What the heck was that." . . . And he said, "Bill, we've started the buildings spray pumps." And I said, "What?" And so I looked over, and they were running and I pondered that for about 30 seconds. I guess, because I thought,

there just must have been some electrical fault surge from the electromatic, that caused the building spray pumps to come on.

Joint Exh. 15, at 33. Mr. Zewe left no doubt as to his understanding of the pressure spike indications:

I was convinced at that time it was just a false electrical signal.

* * *

It never entered my mind that it was a hydrogen explosion, at that time at all.

Id. at 38. He stated that he discussed the spike with Joseph Chwastyk and Michael Ross, and they also concluded it was some sort of electrical transient. Joint Exh. 75, at 256-59. *See also* Joint Exh. 119, at 42-44.

209. In a May 9, 1979 NRC interview, Mr. Joseph Logan, the TMI-2 Superintendent, stated that although he was in the control room at the time, he did not recall a report that reactor building sprays had activated. He did hear a noise, asked what it was, and someone reported it was the ventilation system. Joint Exh. 25, at 72-73; Joint Exh. 77, at 14-15. Mr. Ivan Porter, lead instrumentation engineer, stated he was not aware of the pressure spike on March 28, 1979. Joint Exh. 70, at 12-14. Mr. George Kunder, in charge of technical assistance, testified in this proceeding and has previously stated that he was not aware of the pressure spike on the 28th. Mr. Kunder, who also went to the State Capitol with Mr. Miller, was collecting data for that purpose at the time of the spike. Tr. 29,994 (Kunder); Joint Exh. 72, at 25-27.

210. Mr. Leland Rogers, B&W's site operations manager, stated that he was not aware of the pressure spike. He did hear a "bang" but was told it was ventilation dampers. Joint Exh. 87, at 47-48; Joint Exh. 100, at 49-50.

211. Two NRC inspectors who were in the control room — James Higgins and Donald Neely — were not aware of the pressure spike on the 28th. Joint Exh. 79, at 51 (Higgins); Joint Exh. 129, at 22-24 (Higgins); Joint Exh. 90, at 16-17 (Neely); Joint Exh. 130, at 8-9 (Neely).

212. Control room operators Edward Frederick and Lynn Wright were aware of the pressure spike, but did not understand it. They attributed it to an electrical or instrument problem. Joint Exh. 28, at 143-47 (Frederick); Joint Exh. 71, at 11-13 (Frederick); Joint Exh. 75, at 264-65 (Frederick); Joint Exh. 111, at 3-7; Joint Exh. 116, at 7-13 (Wright).

213. Mr. Adam Miller, a shift foreman in the control room, was also aware of the pressure spike but did not understand it. He believed it was due to a sudden escape of steam when the EMOV was opened. Joint Exh. 137, at 4-5.

214. Mr. Walter Marshall, an operations engineer in the control room at the time of the spike, was aware of the spike. He stated that they could not come up with any reason for the pressure spike other than an electrical system or instrument fault. Joint Exh. 31, at 23.

215. Mr. Michael Ross, the TMI-1 Supervisor of Operations who was in the Unit 2 control room providing assistance, and near the console at the time, was also aware of the pressure spike, but he attributed it to an instrument problem. Joint Exh. 33, at 3-5; Joint Exh. 81, at 42-44; Joint Exh. 124, at 47-48.

H. Questionnaire Responses

216. In order to respond to many of TMIA's first set of interrogatories, Licensee prepared a thirteen-page questionnaire which was distributed to 456 individuals. Those receiving the questionnaire were present and past GPU System and B&W employees who might be in a position to have information about the pressure spike, spray actuation, the noise heard coincident with the spike, and any realization of hydrogen combustion and core damage inferred from the pressure spike. TMIA Exh. 32(a), at 1.

217. Question 3(a) of the questionnaire asked:

On Wednesday, March 28, 1979, were you aware or informed that a hydrogen explosion or combustion had occurred in the TMI-2 containment building?

Twenty-one individuals answered "yes" to question 3(a). Affirmative answers to question 3(a) would, if correct, be contrary to Licensee's avowed understanding of the facts. Therefore, Licensee contacted all twenty-one persons who responded "yes." In all but one instance (one person, an ex-employee, could not be reached), Licensee discussed with each person his or her response to question 3(a). Licensee's discussion with each person amounted to asking each person whether he or she understood question 3(a). Each of the twenty reported that his or her response to question 3(a) was in error; that in fact each had no information about hydrogen on March 28, or that each could not recall when each first learned about hydrogen. Several were quite specific as to the time and circumstances of their learning about hydrogen on another date. As a result, Licensee prepared and sent a letter to each individual confirming Licensee's understanding of the conversation. Subsequently Licensee sought acknowledgment of its letter from each person contacted (except one who is not currently an employee of the GPU System Companies). TMIA Exh. 32(a), Attach. 3.

218. The Board authorized TMIA to depose and to call as witnesses any six of the twenty respondents. TMIA called Thomas Mulleavy, Joseph DeMan, Curtis Conrad, David Zeiter, A.P. Rochino, and Robert Boyer. Counsel for TMIA cross-examined all six extensively concerning their responses and their discussions with Licensee's attorneys. As might be expected, as a group, the six witnesses called by TMIA had the weakest and most questionable comments on Licensee's followup. *Id.* Each of the six, however, explained in his testimony that his original response to the questionnaire was as the result of misunderstanding. As perceived by the Board, there was plain carelessness in reading. Tr. 31,334 (Mulleavy); Tr. 31,357 (DeMan); Tr. 31,387 (Conrad); Tr. 31,403-04 (Zeiter); Tr. 31,430, 31,432-33 (Rochino); and Tr. 31,558 (Boyer).

219. Messrs. Mulleavy (Tr. 31,334), DeMan (Tr. 31,350-51), and Rochino (Tr. 31,427, 31,434-36, 31,449) testified that it was after the 28th that they learned about the hydrogen burn. Mr. Boyer could not recall when he learned about it. Tr. 31,556-58 (Boyer). Mr. Conrad learned about the hydrogen combustion in the containment building at the hearing during cross-examination, apparently believing that the combustion under discussion was one he thought to be in the reactor vessel itself. Tr. 31,378-80 (Conrad).

220. Similarly, Mr. Zeiter thought that the hydrogen bubble in the reactor vessel, a matter of concern several days after the accident, was the same phenomenon as the pressure spike on March 28 until a couple of weeks before his testimony in this proceeding. Tr. 31,402 (Zeiter).

221. TMIA meets this testimony quite simply: The Board should accept the initial responses to the questionnaire as accurate and regard the testimony of each of them in this proceeding as noncredible. TMIA Proposed Finding 133. We are urged to find that the quality of the testimony by TMIA's six witnesses is so poor that we must "find they were pressured by company attorneys to change their testimony for purposes of these hearings." TMIA Proposed Finding 134. In essence, counsel for TMIA charges the six witnesses with perjury and the company attorneys with subornation of perjury. *See also* TMIA Proposed Findings 103, 111, 116, 120, 127, and 129. The charge is disruptive, unfounded, and professionally reckless. TMIA's analysis of the record based upon its perjury/subornation-of-perjury theory is frivolous and we decline to evaluate it. The Board itself, however, is satisfied that none of the six witnesses knew on March 28, 1979, that there was a hydrogen combustion in the containment. Their testimony to that effect is representative of the twenty-one witnesses who originally answered "yes" to question 3(a).

I. Knowledge of GPU Service Corporation (GPUSC) Engineers

222. On the day of the TMI-2 accident (March 28, 1979), Mr. Richard Wilson, Director of Technical Functions, GPUSC, informed Mr. Robert Keaten (GPUSC) of the event and directed Mr. Keaten to arrange to send some of the GPUSC engineers to the Three Mile Island facility for an investigation of what had happened.²² TMIA would have the Board find that these engineers interpreted the pressure spike in terms of the generation of substantial amounts of hydrogen and serious core damage from information they learned on March 28 or early on March 29, thus, we presume, undercutting the credibility of the Dieckamp mailgram. TMIA Proposed Findings 137-166.

223. TMIA states that Mr. Gary Broughton, who was GPUSC's Control and Safety Analysis Manager, was given the responsibility to obtain data to put together a sequence of events and to address the question of whether the core was uncovered. TMIA Proposed Findings 138-139. Mr. Broughton testified, however, that he did not know whether the question "was the core covered" was a specific assignment. Rather, he suggested that it was the type of question that they would have been able to answer after the data were collected and subsequently analyzed. Tr. 31,708 (Broughton).

224. While TMIA points to Mr. Broughton's testimony that "they might collect strip chart recordings to evaluate the transient" (TMIA Proposed Finding 139), that statement alone creates a false impression of the materiality of strip charts to GPUSC engineers. Mr. Broughton testified: "Generally when we looked at a transient like this we didn't rely on strip charts. . . . In some cases we had to fall back on the strip charts because that information wasn't available through some other source." Tr. 31,081 (Broughton).

225. TMIA attributes generally to the GPUSC engineers knowledge of incore thermocouple temperatures greater than 2500°F. TMIA Proposed Finding 137. Notes taken by the first GPUSC engineer to arrive at TMI — James Moore — indicate that Mr. Moore was told at approximately 5 p.m. on March 28 by Richard Bensel about incore thermocouple readings greater than 2500°F. TMIA Exh. 32K, deposition Exh. 2, at 6. TMIA continues, however, claiming that "Mr. Moore stated that

²² At our hearing, Mr. Keaten could only remember specifically having arranged for Messrs. Gary Broughton and Richard Lentz to go, but said there may have been others. Tr. 31,237-39 (Keaten). Licensee lists the following GPUSC engineering personnel who went to Three Mile Island on March 28: Messrs. Julien Abramovici, Gary Broughton, George Lehmann, Richard Lentz, and James Moore. Licensee Proposed Findings, Appendix C.

after being briefed about temperatures greater than 2500°F he understood that there had been some core damage.” TMIA Proposed Finding 142, *citing* TMIA Exh. 32K, at 126. However, the citation indicates that Mr. Moore concluded that there was core damage based on a 1000-R/hr dome reading — information also provided to Mr. Moore by Mr. Bensel at 5 p.m. Mr. Moore’s statement only indicates he reached a conclusion regarding core damage after the 5 p.m. briefing, and does not indicate that he based his conclusion on high incore thermocouple readings as TMIA suggests. Mr. Moore, in fact, testified that he did not know that core temperatures in excess of 2200°F would indicate that a zirconium-water reaction would occur or that hydrogen would be produced. TMIA Exh. 32K, at 87-88 (Moore).

226. TMIA asserts that Mr. Moore has stated that he subsequently informed Mr. Broughton of all relevant information including the incore thermocouple temperature readings greater than 2500°F. TMIA Proposed Findings 143. Not one of TMIA’s citations, however, supports this claim. Mr. Broughton, as early as in a June 11, 1979 NRC IE interview, stated that he did not have any knowledge of incore thermocouple readings on the 28th. The only affirmative piece of evidence before the Board — Mr. Broughton’s IE interview — indicates that Mr. Broughton was not informed of incore thermocouple temperatures. Joint Exh. 48, at 29 (Broughton). The Board also rejects TMIA’s claim that “GPUSC engineers were also aware that a significant amount of hydrogen had been produced by a zirconium-steam reaction.” TMIA Proposed Finding 146. TMIA cites no evidence to support this.

227. TMIA attributes to the GPUSC engineers knowledge of the pressure spike. TMIA first refers to a briefing of the engineers by George Kunder at about 6 p.m., but TMIA does not claim that any mention was made of the pressure spike. TMIA Proposed Finding 147.

228. TMIA claims that Mr. Lentz photocopied the strip chart on the evening of March 28. TMIA Proposed Finding 152. TMIA ignores Mr. Lentz’s present testimony and prior statement to the effect that he did not obtain a photocopy of the pressure spike on that day. Lentz, ff. Tr. 32,972, at 2. Mr. Lentz previously stated in an NRC interview on June 1, 1979, that he photocopied no analog output on March 28. Joint Exh. 47, at 9 (Lentz). TMIA claims that Mr. Lentz “was responsible for preserving analog data, including strip charts on March 28.” TMIA Proposed Finding 161. But Lentz testified that this responsibility was not assigned to him until a day or two after the accident. Tr. 32,997 (Lentz).

229. TMIA cites no evidence indicating that Mr. Lentz photocopied the strip chart. Instead, TMIA refers to Theodore Illjes’ NRC IE interview (TMIA Proposed Finding 152), in which Mr. Illjes stated that on

March 28 someone (whom Illjes could not remember) asked for a copy of the strip chart. See Joint Exh. 36, at 9 (Illjes). Mr. Illjes stated that he could not remember if the person was an NRC inspector or a B&W representative. *Id.* Even if the Board were to accept Illjes' statement in his IE interview, the Board could not accept TMIA's assertion that "it must have been Lentz who made the photocopy." TMIA Proposed Findings 153.

230. Mr. Illjes' NRC IE interview cannot, however, be accepted at face value — particularly with regard to whether the strip chart was photocopied on the 28th. We have previously noted that Mr. Illjes' memory has been consistently very poor. § IV.D, *supra*. Mr. Illjes' statement has been widely discredited. The possibility that the strip chart was photocopied on March 28 was examined and rejected in NUREG-0600 and in the SIG Report. Mr. Illjes now believes that the discussion of hydrogen, which he remembered in conjunction with the chart being photocopied, occurred on Friday, March 30. Tr. 29,595, 29,651 (Illjes). In addition, other testimony and physical evidence strongly indicates that the pressure chart was not removed on the 28th. Joint Exh. 60, at 9-12; Joint Exh. 107, at 61; Tr. 29,407-09 (Chwastyk).

231. TMIA's last point is that Mr. Keaten's notes "confirm this hypothesis" that GPUSC engineers understood the pressure spike. TMIA Proposed Finding 166. This point rests on the premise that Mr. Keaten's notes were written on March 29. We have found elsewhere, however, that they were written on March 30. § III.A.4, *supra*.

232. There may be some evidentiary ambiguity as to who copied the pressure spike portion of the reactor building pressure recorder strip chart and when the copies were made. We have not attempted to resolve this previously, pending a determination as to its relevancy to the state of knowledge of the GPUSC engineers. The Board concludes that the question of who and when is in no way a pivotal or relevant issue with respect to the depth of understanding about the TMI-2 accident acquired by the GPUSC engineers on the 28th or 29th of March.

233. The Board finds that the GPUSC engineers first sent to TMI on March 28 did not gain an awareness of the significance of the pressure spike on the 28th or early on the 29th of March 1979.

V. WHETHER, IN THE NRC STAFF'S VIEW, MR. DIECKAMP BELIEVED THE STATEMENTS IN THE MAILGRAM WERE TRUE

234. The Licensing Board originally disposed of its concern about the Dieckamp mailgram based upon the report of the NRC Staff's in-

vestigation into information flow, NUREG-0760,²³ and the testimony of the lead Staff investigator, Mr. Norman C. Moseley. In its remand opinion, the Appeal Board explained that our reliance upon NUREG-0760 and Mr. Moseley's testimony was misplaced. We erred primarily because that report was too summary; because our questioning of Mr. Moseley on the point was insufficiently penetrating; because there was then no firm record evidence that Mr. Dieckamp was ever interviewed on the matter; and because we should have examined Mr. Dieckamp on our own. ALAB-772, 19 NRC at 1266-67.

235. Whether NUREG-0760 is an adequate report of the IE investigation, whether Mr. Moseley's views on the Dieckamp matter are sound and, in fact, whether the investigation was complete have, to a large extent, become moot. With the aid of the parties, we have explored the issues as carefully as we know how and have not relied upon the conclusions of NUREG-0760 or those of Mr. Moseley in his early testimony.

236. The Board has not used NUREG-0760 for disputed factual findings. We have purposely avoided referring to the report except to determine whether we have left unexplored avenues of inquiry suggesting that the mailgram was false.

237. When Mr. Moseley previously appeared before the Board on February 18, 1981, he testified that, based upon his September 12, 1980 interview with Mr. Dieckamp, Mr. Moseley believed that Mr. Dieckamp's intent in sending the mailgram was to tell the truth, and that in fact Mr. Dieckamp believed the mailgram was true. Tr. 13,063-64 (Moseley).

238. Even though we do not depend upon Mr. Moseley's conclusions as to whether Mr. Dieckamp believed his mailgram was accurate, it was appropriate and useful, in a negative sense, to hear from Mr. Moseley in the remanded proceeding. That is, in view of the Appeal Board's concern, our duty was to determine whether Mr. Moseley and the IE investigating team possessed information tending to incriminate Mr. Dieckamp.

239. Mr. Moseley, now employed by the Institute of Nuclear Power Operations, testified for the Staff in the hearing on remand. He still believes that Mr. Dieckamp believed the mailgram was true. Moseley, ff. Tr. 29,816, at 4. He explained that he and Terry Harpster of the NRC Staff interviewed Mr. Dieckamp under oath and on the record on September 12, 1980, and believed then that he was sincere. *Id.* As noted, it is now our task, not Mr. Moseley's, to judge Mr. Dieckamp's credibility. However, Mr. Moseley also added objective reasons for his

²³ Staff Exh. 5 in the main hearing.

opinion. He believes that it was beyond the range of credible operator knowledge to infer that amounts of hydrogen sufficient to reach a flammable concentration in a 2 million ft³ containment would exist at 10 hours after the initiation of the event. Mr. Moseley also asserted his belief that no one present in the control room had concluded on March 28 that hydrogen caused the pressure spike. *Id.*

240. Mr. Moseley made himself available for extensive cross-examination, and in our view nothing inconsistent with his opinion was developed. He was a credible witness. Tr. 29,817, *et seq.* (Moseley). We listened to his testimony carefully and have since read many of the depositions conducted by him and the IE team in September 1980. We are satisfied that Mr. Moseley was well informed and had a basis for his opinion.

241. TMIA presented the testimony of David H. Gamble, who, during the relevant period had been employed as a criminal investigator by the NRC Office of Inspector and Auditor. He had been assigned to participate in the investigation directed by Mr. Moseley. The purpose of Mr. Gamble's testimony was to disparage the methods and results of the investigation. Gamble, ff. Tr. 30,522 (*passim*).

242. Mr. Gamble was not a very convincing witness and did not seem to understand the investigatory scheme used by the IE team. For example, Mr. Gamble makes the superficially shocking charge that Mr. Moseley directed that portions of the report of the investigation be drafted before the interviews. *Id.* at 2. Mr. Gamble felt that writing sections of the report based upon prior interviews and previously gathered documents tended to predetermine the conclusions. *Id.* at 4. But Mr. Gamble scarcely acknowledged the fact that the order from Mr. Victor Stello to Mr. Moseley establishing the information-flow task force, expressly and prudently directed the team to rely on available interview transcripts and testimony "to the maximum extent possible" and to conduct additional interviews only when necessary. Staff Exh. 2, at 2. There was a very large body of carefully developed, preexisting information. Even so, the IE team conducted many additional interviews which formed an important part of the conclusions of NUREG-0760.

243. As is evident throughout this Decision, the Board has cited to many of the interviews conducted by task force members Messrs. Moseley, Harpster, Craig, Hoefling, and Gamble in carrying out Mr. Stello's order to investigate the flow of information following the accident. One of Mr. Gamble's allegations is that Mr. Moseley placed unwarranted restrictions on the questioning of witnesses during the information-flow depositions. If true, the quality of the interviews would be diminished.

244. As Mr. Gamble explained, Mr. Moseley (1) established the scope of the questioning; (2) required that questions be prepared before the interview, based upon available information; (3) required that one principal questioner at a time ask questions, that other questioners defer their questions until the end of the interview or slip the question to the principal questioner at the time; (4) at the end of the planned interview, Mr. Moseley would, off the record, organize and approve followup questioning. Tr. 30,560-73 (Gamble). Mr. Gamble could not recall Mr. Moseley prohibiting any questions in any interview attended by Mr. Gamble. Tr. 30,665.

245. If Mr. Gamble had been in charge of the investigation, he would not have prepared word-for-word questions in advance and would have permitted all five of the interviewers to ask questions whenever each felt like it. *E.g.*, Tr. 30,561, 30,567. Mr. Gamble was free to ask any questions whenever he chose. *E.g.*, Tr. 30,562.

246. The Board has read the relevant portions of most, perhaps all, of the pertinent information-flow interviews. We find no sign that the questioners were frustrated. There were many followup questions. Mr. Moseley's ground rules for the interviews were logical and conducive to order, accuracy and thoroughness — not to mention fairness to witnesses. Our only criticism might be that he should not have exempted Mr. Gamble from following the protocol, but as it turned out, Mr. Gamble asked relatively few questions.

247. In sum, while the Board did not rely upon the conclusions of NUREG-0760 in this proceeding, we relied upon its underlying interviews. We find no fault with the Staff's information-flow investigation as it pertains to the Dieckamp mailgram issue.²⁴

VI. CONCLUSIONS OF LAW

248. The pressure spike and the actuation of the containment building spray system was first interpreted in terms of a hydrogen combustion at about 11:00 p.m. on March 29, 1979, by Mr. William Lowe. At that time he also concluded that the hydrogen was produced by a zirconium and water reaction in the reactor core. Several hours later he concluded that the core had been extensively damaged.

²⁴ The Board has not addressed all of Mr. Gamble's criticisms of the NUREG-0760 investigation (TMIA Proposed Findings 273-283). We agree with the Staff that they are inconsequential. Moreover, they have turned out to be irrelevant. The Staff's proposed findings on Mr. Gamble's testimony accurately reflect our views. Staff Proposed Findings 57E-57P.

249. Mr. Dieckamp learned of Mr. Lowe's discovery on March 30, 1979.

250. The statements by Joseph Chwastyk that, on March 28, 1979, he knew the pressure spike was real are accurate. Mr. Chwastyk's statements that, on March 28, he knew that the pressure spike was caused by a hydrogen explosion are not accurate. His statements that on March 28 he knew that there had been a zirconium/water reaction also are not accurate.

251. The statement by Brian Mehler that he knew that on March 28, 1979, an order was given not to operate electrical equipment in order to avoid igniting hydrogen is not accurate, nor does Mr. Mehler believe his statement is accurate.

252. The statement by Theodore Illjes that on March 28, 1979, there was a discussion that a hydrogen combustion caused the pressure spike is not accurate, nor does Mr. Illjes believe it is accurate.

253. No statement by any participant to the effect that on March 28, 1979, he knew that there had been a hydrogen combustion is accurate. No one knew on March 28, 1979, that there had been a hydrogen combustion in the containment of TMI Unit 2, or that there had been a zirconium/water reaction in the reactor core.

254. On May 9, 1979, when Mr. Dieckamp sent his mailgram to Congressman Udall, he believed that it was accurate. At that time there was no evidence to the contrary. Subsequent information to the contrary is not accurate.

255. Mr. Dieckamp was deeply involved in the recovery of the accident at TMI-2. He had gathered information to present to Senator Hart's Subcommittee about the accident several weeks before the mailgram. He had a reasonable basis to believe that the mailgram was accurate and did not act in careless disregard of the facts in sending the mailgram.

256. Subsequently, when the statements of Messrs. Chwastyk, Mehler, and Illjes came to light, and when other information became available to Mr. Dieckamp that there was some evidence that someone on March 28, 1979, had interpreted the pressure spike and containment spray actuation in terms of reactor core damage or hydrogen, it would have been functionally pointless to formally notify the NRC of this information. The NRC was either the developer of that information or was receiving it simultaneously with Mr. Dieckamp. We do not reach the question as to whether Mr. Dieckamp, in the narrow legal sense, had a duty to formally notify the NRC of such information because that question is unrelated to any question of integrity.

257. From the foregoing conclusions, it necessarily follows that no relevant information was withheld.

258. This aspect of the remanded proceeding is decided without reservation or condition in favor of the Licensee.

VII. APPEALS

Any party may take an appeal from this Decision by filing a Notice of Appeal within 10 days after service of this Partial Initial Decision. Each appellant must file a brief supporting its position on appeal within 30 days after filing its Notice of Appeal (40 days if the Staff is the appellant). Within 30 days after the period has expired for the filing and service of the briefs of all appellants (40 days in the case of the Staff), a party who is not an appellant may file a brief in support of or in opposition to the appeal of any other party. A responding party shall file a single, responsive brief *only* regardless of the number of appellants' briefs filed. *See* 10 C.F.R. § 2.762.

THE ATOMIC SAFETY AND LICENSING BOARD

Sheldon J. Wolfe
ADMINISTRATIVE JUDGE

Gustave A. Linenberger, Jr.
ADMINISTRATIVE JUDGE

Ivan W. Smith, Chairman
ADMINISTRATIVE LAW JUDGE

Bethesda, Maryland
August 19, 1985

[The Appendices have been omitted from this publication but may be found in the NRC Public Document Room, 1717 H Street, NW, Washington, DC 20555.]

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

**Morton B. Margulies, Chairman
Dr. Jerry R. Kline
Mr. Frederick J. Shon**

In the Matter of

**Docket No. 50-322-OL-3
(Emergency Planning)**

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

August 26, 1985

In this concluding Partial Initial Decision, the Board finds no reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency at the Shoreham Nuclear Power Station, and therefore no operating license shall be issued.

**EMERGENCY PLANNING: STATE AND LOCAL
GOVERNMENT PARTICIPATION**

Lack of a plan for concerted action among the State, local government, and utility in response to a radiological emergency creates a risk of release to the public of conflicting and confusing information in the event of a radiological emergency at Shoreham. The State and local governments have indicated that, in an emergency, they would pursue a course of action independent of that of the utility. The absence of a cooperative effort constitutes a substantial deficiency in the Shoreham emergency plan.

EMERGENCY PLANNING: STATE STATUTES

Where State statutes prohibit the utility from performing activities essential to the successful implementation of the utility emergency plan, the Board finds that the utility does not have an adequate plan to respond to an emergency at the Shoreham Nuclear Power Station.

TECHNICAL ISSUES DISCUSSED

Relocation centers
Thyroid monitoring.

APPEARANCES

Donald P. Irwin, James N. Christman, and Kathy E.B. McCleskey, Esqs., Hunton & Williams, Richmond, Virginia, for Applicants.

Martin Bradley Ashare and Eugene R. Kelley, Esqs., Hauppauge, New York, and **Herbert H. Brown, Lawrence Coe Lanpher, Karla J. Letsche, Michael S. Miller, and Christopher M. McMurray, Esqs.,** Kirkpatrick & Lockhart, Washington, D.C., for Suffolk County, New York.

Fabian G. Palomino and Richard J. Zahnleuter, Esqs., Albany, New York, for the Governor of the State of New York.

Bernard M. Bordenick, Donald F. Hassel, Sherwin E. Turk, and Oreste Pirfo, Esqs., Bethesda, Maryland, for the Nuclear Regulatory Commission Staff.

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CONCLUDING PARTIAL INITIAL DECISION ON EMERGENCY PLANNING

Introduction

This is the second and concluding Partial Initial Decision in which the Board considers offsite emergency planning issues pertaining to the application of Long Island Lighting Company (LILCO) for an operating license for Unit 1 of the Shoreham Nuclear Power Station (Shoreham), located in Brookhaven, New York.

The first partial initial decision, LBP-85-12, 21 NRC 644, was issued April 17, 1985. Findings of fact and conclusions of law were made on contentions in the following categories: I. Human Behavior; II. Credibility and Conflict of Interest; III. EPZ Boundary; IV. LERO Workers; V. Training; VI. Notification and Information to Public; VII. Sheltering; VIII. Making Protective Action Recommendations; IX. Evacuation; XI.

The Handicapped, Hospitals, and Nursing Homes; XII. Schools; XIII. Ingestion Pathway; XIV. Loss of Offsite Power; XV. Strike by LILCO Employees; and XVI. Legal Authority Issues.

The Board did not, however, decide the contentions in Category X. Relocation Centers (24.O, 24.P, 74, 75, and 77) because the record on Contention 24.O had been reopened and was not yet complete. The contentions in that category were to be decided after the record was closed on Contention 24.O. That record was closed on June 26, 1985. Proposed findings of fact and conclusions of law were filed by LILCO (Applicant) on July 11, 1985; by Suffolk County and New York State (Intervenors) on July 16, 1985; and by NRC Staff (Staff) on July 26, 1985. Applicant filed a reply on July 26, 1985.

All of the proposed findings of fact and conclusions of law submitted by the parties have been considered. Any such finding or conclusion not incorporated directly or inferentially in this Partial Initial Decision is rejected as unsupported in fact or law or unnecessary to the rendering of this Decision.

In this concluding Partial Initial Decision the Board will decide the remaining emergency planning contentions, 24.O, 24.P, 74, 75, and 77. With this Decision, findings of fact and conclusions of law will have been made on each litigated contention. The Board here decides whether the LILCO Plan as a whole provides reasonable assurance that adequate measures can and will be taken in the event of a radiological emergency at Shoreham, as required by U.S. Nuclear Regulatory Commission (NRC or Commission) regulations. 10 C.F.R. § 50.47(a)(1). To arrive at this ultimate conclusion, we incorporate by reference the findings of fact and conclusions of law made in the first Shoreham partial initial decision, LBP-85-12, *supra*. Our Decision is made in accordance with the regulatory requirements set forth in that decision. *See* LBP-85-12, 21 NRC at 651-54.

X. RELOCATION CENTERS (CONTENTIONS 24.O, 24.P, 74, 75, and 77)

X.1. Introduction

Intervenors' contentions concerning relocation centers for the general population of the Shoreham plume emergency planning zone (EPZ) allege: (1) LILCO has not identified a relocation center for a significant number of the anticipated evacuees (24.O); (2) although LILCO relies on the American Red Cross to provide medical and counseling services for evacuees, LILCO does not have an agreement with the American

Red Cross to provide such services (24.P); (3) two of the three primary relocation centers designated by LILCO are only 3 miles from the plume EPZ boundary (74); (4) the LILCO Plan provides no estimate of the number of evacuees who may require shelter in a relocation center, and thus there is no assurance that the relocation centers designated by LILCO will be of sufficient capacity to provide necessary services for the number of evacuees that will require such services (75); and (5) the equipment LILCO plans to use to measure thyroid contamination at relocation centers will be incapable of differentiating the required signal from background readings (77). See Appendix C, LBP-85-12, 21 NRC at 979, 1020-21, for full text of these contentions.

These relocation center contentions were based on an early version of the LILCO Plan, issued in May 1983. In March 1984, LILCO and Suffolk County each filed direct written testimony on the relocation center contentions. After learning that the facilities relied upon in the original plan were not available for its use, LILCO filed supplemental testimony on June 15, 1984. Again, facilities relied upon by LILCO became unavailable. The Board allowed LILCO to replace its June 15 testimony with the testimony finally heard in this proceeding. See Cordaro *et al.*, ff. Tr. 14,707, *et seq.* That testimony did not identify the relocation center with which LILCO was then negotiating an agreement for use. Although the Board did not require disclosure of the name of the facility, the Board found the lack of an identified relocation center constituted a void in LILCO's proof on the matter. Tr. 14,806-07. Thereafter, on August 29, 1984, the record was closed.

In October 1984, LILCO submitted to the Board a letter naming the Nassau Veterans Memorial Coliseum (Coliseum) as a "reception" center for evacuees. This reception center is to serve as a central location to which evacuees should go in the event of an emergency at Shoreham. Evacuees will be monitored, and if necessary, decontaminated, at the reception center and then directed to "congregate care" centers operated by the Nassau County Chapter of the American Red Cross. LILCO did not seek to reopen the record to admit this evidence, but claimed that the identity of the reception center was merely a confirmatory item which could be admitted without reopening. At a conference of counsel on January 4, 1985, the Board ruled that LILCO could not simply insert this information into evidence without reopening the record. See Tr. 15,740.

On January 11, 1985, LILCO filed a motion to reopen the record on Contention 24.O. This motion was granted, over the objection of the County and State, on January 28, 1985. The reopening was limited to the narrow issue of the adequacy of the Coliseum to serve as a relocation

center. LILCO, Suffolk County, the State of New York, and the Federal Emergency Management Agency (FEMA) each submitted prefiled written testimony. The Board rejected, as irrelevant to Contention 24.O, testimony proffered by the State and County which did not address the functional adequacy of the Coliseum to serve as a relocation center.¹ A hearing was held on Contention 24.O in Hauppauge, New York, on June 25 and 26, 1985.

X.A. Relocation Centers for the General Public (Contention 24.O)

This contention alleges that there is no relocation center designated for a significant portion of the anticipated evacuees from the Shoreham plume EPZ. When the record in this emergency planning proceeding was closed on August 29, 1984, LILCO had not yet named a facility to be used for monitoring and decontamination of the general public in the event of an emergency at Shoreham. As noted above, the record was reopened on Contention 24.O in response to LILCO's motion to reopen, and a hearing was held on June 25 and 26, 1985, in Hauppauge, New York. The record was reopened for the narrow purpose of admitting the identity of LILCO's proposed facility and for assessing its functional adequacy to serve as a relocation center. See unpublished Memorandum and Order on Reopening of the Record, May 6, 1985.

LILCO's written testimony consisted of an Affidavit of Elaine D. Robinson with six attachments. Robinson Affidavit, ff. Tr. 15,870 and Attach. 1-6. FEMA's written testimony consisted of an affidavit of Thomas E. Baldwin, Joseph H. Keller, Roger B. Kowieski, and Philip H. McIntire. ff. Tr. 15,991. The qualifications of these witnesses have been summarized in Appendix A, LBP-85-12, 21 NRC at 923, 929. The County and State made their case on cross-examination alone.

X.A.1. Agreement for Use of the Nassau Veterans Memorial Coliseum

LILCO has designated the Coliseum as a reception center to be used for monitoring and decontamination of evacuees from the plume EPZ in the event of an emergency at Shoreham. Robinson Affidavit, ff. Tr. 15,870, at 2. The Coliseum is a sports and entertainment/exhibition complex located in the south-central Nassau County at the intersection

¹ On May 17, 1985, the County and State moved for reconsideration of the Board's May 6, 1985 order (unpublished), or in the alternative, for reopening of the record on Contentions 24.N; 74, and 75 for the purpose of admitting the testimony rejected by the Board as irrelevant to Contention 24.O. The County further requested that, if the Board ruled against the County on the reconsideration and reopening requests, the Board certify the matter to the Appeal Board. All of Interveners' requests were denied on June 10, 1985, in an unpublished memorandum and order.

of Hempstead Turnpike and Meadowbrook Parkway, 43 miles from the Shoreham site and 33 miles from the western boundary of the 10-mile EPZ. *Id.*; Tr. 15,892-93 (Robinson). The Coliseum is designed to accommodate crowds of 15,000 to 17,000. Robinson Affidavit, ff. Tr. 15,870, at 2.

The Hyatt Management Corporation of New York, Inc. (Hyatt) leases and manages the Coliseum for Nassau County. *Id.* at 1. A letter of agreement between LILCO and Hyatt, dated September 25, 1984, authorizes LILCO and the Nassau County Chapter of the American Red Cross (Red Cross) to use the Coliseum as a reception center. The letter, which was approved by Hyatt on October 8, 1984, allows LILCO to use the Coliseum and all parking lots and immediately surrounding property as a reception center for the general public, in planning for and responding to a radiological emergency at Shoreham. *Id.* The letter of agreement further provides that LILCO will be given reasonable access to the Coliseum upon notification by LILCO to Hyatt or to Nassau County that a radiological emergency has occurred at Shoreham. Reasonable access refers to the time which Hyatt would need to clear the Coliseum and parking lots if there were an event in progress at the Coliseum at the time an emergency occurred at Shoreham. According to Mr. Sumerlin, General Manager of the Coliseum, the time could range from 15 minutes to an hour and a half. Tr. 15,924-25 (Robinson). A consultant for LILCO performed an informal study and found that the parking lot was cleared in 45 minutes following the end of a capacity-crowd hockey game on Tuesday night, January 8, 1985. Tr. 15,916-17 (Robinson). The Coliseum has 24-hour security which will permit LILCO to enter the building at any time. Tr. 15,924-25 (Robinson). The Board finds that the Coliseum can be cleared quickly enough to conclude that it will be available for LILCO's use in the event of an emergency at Shoreham.

The evidence shows that the Nassau County Executive intends to assist in the event of an emergency at Shoreham. The County Executive is aware of and approves of the use of the Coliseum as a reception center in a Shoreham emergency and pledges that the Nassau County Police Department will be available to assist with security and to facilitate traffic flow and parking at the Coliseum. Robinson Affidavit, ff. Tr. 15,870, Attach. 2.

The Red Cross has agreed in writing to provide Red Cross staff to assist evacuees and to direct evacuees to congregate care centers. Cordaro *et al.*, ff. Tr. 14,707, Attach. 1. Red Cross staff will coordinate with LERO monitoring and decontamination personnel to define a "clean" area from which the Red Cross will operate at the Coliseum. Robinson Affidavit, ff. Tr. 15,870, Attach. 3.

The Board finds these agreements satisfactory to provide reasonable assurance that LILCO will have access to the Coliseum in the event of an emergency at Shoreham. Further, we find that the agreement between LILCO and the Red Cross is adequate to support our conclusion that the Red Cross will provide assistance and information to evacuees at the Coliseum. The issue of whether the Coliseum itself is functionally adequate to serve as a reception center is addressed below.

X.A.2. LILCO's Planning Basis

LILCO has used an estimate of 20% of the population of the EPZ as the maximum number of persons who would require shelter in the event of an emergency at Shoreham. Cordaro *et al.*, ff. Tr. 14,707, at 18-20. This figure is based on past experience in disasters. *Id.* The maximum population of the EPZ is 160,000, thus LILCO's planning is based on a maximum of 32,000 seeking shelter. LILCO did not justify how this number could be related to the number of persons who might seek monitoring. The Board finds that the number of persons expected to seek shelter in the event of a disaster is not necessarily the same as the number of persons who might seek monitoring in the event of a radiological accident.

We accept LILCO's planning basis for the number of evacuees who might seek shelter, be processed through the relocation center and, according to NUREG-0654 § II.J.12, must thus be monitored. *See also* § X.D.1, *infra*. The record is unclear as to how the Coliseum could accommodate the evacuees of the general population who will seek monitoring and processing, aside from those seeking shelter. We therefore find that LILCO's failure to plan for those of the general population who seek only monitoring and processing constitutes a defect in the Plan.

X.A.3. Functional Adequacy of the Nassau Coliseum to Serve as a Relocation Center

The activities to be performed at the Coliseum include registration, monitoring, and decontamination of evacuees from the plume EPZ. Vehicles will be decontaminated or stored in parking lots adjacent to the Coliseum. The initial monitoring of evacuees will be done in the receiving area. Tr. 15,899 (Robinson). The purpose of the initial whole-body monitoring is to determine whether an evacuee has any contamination, either on the clothing, shoes, skin, or in the thyroid. Tr. 15,901 (Robinson). Evacuees who are free of contamination will be issued "clean"

tags and instructed to proceed to the arena lobby. Tr. 15,897 (Robinson). These evacuees will be directed to congregate care centers operated by the Red Cross. Tr. 15,898 (Robinson). Contaminated evacuees will be sent to the decontamination area. *Id.* Evacuees with thyroid contamination will be sent by ambulance to a hospital. Tr. 15,901 (Robinson). LILCO security personnel will be positioned to keep contaminated and uncontaminated individuals from mingling. Tr. 15,897 (Robinson). Contaminated evacuees will then be instructed to remove their clothing and be remonitored before showering. According to FEMA, a normal shower is a typical decontamination method. Tr. 16,033 (Keller). Ms. Robinson testified that experience has shown that in most cases contamination would only be on the clothing. Tr. 15,901-02 (Robinson). Contaminated clothing will be collected, wrapped, and transported back to Shoreham for processing. Tr. 15,907-08 (Robinson). The process of monitoring and showering may be repeated as many as four times, if necessary. Tr. 15,902 (Robinson). Any evacuees who are still contaminated after completing the showering process would be sent to a hospital for decontamination. *Id.* The Board finds that these procedures are compatible with the proposed use of the relocation center building.

The initial question concerning the functional adequacy of the Coliseum to serve as a relocation center is whether the Coliseum is large enough to accommodate the number of evacuees who may seek monitoring, and, if necessary, decontamination. The Coliseum has a receiving area of 15,500 square feet, an arena of 17,000 square feet, an exhibition hall of 59,000 square feet, and an arena lobby with 5,750 square feet of space. Robinson Affidavit, ff. Tr. 15,870, at 2. The Coliseum also has four locker rooms, with a total of thirty showers. Tr. 15,896 (Robinson). The LILCO Plan calls for use of only two of the four locker rooms, but Ms. Robinson has stated that all four would be made available if necessary. Tr. 15,885 (Robinson). Ms. Robinson testified that LILCO had decided the twelve showers in the visitors' locker rooms would be adequate. Tr. 15,896 (Robinson).

LILCO does not rely on use of the exhibition hall or arena floor since the exhibition hall is in use 30% of the time and the arena is in use 60% of the time. Tr. 15,926 (Robinson). LILCO will use the receiving area, arena lobby, and corridors, but does not specify how processing is to be accomplished for the anticipated number of evacuees, with the available facilities.

The FEMA witnesses found that they would need more details before they could approve the Plan. Tr. 16,039 (Keller). We agree with FEMA and find that the lack of information concerning the factual basis for

LILCO's conclusion that the Coliseum is adequate to serve as a relocation center is a deficiency and must be corrected.

In summary, the Board finds LILCO's overall procedures for processing evacuees at the Coliseum to be conceptually adequate. However, LILCO must provide more detail concerning the size of the areas and available facilities, and how that relates to the number of people that must be processed. Furthermore, LILCO's time estimate for monitoring must fall somewhere within the range contemplated by NUREG-0654 § II.J.12:

The personnel and equipment available should be capable of monitoring within about a 12 hour period all residents and transients in the plume exposure EPZ arriving at relocation centers.

X.B. Agreement with the American Red Cross (Contention 24.P)

This contention alleges that although LILCO relies upon the American Red Cross to provide services, including medical and counseling services, at relocation centers, LILCO has no agreement with the American Red Cross to provide such services. Thus, Intervenors claim, LILCO's proposed protective action of evacuation cannot and will not be implemented.

LILCO presented the testimony of Matthew C. Cordaro, Frank M. Rasbury, Elaine D. Robinson, and John A. Weismantle. ff. Tr. 14,707. The FEMA panel of Thomas E. Baldwin, Joseph H. Keller, Roger B. Kowieski, and Philip H. McIntire also testified. ff. Tr. 12,174. The qualifications of these witnesses are summarized in Appendix A, LBP-85-12, 21 NRC at 921-23, 929.

LILCO's testimony includes a letter of agreement with the Nassau County Chapter of the American Red Cross (Red Cross). This agreement, signed by Frank M. Rasbury, Executive Director of the Nassau County Chapter, states that upon notification of an emergency at Shoreham the Red Cross will set up emergency centers at predesignated facilities, and that the Red Cross will staff the facilities and dispatch evacuees to additional facilities if necessary. Cordaro *et al.*, ff. Tr. 14,707, Attach. 1. The Red Cross will also staff the additional facilities and will provide supplies as needed. Rasbury, ff. Tr. 14,707, at 17. Mr. Rasbury further testified that the Red Cross provides shelter, staff, food, beds, medical care, case work services, personal counseling, and other aid as necessary. *Id.* The Red Cross will not perform monitoring and decontamination at any location. *Id.* The Red Cross has participated in a drill and planning for Shoreham and will participate in additional drills in the future. Tr. 14,748 (Rasbury); Tr. 14,751 (Robinson).

The FEMA Regional Assistance Committee (RAC) review found that more information is needed on the Red Cross' responsibilities and procedures at the centers. Baldwin *et al.*, ff. Tr. 12,174, at 42. FEMA noted that there should be procedures for completing registration forms for uncontaminated individuals and that the procedures should also specify where evacuee monitoring records will ultimately be maintained. *Id.* Although Mr. Keller testified that the absence of a letter of agreement is a deficiency in the LILCO Plan, the letter was provided subsequent to his testimony. Robinson Affidavit, ff. Tr. 15,870, Attach. 3.

The Board finds that the letter of agreement between LILCO and the Red Cross is adequate to provide reasonable assurance that the Red Cross will perform the duties upon which LILCO relies in its emergency plan. Mr. Rasbury's testimony shows what the Red Cross intends to do in the event of an emergency at Shoreham.

We agree with FEMA that procedures for completing registration forms for uncontaminated individuals and for maintenance of evacuee monitoring records should be specified in the Plan. We find this to be a matter subject to Staff oversight.

X.C. Location of Relocation Centers for Evacuees (Contention 74)

This contention alleges that two of the three primary relocation centers designated by LILCO are within 20 miles of the Shoreham site. Both the Suffolk County Community College and the State University of New York at Stony Brook are only 3 miles from the plume EPZ boundary, contrary to the requirements of NUREG-0654 § II.J.10.h.

LILCO no longer relies on these three facilities to serve as relocation centers in the event of an emergency at Shoreham. Thus, we find Contention 74 is moot.

X.D. Adequacy of Shelters (Contention 75)

Contention 75 asserts that there is no assurance that the relocation centers designated by LILCO will be of sufficient capacity to provide necessary services for the number of evacuees that would require them. The Board understands this contention to challenge the adequacy of congregate care centers that have been designated by the Red Cross, and not of the Coliseum, which we addressed under Contention 24.O. We consider this contention to challenge the adequacy of designated facilities to serve the needs of evacuees seeking shelter at congregate care centers, and the ability of the congregate care centers to collectively shelter the number of evacuees stated in the planning basis.

LILCO presented the testimony of Matthew C. Cordaro, Frank M. Rasbury, Elaine D. Robinson, and John A. Weismantle. ff. Tr. 14,707. The County presented the testimony of David Harris and Martin Meyer. ff. Tr. 9777. The qualifications of these witnesses have been summarized in Appendix A, LBP-85-12, 21 NRC at 921-25.

X.D.1. LILCO's Planning Basis for Sheltering Evacuees

LILCO estimates that about 32,000 people, or 20% of the 160,000 people who reside in the 10-mile EPZ, could seek shelter. Cordaro *et al.*, ff. Tr. 14,707, at 18-20. This estimate is based on past experience in disasters and the Suffolk County planner's own conclusion that 20% is a reasonable planning number. *Id.*; Tr. 14,821 (Robinson). The facilities that would be used to house evacuees seeking shelter consist of numerous public schools and other buildings located in Nassau County. The Red Cross has agreements dating back to 1975 with all of the facilities that have been designated for use during emergencies. The Red Cross calculates that the shelters it has designated have a combined capacity of up to 48,000 people, assuming a requirement of 60 to 65 square feet per person. Cordaro *et al.*, ff. Tr. 14,707, Attach. 1, at 2; Tr. 14,744-46 (Rasbury). The County does not dispute that approximately 60 square feet per individual is adequate. Tr. 14,886-88 (Harris).

The Red Cross assessed the adequacy of the proposed shelters in Nassau County at the time that it made its agreements with each individual shelter. American Red Cross standards have been used in choosing the buildings that the Red Cross relies on for congregate care centers. These standards include consideration of adequate parking, food facilities, toilets, and showers for people who seek shelter. Cordaro *et al.*, ff. Tr. 14,707, at 23. The Red Cross constructs a shelter profile containing specific information for each facility upon which it relies. Tr. 14,777-78 (Rasbury). Most of the facilities are less than perfect regarding all the items on the Red Cross checklist; however, all those designated are satisfactory for emergency shelter. Cordaro *et al.*, ff. Tr. 14,707, at 23-24; Tr. 14,778-80 (Rasbury). The Red Cross chooses the best buildings from among those available in the community for use as shelters during a disaster. Cordaro *et al.*, ff. Tr. 14,707, at 23-25; Tr. 14,775-76 (Rasbury). If facilities become unavailable the Red Cross finds other suitable facilities.

The agreements between the Red Cross and the designated shelter facilities are revocable at will by either of the parties to the agreement. Tr. 14,768 (Rasbury). Some facilities could become unavailable at the

time of a disaster because schools' and school districts' first responsibility to their pupils might take priority over the use of school buildings as congregate care centers. Tr. 14,770 (Rasbury). The agreements for the facilities do not specify the type of emergency, although the Red Cross interprets them to mean that they will be available as public shelters in the event of natural disasters or man-made disasters without reference to the type of disaster. Tr. 14,770-71 (Rasbury). The agreements were made without specific reference to the possibility of sheltering evacuees from a radiological disaster. Tr. 14,772 (Rasbury). In the Red Cross' view, however, there is no need to distinguish the type of disaster for the purpose of judging the adequacy of the facilities, and it has not done so. A person who is displaced and requires shelter has the same basic needs regardless of the type of hazard that caused the displacement. Tr. 14,774 (Rasbury).

A list of the organizations with whom agreements are maintained for the congregate care centers is attached to the July 25, 1984 letter of agreement between LILCO and the Red Cross. Cordaro *et al.*, ff. Tr. 14,707, Attach. 1. At the time of an emergency, evacuees arriving at the reception center and needing shelter will be directed by the Red Cross to congregate care centers. The organizations named with whom the Red Cross has agreements will not be published and made available to the public in advance of an accident. One reason for this is that in some instances a particular facility may not be available. Another reason is that this will limit the ability of the public to bypass the relocation center where monitoring and decontamination will take place. Tr. 14,770, 14,779 (Rasbury); Tr. 14,825-6 (Weismantle). Congregate care centers will be designated according to need at the time of an emergency. Tr. 14,773 (Rasbury). The Board finds this to be a satisfactory means of operation that meets the legitimate needs of all concerned.

X.D.2. Board Conclusions

The Board accepts LILCO's planning basis of 32,000 evacuees as reasonable, because it is based on prior disaster experience and because the Intervenors have brought forward no contradictory evidence that would lead us to believe that planning basis is seriously underestimated. Further, we conclude that the planning basis used by LILCO is conservative and that up to 48,000 persons could be sheltered within the facilities that have been identified by the Red Cross. This is clearly an adequate margin above the planning basis for any uncertainty that exists as to the actual number of possible evacuees who may need assistance if an accident occurs at Shoreham.

The Board also concludes that it may place its confidence in the Red Cross for the assessment of adequacy of the shelters that it has identified. This confidence is based not only on the American Red Cross' extensive experience in rendering assistance to disaster victims, but also because the Red Cross was able to identify clearly the factors that go into its judgment and it has shown that it forms its judgments based on a systematic assessment.

The Board is aware, however, that the agreements between the Red Cross and the individual facilities are revocable at will and that many of the agreements were made as far back as 1975. In light of the possibility of out-of-date agreements the Board concludes that LILCO should confirm that the agreements between Nassau County shelter facilities and the Red Cross remain in effect. In the event that some agreements are not confirmed, we would expect that the Red Cross would find other suitable facilities, according to their normal procedures, that would be able to shelter the anticipated number of evacuees.

The Board finds that the facilities to be made available are adequate and that the Red Cross has adequate procedures to provide others if needed. We leave the matter of review of the confirmed Red Cross agreements to Staff oversight.

X.E. Thyroid Monitoring Equipment at Relocation Centers (Contention 77)

Contention 77 asserts that the thyroid monitoring equipment to be used at relocation centers is not sufficiently sensitive to accurately detect 150 counts per minute (CPM) in the presence of background readings that are likely to exceed 50 CPM.

LILCO presented the testimony of Matthew C. Cordaro, Charles A. Daverio, and Michael L. Miele. ff. Tr. 13,755. FEMA's witnesses were Thomas E. Baldwin, Joseph H. Keller, Roger B. Kowieski, and Philip H. McIntire. ff. Tr. 12,174. The qualifications of these witnesses are described in Appendix A, LBP-85-12, 21 NRC at 921-22, 929. Intervenors presented no testimony on this contention.

X.E.1. LILCO's Monitoring Procedures

LILCO will use an Eberline RM-14 survey meter with HP-270 probe to measure thyroid contamination at relocation centers. Cordaro *et al.*, ff. Tr. 13,755, at 5 and Attach. 3. LILCO will also use the same meter with a tungsten-shielded HP-210 probe when a more sensitive instrument is called for; for example, at times when elevated background

levels are present, or to monitor children's thyroids. *Id.* at 9-10 and Attach. 4; Tr. 13,756-62 (Daverio, Miele). The tungsten-shielded probe is between three and four times more sensitive than the HP-270 probe and is capable of detecting thyroid contamination in the presence of background levels at least four times greater than would be possible with the HP-270 probe. *Id.*; Tr. 13,787-92 (Miele). LILCO commits to using the more sensitive probe where appropriate and to including procedures for its use in future revisions of the LILCO Plan. Cordaro *et al.*, ff. Tr. 13,755, at 9.

In conducting its monitoring operations, LILCO will separate areas for whole-body monitoring from areas devoted to thyroid monitoring, and evacuees will not have their thyroids monitored until after it is determined that they are not contaminated or, if contaminated, that they have been decontaminated. Tr. 14,280 (Keller); OPIP 3.9.2, §§ 5.6 and 5.8. Monitoring personnel are trained to set up separate areas for whole-body and thyroid monitoring. Babb *et al.*, ff. Tr. 11,140, at Attach. 20, module number 10, § I, at 3, 5-11, 19-20. Monitoring personnel are also trained to have persons enter the building through a controlled route and to conduct whole-body monitoring at a station close to the contaminated area and which will be blocked off from clean areas by appropriate barriers. *Id.* at 5.

If whole-body monitoring discloses that a person is contaminated, that person will be directed to decontamination areas along controlled routes and will not be allowed to enter any clean areas. *Id.* at 3. Monitoring personnel will use the criterion of 150 CPM over background as a threshold for determining that persons with contaminated thyroids should be sent to a hospital for medical care. That criterion functions as a general guideline to monitoring personnel rather than as a sharp threshold. Thus, the 150-CPM threshold is a qualitative rather than a quantitative guideline. Tr. 13,774-76 (Miele). The basic concern is simply to conduct monitoring to determine if the dose to the thyroid is substantial enough to warrant further action. Cordaro *et al.*, ff. Tr. 13,755, at 8-9; Tr. 13,772-77 (Miele). The qualitative guideline is adequate, in LILCO's view, because the 150-CPM threshold is well below the 5-rem exposure level at which protective action is recommended. Radiation monitoring personnel would have to misread a thyroid reading by 600 CPM before the public safety would be endangered. Tr. 14,276-77 (Keller). FEMA witnesses believe that this would be extremely unlikely and there is nothing in our record to suggest that errors of that magnitude could occur. *Id.*

X.E.2. Intervenors' Concerns

Intervenors assert that LILCO's procedure for the use of its monitoring instrument is inadequate for three reasons: (1) The procedure indicates that the background reading should be taken with the shield of the HP-270 probe open when it should be taken with a closed shield; (2) the present procedure does not indicate that the meter is to be set for a fast response time; and (3) the procedure does not include special provisions for monitoring the thyroids of children. I.F. 645, 648, 649. There is no dispute regarding the validity of the three errors noted by the Intervenors in LILCO's procedures. Both Applicant and Staff agree that the three items constitute errors in LILCO's Plan. A.F. 537, S.F. 605.

LILCO has committed to revise its Plan (1) to reflect that both background radiation and thyroid contamination readings are to be conducted with a closed shield (Tr. 13,794 (Daverio)); (2) to indicate that the RM 14 meter with HP-270 probe is to be set on a fast response time (Tr. 13,795 (Daverio)); and (3) to include special provision for monitoring children with an HP-210 probe. *Id.* The Board accepts LILCO's commitment to remedy the defects in its Plan regarding its use of instruments and monitoring of thyroids.

Intervenors did not press in their proposed findings the claim stated in the contention that backgrounds above 50 CPM are likely. This is reasonable since the record shows without contradiction that it is unlikely that background radiation levels at relocation centers more than 20 miles from Shoreham would ever exceed 50 CPM. Tr. 14,578 (Keller).

Intervenors point out that LILCO's Plan states that background radiation levels should remain less than 50 CPM but that LILCO's witnesses testified that LILCO intends to delete this statement because if background is less than 350 CPM it would not affect survey measurements. Cordaro *et al.*, ff. Tr. 13,755, at 7-9. FEMA witnesses testified that it is neither desirable nor prudent to attempt to measure a thyroid contamination in a background of more than 50 CPM and that the provision should not be deleted. Tr. 14,278-81, 14,610 (Keller). The NRC Staff agrees that background readings of 50 CPM as stated in the plan should not be altered. S.F. 604, n.45. The Board agrees with FEMA and the Staff that LILCO should retain the provision stating that permissible background levels during thyroid monitoring should not be above 50 CPM.

The Intervenors are also concerned that when monitoring instruments are set on fast response times, accurate readings are difficult to make because of fluctuations in background radiation, statistical variations in the number of counts, and needle fluctuations. I.F. 648. These concerns are without merit because there are adequate margins between the nominal

levels proposed in the plan for screening evacuees and levels which could cause harm to public health. Thus, even if substantial errors were made in reading instruments, public health would not be threatened. Further, it seems to the Board implausible that even a fluctuating meter could be misread by some 600 CPM. We also note that, while the Applicant's threshold number stated for the purpose of planning is 150 CPM, persons doing the monitoring are instructed to use conservative judgment in implementing that plan and that thyroids showing count rates less than that level would also trigger the monitoring personnel to send such individuals to the hospital.

X.E.3. Board conclusions

The Board concludes that LILCO has outlined an adequate plan for thyroid monitoring of evacuees in the event of an accident at Shoreham. The Applicant's plan provides for the use of instruments of suitable sensitivity and for procedures which will assure that thyroid monitoring will not take place in contaminated areas where backgrounds are likely to be excessive due to radiation tracked in by contaminated evacuees. The evidence is also clear that there is virtually no possibility that there will be excessively high background levels as a result of direct contamination from the plant. Thus we conclude that the problem postulated in the contention of excessively high background readings during thyroid monitoring is speculative and virtually nonexistent.

The three errors in LILCO's monitoring procedures noted in Intervenor's proposed findings are agreed to by all parties. We conclude that the remedies proposed by LILCO are simple and adequate and should be adopted. Intervenor's request that they be provided an opportunity to review procedures is unnecessary. The Board finds LILCO's commitment to remedy the defects to be acceptable and delegates assessment of compliance to the NRC Staff. We further conclude that LILCO should not revise its Plan so as to permit background levels higher than 50 CPM during thyroid monitoring.

We conclude that LILCO has met its burden of proof on Contention 77.

Opinion and Findings

From the evidence of record the Board finds that no operating license shall be issued. We make this finding because the LILCO Plan does not provide reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency at Shoreham, as

required by 10 C.F.R. § 50.47(a)(1). This determination is not based upon a finding that there is anything unique about the demography, topography, access routes, or jurisdictional boundaries in the area in which Shoreham is located. To the contrary, the record fails to reveal any basis to conclude that it would be impossible to fashion and implement an effective offsite emergency plan for the Shoreham plant.

Our review of the LILCO Plan has disclosed not only the fatal defects upon which we base the denial, but other deficiencies discussed below. It should be stated at this point, that inasmuch as it is the LILCO Plan, the inadequacies are ascribable to LILCO. However, to a significant degree the inadequacies resulted from and have been aggravated by Suffolk County's and New York State's opposition to the Plan.

The existing regulatory scheme provides for the participation of State and local governments with the utility to assure the success of emergency planning.² There is a fundamental assumption that there will be an integrated approach to emergency planning among the three. The State and County have decided not to follow the route contemplated by the Federal rules. Although we do not find their opposition to the emergency plan for Shoreham to be contrary to law, that action has helped to create a barrier to the implementing of an acceptable emergency plan.

Our holding is not contrary to the Commission's decision in *Long Island Lighting Co.* (Shoreham Nuclear Power Station, Unit 1), CLI-83-13, 17 NRC 741 (1983), which held that it was possible for a utility plan, submitted in the absence of State and local government-approved plans, to meet the prerequisites for the issuance of an operating license. A condition of licensing is that the applicant has the burden of showing that its plan meets all applicable regulatory standards. This LILCO has failed to do.

The emergency plan LILCO proffered for Shoreham requires the utility to perform all essential functions necessary for successful implementation of the Plan. The essential functions extend from conducting the evacuation, to making decisions and recommendations to the public concerning protective actions, and to performing access control at various sites. The activities found to be beyond LILCO's legal authority to perform are as follows: (1) guiding traffic; (2) blocking roadways, erecting barriers in roadways, and channelling traffic; (3) posting traffic signs on roadways; (4) removing obstructions from public roadways, including towing private vehicles; (5) activating sirens and directing the broadcasting of emergency broadcast system messages; (6) making decisions and

² That expected participation extends to the point where responsibility for activating the public notification system is placed with the governmental authorities. See 10 C.F.R. Part 50, Appendix E, § IV.D.2.

recommendations to the public concerning protective actions; (7) making decisions and recommendations to the public concerning protective actions for the ingestion exposure pathway; (8) making decisions and recommendations to the public concerning recovery and reentry; (9) dispensing fuel from tank trucks to automobiles along roadsides; and (10) performing access control at the Emergency Operations Center (EOC), the relocation centers, and the EPZ perimeters.

It is beyond LILCO's legal authority to conduct such activities. See Board Findings XVI.1-4 (LBP-85-12, 21 NRC at 896-919). Thus LILCO has a proposed plan which cannot lawfully be implemented. See Board Findings XVI.5 (21 NRC at 919), wherein we state that the activities LILCO seeks to perform as specified in Contentions 1-10 are unlawful, leaving LILCO without an implementable, comprehensive, and effective emergency response plan for Shoreham. Needless to say, these circumstances alone are adequate to support a denial of approval of the emergency response plan, under 10 C.F.R. § 50.47(a)(1). LILCO had previously acknowledged that the lack of legal authority, if upheld, would prohibit it, by itself, from implementing its emergency plan regardless of the substantive merits of the Plan. *Id.*

Having found that Applicant does not have a workable emergency response plan for Shoreham because of the legal impediment to LILCO's implementation of its Plan, there is no ground upon which to base a temporary solution for providing an emergency plan for the facility, in the manner contemplated by 10 C.F.R. § 50.47(c)(1).

Even if we had found that LILCO had the necessary legal authority to implement the proposed Plan, the Plan remains inadequate because of the ramifications of the refusal of the State and County to participate. To achieve an effective emergency response, the Commission's emergency planning regulations and guidance provide for a cooperative, comprehensive, preplanned, and implementable effort on the part of the utility, the State, and the local government. The Shoreham emergency plan lacks such an integrated approach. Here each entity is free to go its own way during an emergency. This is the antithesis of what the regulatory scheme calls for to achieve a satisfactory emergency response.

Lack of participation by the State and County in the emergency plan was found to diminish the Plan's effectiveness in important areas. We have concluded as to Contention 92, which alleges that there is no New York State emergency plan for dealing with an emergency at Shoreham, that this lack of State participation constitutes a serious substantive deficiency in emergency preparedness. There is no reasonable assurance that there will be cooperation between New York State and the utility during an emergency, given the former's recalcitrant position in this

matter. As a result, public health and safety cannot be protected as well by LILCO acting alone as it could if LILCO were acting in concert with the State and County. *See* Board Finding XIII.C.6 (LBP-85-12, 21 NRC at 884-85).

The regulatory scheme contemplates that command and control decisions will be made by State and local governments during radiological emergencies to assure independence and objectivity in decisionmaking. The LILCO Plan does not provide a result comparable to that contemplated by the regulations because its supporting command and control organization's decisionmakers have not been removed from LILCO's influence. *See* Board Findings II.A.3 and II.A.6 (21 NRC at 682, 686).

LILCO had given adequate consideration to the evacuation shadow phenomenon in its emergency planning process so that the LILCO evacuation plan for Shoreham is technically adequate in that respect, if implemented as LILCO has outlined. But the Board's finding to that effect strongly depends on there being clear, nonconflicting notice and instructions to the public at the time of an accident. If confused or conflicting information were disseminated at the time of an accident the evacuation and protective actions planned for could be jeopardized. The lack of assurance of integrated action between the State and local government and the utility constitutes a substantive deficiency in the Plan and diminishes the Board's confidence that public health and safety could be protected as well by LILCO acting alone as with State and local governments. *See* Board Finding I.A.12 (21 NRC at 669-70).

The foregoing illustrates that the refusal of New York and the County to participate in emergency planning creates situations in which the LILCO Plan can be made unworkable at any time. To the extent that this potential continues to exist, the Board cannot make a finding that there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency at Shoreham.

The Board found additional defects of a lesser magnitude in the Plan. These defects can be remedied and such corrections should be in place by the time the plant commences operations, should it be licensed. They involve the following:

1. Specified schools in Terryville, Riverhead, and Port Jefferson, New York, shall be included within the plume EPZ. *See* Board Findings III.4 and III.6 (LBP-85-12, 21 NRC at 703-04, 705).
2. The informational brochure must contain a statement that radiation can cause injury or death. *See* Board Finding VI.E.4 (21 NRC at 769-70).

3. LILCO shall incorporate a reasonable summary of the results of its sensitivity analysis contained in KLD Tm-140 into Appendix A of the Plan. *See* Board Finding IX.A.17 (21 NRC at 794-95).
4. The Plan shall contain bounded estimates of uncertainty in evacuation times in addition to point estimates. Corrections of traffic control strategies identified by the Suffolk County Police shall be incorporated in Appendix A of the Plan. *See* Board Finding IX.A.30 (21 NRC at 805-09).
5. A letter of agreement to provide support services shall be entered into between LILCO and the Central Suffolk Hospital. *See* Board Finding XI.B.5 (21 NRC at 810-11).
6. Reception centers must be identified for residents of special health care facilities within the EPZ. In addition, supporting agreements for the use of such facilities must be obtained. *See* Board Finding XI.B.12 (21 NRC at 840).
7. The Plan is deficient and must be corrected because LILCO's agreements for obtaining buses for use in an emergency are subordinated to preexisting contracts for normal daily use by schools outside of the EPZ. *See* Board Finding XII.22 (21 NRC at 872-74).
8. The Plan is defective and must be corrected because reception centers have not been identified for schoolchildren. *See* Board Finding XII.6 (21 NRC at 860). Without the identification of such a center, or centers, for schoolchildren it is impossible to calculate how long it might take to evacuate these children. Since multiple bus runs may be necessary, we find that the time required to transport schoolchildren to their reception center must be calculated. This calculation cannot be made until LILCO has identified the location to which schoolchildren will be taken. In addition, the Plan is considered deficient in that it has not been shown that the evacuation of schoolchildren can be accomplished within about the same time as an evacuation of the general population. *See* Board Finding XII.22 (21 NRC at 872-74).
9. LILCO must plan for the alteration of early dismissal procedures to conform to the protective actions recommended for the general public. *See* Board Finding XII.11 (21 NRC at 863).
10. LILCO's emergency plan contains provisions for monitoring only evacuees who may seek shelter in the event of an emergency at Shoreham. *See* Board Finding X.D.2 (pp.

422-23, *supra*). LILCO must plan for monitoring of all evacuees from the EPZ who seek monitoring, whether or not these evacuees seek shelter.

11. LILCO must provide further details as to how the Coliseum will adequately accommodate the anticipated number of evacuees seeking monitoring, and, if necessary, decontamination, and must comply with the requirements of NUREG-0654 § II.J.12. *See* Board Finding X.A.3 (pp. 417-19, *supra*).
12. Should a license be granted, and should LILCO continue to rely upon LERO for its emergency response, if the plant is shut down because of a strike, refueling would only be permissible under the conditions set forth in the first partial initial decision, and a request to perform other operations during shutdown would require an application for a license amendment. *See* Board Finding XV.C.2 (LBP-85-12, 21 NRC at 894-95).

The Board has concluded that the LILCO Plan is fatally defective on two grounds. The first is that the Applicant does not have the legal authority to implement the plan it submitted. The second is that the opposition of the State and County to the Plan has created a situation where at any given time it is not known whether the Plan would be workable. Also, as we have seen, Applicant would have to perform with secondary resources, absent State and County involvement, even if it had the necessary authority to implement the Plan. For example, its command and control decisionmakers do not have the independence and objectivity of those in State and local government. Also, the State and County have chosen to operate on independent courses during an emergency at Shoreham. This sets the stage for the dissemination of conflicting and confusing information, even if unintended. The views of the State and County on what actions should be taken in response to an emergency differ markedly from those of LILCO. This creates a real potential for the defeat of a successful response to an emergency at Shoreham.

Under the circumstances of this proceeding, at this time, the Board is justified in finding under 10 C.F.R. § 50.47(a)(1) that an operating license for a nuclear power reactor shall not be issued to LILCO. Unlike the situation in *Commonwealth Edison Co.* (Byron Nuclear Power Station, Units 1 and 2), ALAB-770, 19 NRC 1163 (1984), the significant deficiencies found in LILCO's Plan are not in the process of being corrected, so that a final decision should be withheld. Here, one fatal flaw to the successful implementation of the Plan was found to exist because of a lack of legal authority on the part of the Applicant. We have no reason to believe this defect can be corrected in the near term. The other defect

involves entities with whom the Applicant is at an impasse. The parties are entitled to a timely decision so that they can choose their future course of conduct and have the opportunity to pursue it.

Conclusions of Law

Based upon review of the entire record in the proceeding on offsite emergency planning, culminating in the findings of fact in the first and this Partial Initial Decision, the Board concludes that there is no reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency at Shoreham, and therefore no operating license shall be issued for the nuclear power reactor, as is authorized by 10 C.F.R. § 50.47(a)(1).

Order

It is hereby ordered that no operating license shall be issued to LILCO for the Shoreham Nuclear Power Station, Unit 1, absent a finding that there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency at Shoreham, as is required by 10 C.F.R. § 50.47(a)(1).

Finality and Appealability

Pursuant to 10 C.F.R. § 2.760 this Concluding Partial Initial Decision will constitute the final decision of the Commission 30 days from the date of its issuance, unless an appeal is taken in accordance with 10 C.F.R. § 2.762 or the Commission directs otherwise. *See also* 10 C.F.R. §§ 2.785 and 2.786.

Under § 2.762 any party may take an appeal from this Decision by filing a Notice of Appeal within 10 days after service of this Partial Initial Decision. Each appellant must file a brief supporting its position on appeal within 30 days after filing its Notice of Appeal (40 days if the Staff is the appellant). Within 30 days after the period has expired for the filing and service of the briefs of all appellants (40 days in the case of the Staff), a party who is not an appellant may file a brief in support of or in opposition to the appeal of any other party. A responding party

shall file a single, responsive brief only, regardless of the number of appellants' briefs filed.

THE ATOMIC SAFETY AND
LICENSING BOARD

Morton B. Margulies, Chairman
ADMINISTRATIVE LAW JUDGE

Dr. Jerry R. Kline
ADMINISTRATIVE JUDGE

Mr. Frederick J. Shon
ADMINISTRATIVE JUDGE

Dated at Bethesda, Maryland,
this 26th day of August 1985.

APPENDIX A

Exhibits

Exhibit Number	Description	Identified at Transcript Page	Disposition at Transcript Page*
S.C. 95	Letter from Vincent Souzzi, dated 4/8/85	15,885	15,890 denied*
S.C. 96	Letter from Hannah Komanoff, dated 5/17/85	15,886	15,890 denied
S.C. 97	Letter from Leon Campo, dated 2/12/85	15,933	15,945 denied

*Denied — denied admission at this page.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

**Peter B. Bloch, Chairman
Dr. Kenneth A. McCollom
Dr. Walter H. Jordan
Herbert Grossman, Esq.**

In the Matter of

**Docket Nos. 50-445-OL&OL-2
50-446-OL&OL-2
(ASLBP No. 79-430-06-OL)**

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

August 29, 1985

In this Memorandum and Order, the Licensing Board declines to adopt Applicants' Management Plan as the sole basis for continued litigation of this case, holding that a hearing may be terminated and unresolved issues turned over to the Applicants and Staff only when the tasks left to be done are merely confirmatory of plant safety.

**RULES OF PRACTICE: APPLICANTS' PROGRAM PLAN
NOT A PROPER FOCUS FOR HEARINGS**

Where Applicants sought to exclude litigation of prior QA/QC and design practices because of a comprehensive program of reexamination of the safety of the plant, it would not be proper to determine whether the study adequately resolves the issues until the results of the study are available for examination and challenge.

RULES OF PRACTICE: DISCOVERY

Where Intervenors sought an order to require Applicants to preserve plant components removed from the plant for design deficiencies but did not provide any authority for such an order, the criteria for a stay are not met and Intervenors do not meet discovery criteria because they are not seeking access to information.

RULES OF PRACTICE: SUMMARY DISPOSITION

Where the information being collected by Applicants was sufficiently important to warrant the delay, the Board granted Applicants an indefinite continuance in their obligation to respond to summary disposition motions being addressed pursuant to the Management Plan.

LICENSING BOARD: RESPONSIBILITIES

Although a major study of plant safety may not be left solely for Staff examination and be excluded from the hearing process when the study is relevant to an admitted contention, it may be possible to exclude the final stages of the study after the earlier stages have demonstrated its adequacy and only similar tasks are left to be performed.

MEMORANDUM AND ORDER

(Proposal for Governance of This Case)

Memorandum

This Memorandum addresses crucial procedural issues raised by Texas Utilities Electric Company, *et al.* (Applicants) in "Applicants' Current Management Views and Management Plan for Resolution of All Issues" (Management Plan), June 28, 1985.¹ It also addresses issues raised by CASE in "CASE's Proposal Regarding Design/Design QA Issues in Response to Applicants' 6/28/85 Current Management Views and Management Plan for Resolution of All Issues" (CASE's Proposal) August 15, 1985.

¹ Citizens' Association for Sound Energy (CASE) responded on July 29, 1985 (Initial Response), and on July 16 (Mootness Response) and the Staff of the Nuclear Regulatory Commission (Staff) responded on August 2, 1985 (Staff Response).

The Board finds that it would not be proper to adopt the Management Plan as the sole basis for continued litigation of this case. The Plan contemplates complex factual and legal determinations. Focusing the entire proceeding on the adequacy of the Plan, prior to its execution, would abnegate our responsibility to determine the merits of CASE's contention. This would be particularly ironic because CASE raised many of the design and quality assurance issues that are being addressed by the Management Plan.

We have only limited authority to terminate this proceeding when there are analyses to be completed. Termination is appropriate only if the analyses are merely confirmatory of the adequacy of the plant. However, the currently proposed plan is not just a confirmatory analysis.² It is necessarily more vague than Applicants' previous plan, which Applicants failed to fulfill. The new Plan is addressed to a wide variety of significant issues that have not been adequately addressed by Applicants.

Although we reject the Plan as the sole basis for litigation, Applicants' commitment to the Plan is substantial and its careful implementation would provide important new information. Hence, it would not be proper to require Applicants to respond to Intervenor's pending summary disposition motions before they can complete work on their Plan.

There would be little purpose in addressing a substantial portion of this proceeding to the adequacy of the Plan itself. In a sense, the Plan is Applicants' internal management document for the process by which it plans to demonstrate the adequacy of its plant. On a grand scale, it is like a lawyer's trial preparation plan. Like the lawyer's plan, however, the success of the Plan will depend largely on the skill with which it is implemented. Thus, there is no reason for CASE, at this time, to file contentions about the Plan or about the Comanche Peak Response Team (CPRT) Plan.³

Although we will forego any extensive effort to judge the adequacy of the Plan prior to its implementation, we have read it and considered the

² *Consolidated Edison Co. of New York* (Indian Point Station, Unit 2), CLI-74-23, 7 AEC 947, 951 (1974), citing *Wisconsin Electric Power Co.* (Point Beach Nuclear Plant, Unit 2), CLI-73-4, 6 AEC 6 (1973) (the mechanism of post-hearing findings is not to be used to provide a reasonable assurance that a facility can be operated without endangering the health and safety of the public); *Metropolitan Edison Co.* (Three Mile Island Nuclear Station, Unit No. 1), ALAB-729, 17 NRC 814 (1983) (post-hearing procedures may be used for confirmatory tests); *Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-811, 21 NRC 1622 (1985) (once a method of evaluation had been used to confirm that one of two virtually identical units had met the standard of a reasonable assurance of safety, it was acceptable to exclude from hearings the use of the same evaluation method to confirm the adequacy of the second unit); see also Staff Response at 915-18. The Board agrees with the Staff's statement at the bottom of page 18, that we should require evidence of the "adequacy of, the scope of, and corrective actions resulting from, the CPRT Program."

³ We encourage CASE to continue cooperating with the Staff by promptly alleging deficiencies for Staff to consider.

comments made on it. There are areas of the Plan that concern us. For the purpose of providing guidance to the parties, we have reached the following tentative, preliminary and nonbinding conclusions:

1. If the Comanche Peak Response Team Program Plan (CPRT Plan) is revised to address concerns raised in this Memorandum and is carefully and appropriately implemented, it may demonstrate both the quality of plant and the extent to which management has fulfilled its responsibility to comply with the FSAR, Commission regulations, and plant quality.
2. The lack of independence of the CPRT from management may seriously affect our willingness to accept the CPRT's findings, particularly with respect to management's responsibilities. Consequently, the lack of independence might affect the admission of evidence concerning past QA/QC failures and management's responsibility for those failures.
3. Applicants will have to demonstrate that the deficiencies identified by the CPRT are adequately resolved.
4. The CPRT must adequately resolve the Staff's Technical Review Team's (TRT) findings concerning deficiencies in the original QA/QC programs⁴ for construction and design. This concern is relevant to whether reinspections by the use of samples are adequate to assure plant safety.
5. The CPRT's resolution of all significant TRT findings that are relevant to Contention 5 may be litigated in this case.
6. We will await the CPRT's consideration of the summary disposition questions raised by Applicants and by CASE, notwithstanding Applicants' request that we no longer consider entering summary disposition in their favor on the basis of these motions.
7. The CPRT should address the extent to which there have been design errors or insufficiently complete design documents at Comanche Peak and it should consider the root cause of these errors. Consideration should be given to whether Applicants incorrectly defended design errors or incomplete design documents before this Board.
8. It would be useful for CYGNA to continue reviewing design issues that it has identified until it reaches independent conclusions about the adequacy with which its concerns have been re-

⁴ NUREG-0797, SER Suppl. No. 11 (May 1985). The TRT found, at page P-35, that "[t]he pattern of failures by QA and QC personnel to detect and document deficiencies suggests an ineffective B&R and TUGCO inspection system. This pattern . . . challenges the adequacy of the QC inspection program at CPSES on a system-wide basis."

solved. CYGNA should maintain its independence from the CPRT, Texas Utilities Electric Company and other site organizations.

9. Applicants must implement an adequate QA/QC program for the CPRT.
10. Applicants cannot be immune from litigating the prior QA/QC program and, at the same time, rely on that program to add confidence to the adequacy of the plant. (See Management Plan at 42.)
11. While, in general, closed issues need not be relitigated, further investigation by the CPRT, CYGNA or the TRT may cast doubts upon the validity of our earlier findings. In that event, these closed issues may become eligible for reassessment by the Board.

Some other questions that concern us are:

- Whether Applicants consistently complied with their FSAR design commitments.
- Whether the samples are properly structured⁵ and whether the populations are defined to include: (a) equipment removed from the plant for design or other reasons, and (b) equipment recently added to the plant or soon-to-be added to the plant.
- Whether it would be useful or necessary to destructively evaluate components removed from the plant or to use nondestructive evaluation techniques, in addition to visual inspection, to assess welds.⁶
- How the CPRT will address management's responsibility for: (a) apparent QA/QC management failures with respect to coatings and to the liner plate; (b) failure to disclose one or more management studies to CASE pursuant to discovery requests; (c) possible inadequacies in the technical analyses contained in Applicants' filings in this case, including its summary disposition filings; (d) the implications of the "destructive inspection" and the transfer of workers as they relate to the t-shirt incident;

⁵ See "Staff Evaluation of Comanche Peak Response Team Program Plan," Rev. 2 ("Evaluation") at 5 (breadth), 6 (basis for selection, sample size), 9 (issues addressed), 10 (exclusion of vendors), 11 (method of establishing populations), 13-14 (criteria for expanding samples).

⁶ CASE's motion to preserve pipe supports and other components being removed from the plant is denied. CASE has not persuaded us that it has met the standard for issuance of a stay or injunction, and its motion does not appear to be a motion for discovery since it does not announce any intention to collect data about the affected components in the near future. The questions CASE has raised go to the adequacy of the sample being taken by Applicants and to the possible need for destructive evaluation of removed components. These issues go to the credibility of the proof Applicants will present and do not require action by the Board at this time.

- (e) Applicants' conduct with respect to Mr. Lipinski and to witness F, both of whom appear to have made at least some charges of technical validity; (f) the handling of Atcheson, Hamilton and Dunham; (g) the handling of other allegations of intimidation of QA/QC and craft personnel; (h) the attempt to defend the quality of QA/QC for coatings and for the liner plate; (i) the apparent inability to understand and properly evaluate the engineering contentions of Mark Walsh and Jack Doyle, including the apparently erroneous argument that Applicants' engineering practices were standard industry practice; and (j) other problems of documentation and workmanship.
- Proper qualification of the QA/QC inspectors used in the CPRT's work.⁷
 - The acceptability of CPRT work done before a QA/QC plan was approved or implemented.
 - How Applicants or the CPRT will assess the adequacy of repairs made pursuant to its recommendations and how this assessment will be done in a way that makes it reviewable by the Staff and by CASE.
 - How the CPRT will discharge its responsibility to find root causes and patterns of deficiencies.
 - The suitability of acceptance criteria and the way in which trends will be used to establish corrective action.⁸
 - Information concerning the independent design review conducted by a professor.
 - Whether generic concerns with QA/QC require additional verification of QA/QC for welding and, if so, the suitability of the inspection attributes being used by the CPRT, particularly with respect to welds covered by paint.
 - The acceptability of CYGNA's current role as independent design reviewer.
 - The completeness of the CPRT's list of issues.⁹

Despite these reservations, it is appropriate to defer consideration of issues raised by CASE in its summary disposition motions. If Applicants are successful, then the completed plan will withstand challenges brought by CASE. One form of challenge CASE might bring is a statement that it intends to prove a certain fact about the plant and that, assuming that fact to be true, Applicants' plan has not adequately re-

⁷ Evaluation at 11.

⁸ *Id.* at 13.

⁹ *Id.* at 9; Staff's Response at 21-25.

sponded to that fact. Another form of challenge is that there are specific reasons (set forth) that Applicants' plan, as implemented, is not adequate to carry their burden of proof to demonstrate the safety of the plant. Still other challenges are possible, which is precisely the state of the world whenever a company prepares its responses to a complex set of allegations. Although this undoubtedly will make things difficult for Applicants, it is nevertheless the only fair way to proceed at this time.

It is difficult to forecast when hearings in this case will be concluded. Much of the difficulty relates to the standard restricting the tasks that may be performed subsequent to the close of hearings. Such subsequent tasks must be merely confirmatory of the adequacy of the plan. Whether or not tasks are confirmatory will, at some future time, become a matter of judgment. Should it be demonstrated that enough work has been done on the CPRT Plan to show its carefulness and comprehensiveness and to establish a pattern for a similar portion of work yet to be done, then the remaining tasks could be considered confirmatory.

This ruling may necessitate substantial proceedings that will delay the operation of Comanche Peak. The number of important issues and the length of hearings that may be required are not a source of comfort to this Board. Although apparent "expedition" could have been accomplished by accepting Applicants' plan at this time, regrettably, the easy road for this case is not the proper one. The parties are encouraged to cooperate in the interest of limiting the work that lies before us all.

Order

For all the foregoing reasons and based on consideration of the entire record in this matter, it is, this 29th day of August 1985,

ORDERED:

Texas Utilities Electric Company, *et al.*'s request that Docket 2 be declared moot is denied; and its motion that we adopt its Management Plan also is denied. Similarly, Citizen Association for Sound Energy's

Proposal relating to summary disposition motions and to the status of Cygna Energy Services is denied.

**THE ATOMIC SAFETY AND
LICENSING BOARD**

**Peter B. Bloch, Chairman
ADMINISTRATIVE JUDGE**

**Walter H. Jordan
ADMINISTRATIVE JUDGE**

**Kenneth A. McCollom
ADMINISTRATIVE JUDGE**

**Herbert Grossman
ADMINISTRATIVE JUDGE**

Bethesda, Maryland

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

**James P. Gleason, Chairman
Dr. Jerry R. Kline
Mr. Glenn O. Bright**

In the Matter of

**Docket Nos. 50-440-OL
50-441-OL
(ASLBP No. 81-457-04-OL)**

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

August 30, 1985

In this Memorandum and Order, the Licensing Board denies Intervenor's motion to reopen the record and submit a new contention finding that Applicants' request for exemption was properly filed under the provisions of 10 C.F.R. § 50.12 and need not have been presented by petition pursuant to 10 C.F.R. § 2.758.

REGULATIONS: EXEMPTION OR WAIVER

When a request for exemption from a Commission regulation does not contend that application of the rule or regulation would not serve the purpose for which it was adopted, but rather that its application would result in costly delays in operation, that request is properly filed under 10 C.F.R. § 50.12 and need not be the subject of a petition pursuant to 10 C.F.R. § 2.758.

REGULATIONS: EXEMPTION OR WAIVER

When a request for exemption from a Commission regulation is not directly related to a contention in the proceeding, and does not involve such serious safety, environmental, or common defense and security matters as to warrant the Board's raising issues on its own initiative, the request is properly filed pursuant to 10 C.F.R. § 50.12 and need not be the subject of a petition under 10 C.F.R. § 2.758.

MEMORANDUM AND ORDER (Motion to Reopen Record and Submit New Contention)

The Ohio Citizens for Responsible Energy (OCRE), Intervenor, filed a motion, opposed by the Applicants and Staff, to reopen the record and submit a new contention. The motion is directed at an exemption requested by Applicants from the provisions of 10 C.F.R. Part 50, Appendix J, § III.D.2(b)(ii). The essential facts are not in dispute. Applicants seek for their Perry facility a partial but permanent exemption under 10 C.F.R. § 50.12(a) from one of the containment leakage testing requirements in Appendix J. The requirements at issue relate to testing for airlock leaks. Applicants' exception, if granted, would allow testing of the airlock seal in lieu of testing the entire airlock in cases where the airlock has been opened during periods when containment integrity is not required. (This substitute is explicitly permitted by the regulations where the opening occurs when containment integrity is required). See 10 C.F.R. Part 50, Appendix J, § III.D.2(b)(iii). The basis for the exemption requested is that the regulatory test requirement, if applied, would require either a lengthy and costly test method to be pursued, or, alternatively, a major design change, either of which would decrease plant availability and create substantial and unjustifiable operational cost increases. In Applicants' view the exemption does not present an undue risk to the public health and safety, is consistent with the common defense and security, and is in the public interest. A number of nuclear facilities have received the same exemption in the past. See Applicants' Answer at 3 and Staff Response at 8 and attachment.

The Applicants included notice of the planned exception from Appendix J in their initial (July 1984) and subsequent drafts of the Perry plant's technical specifications and supported with an analysis their exemption request to the Commission on April 8, 1985. See Applicants' Answer, Attachments 2, 3, 4 and 5 and OCRE Motion, Exhibit 1.

The Staff, pursuant to 10 C.F.R. § 51.35, has prepared an environmental assessment and finding of no significant impact of the requested exemption which suggests, at least, that the request will be approved. There is an added condition included therein that full-pressure testing required by § III.D.2(b)(ii) will have to be undertaken whenever maintenance is performed on a containment airlock.

OCRE's stated objections to the Applicants' submittal in part deals with the merits of the exemption requested and in part with the procedure being followed. All parties agree on the Commission's existing standards for reopening the record and for late-filed contentions even though there is a sharp divergence over their application.

Intervenor's proposed new contention reflects OCRE's position that Applicants should have filed for an exemption under 10 C.F.R. § 2.758 rather than § 50.12. However, OCRE also alleges a failure on Applicants' part to meet the tests required under 10 C.F.R. § 50.12 as well. This later section of the regulations provides for the Commission to grant such exemptions from the requirements of Part 50 as it determines are authorized by law and will not endanger life or property and the common defense and security and are otherwise in the public interest.

The Intervenor initially challenges the Commission's legal authority to issue exemptions from its regulations, a thrust which is beyond a licensing board's responsibility to consider. *See* 10 C.F.R. § 2.758(a); *Potomac Electric Power Co.* (Douglas Point Nuclear Generating Station, Units 1 and 2), ALAB-218, 8 AEC 79, 89-90 (1974). The Commission has previously expressed its view on challenges to 10 C.F.R. § 50.12. *See Carolina Power and Light Co.* (Shearon Harris Nuclear Power Plant, Units 1, 2, 3 and 4), CLI-74-9, 7 AEC 196 (1974). Intervenor next contends that Applicants' request for an exemption does not meet the standards of § 50.12, alleging its primary motive for the request is avoidance of financial hardship, a claim OCRE suggests is beyond the Commission's authority to consider. In our view, the cases cited by OCRE have no direct applicability to the issue of exemptions involved here. Continuing, OCRE alleges that the grant of an exemption would increase dangers to the public health and property and as a consequence not be in the public interest. We need not burden this Order with a detailed evaluation of these particular OCRE allegations since if Applicants have validly filed a request under 10 C.F.R. § 50.12 then the grant of the requested exemption under its present posture will be a matter for the Commission to decide.

The Commission does have pending a proposed rule designed to clarify the standards that will be applied when it considers requests for exemptions under § 50.12. *See* 50 Fed. Reg. 16,506 (1985). Although the

rule being proposed has no present application here, the Appeal Board has recently pointed out that the discussion in the notice yields useful insight on the application and purpose of the rule in its existing form. See *Philadelphia Electric Co.* (Limerick Generating Station, Units 1 and 2), ALAB-809, 21 NRC 1605, 1610 n.5 (1985). The rule proposes to include “financial or economic hardship” and “any unusual difficulties” as circumstances that could justify an exemption. As the Appeal Board noted, *supra*, the proposed rulemaking is intended to incorporate certain standards now being applied by the Staff as a matter of practice. The central issue before us, however, is a determination on whether Applicants’ request for relief, as OCRE alleges, is required to be filed under § 2.758 rather than § 50.12 of the Commission’s regulations. If the decision here is in the affirmative, we will need to evaluate whether the standards for reopening the record and filing a new contention have been met. If negative, no purpose is served by deciding the merits of that issue in this decision.

Section 2.758 is the basic regulation which insulates the Commission’s rules and regulations from attack or challenges in an adjudicatory proceeding. It provides a method for waivers or exceptions to be made in the application of such rules or regulations to a particular subject matter of the proceeding wherein the application of the rule or regulation would not serve the purpose for which it was adopted. A petition for a waiver or exception is permissible and generally should be utilized where the interpretation or the application of a regulation to particular facts is questioned. See *Washington Public Power Supply System* (WPPSS Nuclear Project Nos. 3 and 5), CLI-77-11, 5 NRC 719, 723 (1977). The waiver petition must be accompanied by an affidavit that identifies the specific aspects of the subject matter of the proceeding as to which application of the rule would not serve the purpose for which the rule or regulation was adopted. If a licensing board finds a *prima facie* showing has been made, the waiver petition is then certified to the Commission for its final disposition. Petitions for waivers or exceptions should be granted only in “unusual and compelling circumstances.” *Northern States Power Co.* (Monticello Nuclear Generating Plant, Unit 1), CLI-72-81, 5 AEC 25, 26 (1972). The Applicants here make no claim that the regulatory testing requirement of § III.D.2(b)(ii) does not serve their purpose but rather that compliance would result in costly delays in operation. Further, it is clear that a petition for a waiver or exception under § 2.758 represents an optional procedure which may or may not be available in the circumstances of a particular proceeding.

The Intervenor, citing a Commission ruling in a *Shoreham* case, argues that absent directions from the Commission in this case, since

the Applicants are a party in an adjudicatory proceeding, they *must* submit their exemption request as a petition under § 2.758 to the Licensing Board (emphasis added). See *Long Island Lighting Co.* (Shoreham Nuclear Power Station, Unit 1), CLI-84-8, 19 NRC 1154 (1984). The *Shoreham* case, as we see it, however, is not applicable since it involved an exemption request under § 50.12 and that exemption was directly related to a contention being litigated in the proceeding. No similar relationship exists in the Perry proceeding. The Board is commanded by 10 C.F.R. § 2.760(a) to adjudicate only such matters as are placed in controversy by the parties. It can raise issues on its own initiative which involve serious safety, environmental, or common defense and security matters; however, the exemption Applicants seek here does not raise that matter to a level of such concern here — this is particularly true in view of the number of other facilities which have received identical exemption approvals. We, of course, do not suggest that the Commission, if it desired, could not direct this Board to consider the merits of Applicants' pending § 50.12 request. It has done so in the past. See *Carolina Power and Light Co.* (Shearon Harris Nuclear Power Plant, Units 1, 2, 3 and 4), CLI-74-9, 7 AEC 197, 198 (1974). Inasmuch as OCRE forwarded its communication in opposition to the Applicants' exemption request to the NRC Project Manager of the Perry facility on May 8, 1985 — the substance of which is identical to arguments made in the present motion — the Commission and Staff have OCRE's views on the issue before it for any evaluation they believe may be required.

The Board concludes that no obligation rests on the Applicants to file their exemption request as a petition under § 2.758, that the relief it seeks is not available from that section, and that the Intervenor's

motion to open up the record to consider a contention in this area flounders for lack of any foundation. We conclude, therefore, its motion must be dismissed.

ORDERED

**THE ATOMIC SAFETY AND
LICENSING BOARD**

**James P. Gleason, Chairman
ADMINISTRATIVE JUDGE**

**Glenn O. Bright
ADMINISTRATIVE JUDGE**

**Jerry R. Kline
ADMINISTRATIVE JUDGE**

Bethesda, Maryland

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

OFFICE OF NUCLEAR REACTOR REGULATION

Harold R. Denton, Director

In the Matter of

Docket No. 50-528
(10 C.F.R. § 2.206)

ARIZONA PUBLIC SERVICE
COMPANY, *et al.*
(Palo Verde Nuclear Generating
Station, Unit 1)

August 9, 1985

The Director of the Office of Nuclear Reactor Regulation denies the petition of Mr. Myron L. Scott of the Coalition for Responsible Energy Education which requested delay in the issuance of the PVNGS Unit 1 license until certain concerns were resolved. The Petitioner contended that the incentive regulations adopted by the Arizona Corporation Commission and the fuel load bonus plan adopted by the Licensees had not been adequately reviewed for their potential safety impact and that emergency preparedness of State and local agencies for PVNGS was inadequate due to underfunding.

DIRECTOR'S DECISION UNDER 10 C.F.R. § 2.206

INTRODUCTION

By petition dated December 18, 1984, Myron L. Scott, on behalf of the Coalition for Responsible Energy Education (CREE), raised three concerns about the Palo Verde Nuclear Generating Station (PVNGS) Unit 1 and requested that no license be issued for PVNGS Unit 1 until the concerns are resolved. Specifically, the Petitioner contends that:

- (1) Incentive regulations imposed by the Arizona Corporation Commission (ACC) on the Arizona Public Service Company (APS) have not been adequately reviewed for their potential safety impact on PVNGS Unit 1;
- (2) The fuel load bonus plan put into effect in the Summer of 1984 by APS compromises safe testing and startup of PVNGS Unit 1, and should be reviewed and/or have special inspections conducted to guarantee that no adverse safety implications have occurred or will occur; and
- (3) Emergency preparedness of State and local agencies for PVNGS is inadequate since the agencies may be underfunded.

The petition was referred to the Staff for appropriate action in accordance with 10 C.F.R. § 2.206. By letter dated February 11, 1985, I informed the Petitioner that the relief requested prior to issuance of the low-power license was not required (and, hence, was denied for that licensing action). Notice that the petition was under consideration was published in the *Federal Register*, 50 Fed. Reg. 7152 (Feb. 20, 1985). The Staff has completed its evaluation of the petition and, for the reasons stated in this Decision, has determined that the Petitioner's concerns could be and were reviewed and satisfactorily resolved prior to issuance of the full-power license for PVNGS Unit 1 without the need for issuance of an order to show cause to the Licensees.

DISCUSSION

Petitioner's Concerns with Regard to the ACC Incentive Plan and APS Fuel Load Bonus Plan

Petitioner states that on November 28, 1984, ACC adopted an incentive regulation package for PVNGS which includes a delay penalty dependent upon PVNGS Unit 1 commercial operation, a total project construction cost ceiling, and an operating efficiency performance incentive for PVNGS Unit 1. Petitioner contends that these incentives have not been adequately reviewed for their potential safety impact on PVNGS.

Petitioner also states that an APS bonus plan was put in effect in the Summer of 1984 for certain personnel relating to the fuel load date for PVNGS Unit 1. In this regard, Petitioner contends that the plan compromises safe testing and startup and should be reviewed and/or have special inspections conducted to guarantee that no adverse safety implications have or will occur.

The Staff considered the above issues prior to issuing a low-power license for PVNGS Unit 1. As stated in my letter to the Petitioner on February 11, 1985, I did not believe that the immediate relief requested (i.e., no license should be issued until the issues were resolved) was required since there was adequate assurance of public health and safety. Construction of PVNGS Unit 1 was essentially complete prior to the time the incentive programs were put into effect. Before issuance of the low-power license, the Staff had determined through a number of inspections that construction and testing of the plant had been completed in substantial agreement with APS's docketed commitments and regulatory requirements.

Prior to issuance of the full-power license for PVNGS Unit 1, the Staff did review in detail the ACC incentive regulations and the fuel load bonus plan established by APS. The Staff provided its views on incentive plans to the ACC in my letter to Wayne Ruhter dated April 9, 1985. The safety concern associated with incentive plans is that in response to short-term economic pressures, licensees may hurry work, take shortcuts or delay action in order to meet a deadline, a cost limitation or other factor. Such actions could have adverse effects on plant safety. In other words, the potential exists that such a program could unintentionally encourage the adoption of actions designed to maximize the measured performance against which the financial rewards or penalties of the incentive plan are applied, but which could adversely affect the public health and safety.

The Staff performed an evaluation of the financial aspects of the ACC incentive plan and determined that none of the elements are likely to have a significant effect on APS's overall financial condition or well being. In addition, two of the elements, i.e., those relating to achievement of commercial operation and the construction cost ceiling, are not likely to be "triggered" since those goals should be completed before the incentives come into effect. Also, since the incentives are relatively modest and are all graduated with no step changes in the amount of incentives involved, the Staff has not found any adverse safety implications.

The APS fuel load bonus plan objective was achieved when the first fuel element was loaded on January 7, 1985. Bonuses were granted based on that date and the bonus plan ended before initial criticality and before low-power testing began. To assure that the fuel load bonus plan did not result in any compromise of plant quality, the Staff conducted an enhanced inspection effort at PVNGS Unit 1 for the period prior to, and including, initial criticality and the low-power testing phase.

As a result of the enhanced inspection effort, the Staff has found no negative impact to date from either the APS fuel load bonus plan or the ACC incentive plan. The Staff will continue to monitor the performance of the plant as part of its normal inspection program.

Therefore, as discussed above, Petitioner's concerns relative to incentive plans have been reviewed and were satisfactorily resolved prior to issuance of the full-power license for PVNGS Unit 1.

Petitioner's Concern with Regard to Offsite Emergency Preparedness

Petitioner contends that emergency preparedness of State and local agencies is inadequate since the agencies may be underfunded and that no license should be issued to PVNGS Unit 1 until this issue is resolved. In support of its contention, Petitioner provided a report by the Auditor General of the State of Arizona, dated November 8, 1984.

The Staff had considered the above concern prior to issuing a low-power license for PVNGS Unit 1. Because of the following considerations, I did not believe that the immediate relief requested was required. The Staff's review had determined that the status of emergency preparedness for PVNGS was acceptable for issuance of a low-power license. Specifically, APS's onsite emergency plan was found adequate and the results of the emergency exercise in September 1984 established that the plan was being properly implemented. The September 1984 exercise also involved a demonstration of offsite preparedness, and the Federal Emergency Management Agency (FEMA) determined that there is reasonable assurance that appropriate protective measures can be implemented by offsite jurisdiction with regard to the offsite, State and local plans.

Prior to issuance of the full-power license for PVNGS Unit 1, the Staff did review the information provided by the Petitioner. During the time between low-power and full-power licensing, FEMA completed its review of offsite, State and local plans and found the plans to be adequate. FEMA also reviewed the November 8, 1984 report by the Auditor General of the State of Arizona as discussed in a memorandum from Richard Krimm to Edward L. Jordan, dated May 16, 1985. The gist of the Auditor's finding was that the Arizona Radiation Regulatory Agency (ARRA), which has certain emergency response and environmental surveillance responsibilities for PVNGS, was not adequately keeping track of its expenses related to PVNGS and thus, was not asking for sufficient funds from the Nuclear Emergency Management Fund which is the legislatively mandated source of payment for these expenses. Instead,

ARRA was using General Funds to pay for many of its PVNGS costs. Thus, the report was not identifying a concern with the overall level of funding available to ARRA for its emergency planning responsibilities, but that the funds were not being derived from the appropriate source, i.e., an annual assessment levied against the owners of PVNGS. FEMA has determined that the funding issues involving emergency response organizations are not relevant to, and do not alter, the FEMA finding regarding the adequacy of offsite emergency preparedness.

Petitioner's concerns were reviewed and satisfactorily resolved prior to issuance of the full-power license for PVNGS Unit 1. No further action is required.

CONCLUSION

As explained above, no adequate basis existed for not issuing a low-power license for PVNGS Unit 1. Accordingly, the Petitioner's request had been denied for that licensing action. The Petitioner's concerns were reviewed and satisfactorily resolved prior to issuance of the full-power license for PVNGS Unit 1. No further action is required. A copy of this Decision will be filed with the Secretary for the Commission's review in accordance with 10 C.F.R. § 2.206(c) of the Commission's regulations.

Darrell G. Eisenhut, Acting
Director
Office of Nuclear Reactor
Regulation

Dated at Bethesda, Maryland,
this 9th day of August 1985.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

OFFICE OF INSPECTION AND ENFORCEMENT

James M. Taylor, Director

In the Matter of

Docket No. 50-341
(10 C.F.R. § 2.206)

THE DETROIT EDISON COMPANY,
et al.
(*Enrico Fermi Atomic Power*
Plant, Unit 2)

August 12, 1985

The Director of the Office of Inspection and Enforcement denies the petition of Mr. Stanley Nietubicz requesting legal action to rectify an asserted lack of viable evacuation routes under flood conditions for certain areas around the Fermi 2 facility.

DIRECTOR'S DECISION UNDER 10 C.F.R. § 2.206

INTRODUCTION

By letter dated April 15, 1985, Stanley Nietubicz requested that the Nuclear Regulatory Commission (NRC) institute legal action to rectify the lack of viable evacuation routes under flood conditions for certain areas near the Fermi-2 facility. It was determined that the request would be treated under 10 C.F.R. § 2.206 of the Commission's regulations.

Notice of the NRC's intent to treat Mr. Nietubicz's request as a petition under § 2.206 of the Commission's regulations was published in the *Federal Register* on June 11, 1985 (50 Fed. Reg. 24,602). Because of the division of responsibilities for the evaluation of emergency preparedness

for nuclear power plants,¹ the NRC requested the assistance of the Federal Emergency Management Agency (FEMA) in responding to Mr. Nietubicz's concern. In addition to the response from FEMA dated June 27, 1985, Detroit Edison Company (Licensee) submitted comments on the issue in Mr. Nietubicz's petition by letter dated June 26, 1985.

DISCUSSION

Mr. Nietubicz's concern involves evacuation routes in the environs of Fermi-2. He contends that in the event an accident should occur at Fermi-2 requiring evacuation during a flood situation, there would be no viable evacuation route for the residents of Estral Beach and Stoney Point. Mr. Nietubicz states that the Estral Beach/Stoney Point area is fronted by a shallow basin of Lake Erie. The area is subject to periodic flooding under certain wind conditions that renders existing roads impassable. Mr. Nietubicz contends that under such conditions there would be no evacuation routes leading from the Estral Beach/Stoney Point area.

In its June 26, 1985 response to Mr. Nietubicz's concern, Detroit Edison Company stated that flooding along the Lake Erie shoreline in the vicinity of Estral Beach is primarily a wind-induced phenomenon. An analysis of severe storms in the area showed that these storms and associated flooding were always accompanied by either northeast or east winds. Comparing the location of Estral Beach with the Fermi-2 reactor site shows that any release from Fermi-2 under such wind conditions would *not* be in the direction of Estral Beach; in fact, the wind would be directed away from the beach.

The Licensee stated that flooding of this nature is not an instantaneous phenomenon. These flood-producing winds are generally in the range of 30-45 miles per hour and sustained for 18-24 hours. As such, there is time for advance warning from either the National Oceanographic and Atmospheric Agency (NOAA) or the Emergency Broadcast System (EBS). Should an incident occur at Fermi-2 during a storm where local flooding had occurred, persons who had not already evacuated because of the flooding could be moved with heavy vehicles from the Road Commission (if an evacuation were considered to be the most appropriate protective action).

¹ FEMA, by Presidential directive, has been assigned the responsibility for assessing the adequacy of off-site emergency plans for the area surrounding a nuclear plant. The NRC is responsible for assessing the adequacy of onsite emergency plans and has the final licensing authority.

In addition, information provided by the Licensee indicates that these flooding conditions would not impact any of the paved, secondary routes which would be the primary routes used for evacuation. The Village of Estral Beach and Frenchtown Township are in the process of preparing to construct alternate secondary routes out of Estral Beach and Stoney Point, respectively. The Detroit Edison Company has agreed to participate in sharing the costs of these projects, and work on the Estral Beach evacuation route has already begun.

FEMA has evaluated the adequacy of offsite preparedness for Fermi-2 with respect to the flooding issue raised by Mr. Nietubicz. FEMA also has verified the Licensee's agreement with Estral Beach to help with upgrading their evacuation route to provide protection from floodwaters.

FEMA has forwarded the State of Michigan Emergency Management Division's response to Mr. Nietubicz in which the State noted that any threat to the existing evacuation routes by flooding also would be a threat to the entire area because the roads and the area are on the same floodplain. Under such conditions, the State indicated that it would seem likely that the community would evacuate early because of flooding as opposed to an accident at Fermi-2.

On the basis of the above information, FEMA continues to believe that State and local plans and preparedness are adequate and that there is reasonable assurance that the health and safety of the public can be protected in the event of a radiological emergency at Fermi-2.

CONCLUSION

In summary, on the basis of the above information, the NRC supports the FEMA conclusion and concludes that there is reasonable assurance that the Fermi-2 facility meets the applicable regulatory requirements and guidance of the NRC and FEMA for emergency preparedness. With respect to Mr. Nietubicz's specific emergency planning concern regarding evacuation routes raised in the petition to the NRC, the findings described above support the conclusion that his concern has been satisfactorily resolved and is adequately addressed in the emergency plans for the Fermi-2 facility. I, therefore, conclude that no further action is required to resolve Mr. Nietubicz's concern.

A copy of this Decision will be filed with the Secretary of the Commission for review by the Commission in accordance with § 2.206. As provided therein, this Decision will constitute final action of the Commission twenty-five (25) days after the date of issuance, unless the Com-

mission, on its own motion, institutes a review of this Decision within that time.

James M. Taylor, Director
Office of Inspection and
Enforcement

Dated at Bethesda, Maryland,
this 12th day of August 1985.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Nunzio J. Palladino, Chairman
Thomas M. Roberts
James K. Asselstine
Frederick M. Bernthal
Lando W. Zech, Jr.

In the Matter of

Docket Nos. 50-352-OL
50-353-OL

PHILADELPHIA ELECTRIC COMPANY
(Limerick Generating Station,
Units 1 and 2)

September 19, 1985

By completing its consideration of emergency planning issues raised by the Graterford inmates, the Licensing Board has mooted the need for the exemption to 10 C.F.R. § 50.47(a) and (b) which it had granted Philadelphia Electric Company in May 1985. The Commission has therefore vacated, on grounds of mootness, ALAB-809 and the underlying Licensing Board decisions which addressed the exemption issue.

ORDER

On May 9, 1985, the Atomic Safety and Licensing Board ("Licensing Board") granted the Philadelphia Electric Company ("PECo") an exemption from the requirements of 10 C.F.R. § 50.47(a) and (b) related to potential emergency planning issues that could be raised by the Graterford inmates, and on May 24, 1985, the Licensing Board authorized the Director of Nuclear Reactor Regulation to issue full-power operating licenses for the Limerick Generating Station. However, the Commission

itself declined to make the decisions immediately effective, CLI-85-11, 21 NRC 1585 (1985), and in ALAB-809, 21 NRC 1605 (1985), the Atomic Safety and Licensing Appeal Board vacated both of these Licensing Board decisions and remanded the matter back to the Licensing Board for further consideration.

Subsequently, the Licensing Board completed its consideration of the Graterford emergency planning contentions thereby mooted the need for any such exemption. Accordingly, we vacate both ALAB-809 and the underlying Licensing Board decisions as moot. This has no effect on the full-power licenses since issuance of the full-power licenses does not depend in any way on the grant of the exemption at issue in these decisions.

It is so ORDERED.

For the Commission

SAMUEL J. CHILK
Secretary of the Commission

Dated at Washington, D.C.,
this 19th day of September 1985.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

**Alan S. Rosenthal, Chairman
Dr. W. Reed Johnson
Gary J. Edles**

In the Matter of

Docket No. 50-293-OLA

**BOSTON EDISON COMPANY
(Pilgrim Nuclear Power Station)**

September 5, 1985

The Appeal Board affirms the Licensing Board's denial of intervenor's untimely petition to intervene in this operating license amendment proceeding for failure to address the 10 C.F.R. § 2.714(a) lateness factors.

**RULES OF PRACTICE: UNTIMELY INTERVENTION
PETITIONS**

Under 10 C.F.R. § 2.714(a), nontimely petitions to intervene will not be entertained absent a determination by the Licensing Board that the petition should be granted based upon a balancing of five factors:

- (i) Good cause, if any, for failure to file on time;
- (ii) The availability of other means whereby the petitioner's interest will be protected.
- (iii) The extent to which the petitioner's participation may reasonably be expected to assist in developing a sound record.
- (iv) The extent to which the petitioner's interest will be represented by existing parties.
- (v) The extent to which the petitioner's participation will broaden the issues or delay the proceeding.

RULES OF PRACTICE: UNTIMELY INTERVENTION PETITIONS

When filing a late petition to intervene, it is the petitioner's obligation to address the five lateness factors of 10 C.F.R. § 2.714(a) in the petition itself. 10 C.F.R. § 2.714(a).

RULES OF PRACTICE: UNTIMELY INTERVENTION PETITIONS

When filing an untimely petition to intervene, the burden of persuasion on the lateness factors of 10 C.F.R. § 2.714(a) is on the petitioner. 10 C.F.R. § 2.714(a).

RULES OF PRACTICE: APPELLATE FILINGS

When appealing purely procedural points, appellants should explain in their papers precisely what injury to them was occasioned by the asserted error(s). *Cf. Long Island Lighting Co.* (Shoreham Nuclear Power Station, Unit 1), ALAB-788, 20 NRC 1102, 1151 (1984).

APPEARANCES

John F. Doherty, Boston, Massachusetts, petitioner pro se.

Thomas G. Dignan, Jr., R.K. Gad, III, and William S. Stowe, Boston, Massachusetts, for the applicant Boston Edison Company.

Gregory Alan Berry for the Nuclear Regulatory Commission staff.

DECISION

I.

A May 21, 1985, *Federal Register* notice informed the public of, among other things, the request of the Boston Edison Company (applicant) for an amendment to the operating license for its Pilgrim nuclear facility. The amendment would permit the applicant to change the

technical specifications governing the facility's spent fuel storage pool.¹ The proposed change would raise the K-effective limit of the pool from 0.90 to 0.95 for normal conditions.² According to the notice, "[t]he K-effective of the pool is [currently] limited to 0.95 for abnormal conditions and this would not be changed. The K-effective limit of 0.95 would then apply to both normal and abnormal conditions in conformance with NRC's current practice."³

The notice further advised the reader that the Commission had made a "proposed determination" that the desired amendment involved "no significant hazards consideration"; that is, it "would not (1) involve a significant increase in the probability or consequences of an accident previously evaluated; or (2) create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) involve a significant reduction in a margin of safety."⁴ Nonetheless, those persons whose interest might be affected by the amendment were provided the opportunity to file a request for hearing and a petition for leave to intervene. In this connection, the notice stated that the deadline for any such submission was June 21, 1985, and directed attention to 10 C.F.R. 2.714, the particular section of the Commission's Rules of Practice governing petitions to intervene in NRC proceedings.⁵ Prospective intervenors were told that a nontimely petition would not be entertained unless the Licensing Board determined that the petitioner had made a "substantial showing" on the five lateness factors set forth in section 2.714(a).⁶

¹ 50 Fed. Reg. 20,969, 20,971.

² *Ibid.* The K-effective concept has been explained in these terms:

A system containing fissionable material — such as a spent fuel pool — is "critical," or "super-critical," if it is capable of supporting a neutron chain reaction. This condition is expressed in terms of the "effective neutron multiplication factor" (k_{eff}) — i.e., the ratio of the number of neutrons produced by fission in each generation to the number of neutrons lost by absorption and leakage. Thus, when a system is critical or supercritical, k_{eff} equals or is greater than 1.0.

Consumers Power Co. (Big Rock Point Nuclear Plant), ALAB-725, 17 NRC 562, 564 n.2 (1983). *See also Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units Nos. 1 and 2), ALAB-334, 3 NRC 809, 819 n.24 (1976).

³ 50 Fed. Reg. at 20,971.

⁴ *Id.* at 20,969; *see also Metropolitan Edison Co.* (Three Mile Island Nuclear Station, Unit No. 1), ALAB-807, 21 NRC 1195, 1200 n.12 (1985). The basis for that determination was summarized at 50 Fed. Reg. at 20,971.

⁵ *Id.* at 20,969.

⁶ *Id.* at 20,970. Those factors, to be balanced by the Board, are:

- (i) Good cause, if any, for failure to file on time.
- (ii) The availability of other means whereby the petitioner's interest will be protected.
- (iii) The extent to which the petitioner's participation may reasonably be expected to assist in developing a sound record.
- (iv) The extent to which the petitioner's interest will be represented by existing parties.
- (v) The extent to which the petitioner's participation will broaden the issues or delay the proceeding.

The only request for hearing and intervention petition submitted in response to the notice (hereafter collectively referred to as the "petition") was that of John F. Doherty. Filed on June 29, 1985, it was eight days late.⁷ It made no reference to that fact, however, and thus did not undertake to address the five section 2.714(a) lateness factors. Rather, Mr. Doherty confined himself to a discussion of his standing and how his interest might be affected by the proposed license amendment. On the first score, he alleged principally that his Boston, Massachusetts residence is 43 miles from the Pilgrim facility (located near Plymouth, Massachusetts on Cape Cod Bay) and, further, that he consumes food products (such as cranberries and fish) grown or caught in the vicinity of the facility.⁸ On the latter score, his articulated concern is that the raising of the K-effective limit for normal conditions to 0.95 would enhance the possibility that criticality would take place in the spent fuel pool, which in turn assertedly might occasion the release of radiation "through spent fuel heat-up and melt."⁹

Both the applicant and the staff responded to the petition. The applicant urged that the petition be denied because Mr. Doherty had demonstrated neither that his tardiness should be overlooked nor that he meets the established standing test.¹⁰ For its part, the NRC staff differed with the applicant on the standing question but agreed that Mr. Doherty had not met his burden with regard to the lateness of the petition.¹¹ As the staff saw it, the Licensing Board should either deny the petition as untimely or require Mr. Doherty to make a further showing on the section 2.714(a) lateness factors.¹²

In a July 19, 1985 memorandum and order, the Licensing Board denied the petition both because it was late and because the Board concurred in the applicant's view that Mr. Doherty lacked standing to challenge the license amendment in question.¹³ The Board's treatment of the lateness matter was brief. After observing that Mr. Doherty "should have been aware of the need for timely filings because that need was explained in the *Federal Register* notice," the Board stated that it was re-

⁷ Inasmuch as the petition mentioned the *Federal Register* notice, Mr. Doherty presumably had read the notice and was aware of the June 21 filing deadline imposed by it.

⁸ Request for Hearing and Petition for Leave to Intervene with Regard to Unnumbered Amendment to Operating License DPR-35, Announced in the *Federal Register*, May 21, 1985 (June 29, 1985) at 1-2. Mr. Doherty additionally claimed standing as a ratepayer of the applicant. *Id.* at 2.

⁹ *Ibid.*

¹⁰ Licensee's Answer to John F. Doherty's Request for a Hearing and Petition for Leave to Intervene (July 12, 1985) at 2-8.

¹¹ NRC Staff Response to John F. Doherty's Petition for Leave to Intervene (July 19, 1985) at 9-10, 11-13.

¹² *Id.* at 15.

¹³ LBP-85-24, 22 NRC 97.

quired to dismiss the petition because he "has not shown good cause for his late filing."¹⁴

Mr. Doherty appeals this result under 10 C.F.R. 2.714a. His principal claim is that the Licensing Board erred in denying his petition without giving him an opportunity to reply to the responses of the applicant and the staff.¹⁵ Insofar as the timeliness matter is concerned, Mr. Doherty believes that the Licensing Board could not deny the petition on lateness grounds unless either the applicant or the staff raised the issue. On the premise that untimeliness is akin to an affirmative defense and must be asserted as such,¹⁶ he reasons that he was justified in withholding any discussion of the lateness factors until the receipt of the responses to the petition. If those responses did not oppose the petition as late, that would be the end of the matter. If, on the other hand, the petition was opposed by one or more parties on tardiness grounds, then his obligation to address the lateness factors would ripen and he would be entitled to fulfill this obligation by way of a reply to the opposition(s).¹⁷

Both the applicant and the staff dispute this line of argument and urge affirmance of the result below.¹⁸

II.

In deciding the appeal before us, we need not and do not reach the question whether either his place of residence or his consumption of food products originating in the vicinity of the facility serves to clothe Mr. Doherty with the requisite mantle of standing to challenge the proposed amendment to the Pilgrim operating license.¹⁹ For, given its fail-

¹⁴ *Id.* at 98. In an accompanying footnote, the Board alluded to the fact that a balancing of all of the 10 C.F.R. 2.714(a) lateness factors is a condition precedent to the grant of an untimely petition. *Id.* at 98 n.3.

¹⁵ John F. Doherty's Brief in Support of His Appeal of the July 19, 1985 ASLB Order Dismissing His Petition for Leave to Intervene and Request for Hearing (August 13, 1985) at 3-7. Mr. Doherty also asserts that the untimeliness of the petition was of no practical significance in that, as of July 17, 1985, the applicant's proposal had not been approved by the staff. *Id.* at 7. Still further, he maintains that the Licensing Board relied upon extra-record information (not subject to official notice) in reaching its conclusion on the standing question. *Id.* at 6.

¹⁶ *Id.* at 4.

¹⁷ *Id.* at 3-4. Mr. Doherty does explicitly acknowledge, however, that "there is no statutory or common law requirement that reply be permitted at the pleading stage as here." *Id.* at 4.

¹⁸ Licensee's Brief (August 27, 1985); NRC Staff Brief in Opposition to John F. Doherty's Notice of Appeal (August 29, 1985). The applicant supports the Licensing Board on both the untimeliness and standing questions. The staff's endorsement of the decision below is confined to the untimeliness matter.

¹⁹ We note in passing, however, that his claim of standing based upon ratepayer status is in the teeth of controlling Commission precedent. *Portland General Electric Co.* (Pebble Springs Nuclear Plant, Units 1 and 2), CLI-76-27, 4 NRC 610, 614 (1976).

ure even to address the section 2.714(a) lateness factors, his intervention petition was correctly denied because it was untimely.

A. There is no conceivable merit to Mr. Doherty's claim that his duty to confront the five lateness factors did not materialize until after the applicant and the staff had responded to the intervention petition and raised the matter of its untimeliness. To begin with, on its face section 2.714(a)(1) lays to rest his suggestion that the lateness of such a petition is in the nature of an affirmative defense, to be considered by a licensing board only if the board is asked to do so by a party to the proceeding. In plain terms, the section permits a licensing board to grant an untimely petition only if, upon a consideration and balancing of the lateness factors, it determines that the petition should be granted: "Non-timely filings *will not be entertained absent a determination* by . . . the atomic safety and licensing board designated to rule on the petition and/or request, that the petition and/or request should be granted based upon a balancing of the [lateness factors]." ²⁰ In short, it is of no consequence whether, in an opposition to the late petition, one of the other litigants points to the untimeliness. Even if all of the parties are inclined to waive the tardiness, the board nevertheless is duty-bound to deny the petition on its own initiative unless it is persuaded that, on balance, the lateness factors point in the opposite direction.

It is equally clear that the burden of persuasion on the lateness factors is on the tardy petitioner and that, in order to discharge that burden, the petitioner must come to grips with those factors in the petition itself. ²¹ The underlying reason for this requirement is particularly apparent in the context of the first factor. A licensing board hardly could determine whether there was justification for the untimely filing without knowing why the petition was not submitted by the prescribed deadline — information peculiarly within the possession of the petitioner. Likewise, in most instances at least, the board will not be able to assess confidently the third factor (the extent to which the petitioner's participation may reasonably be expected to assist in developing a sound record) without having before it the petitioner's reasons for believing that the factor weighs in his or her favor. ²²

²⁰ Emphasis supplied.

²¹ See *Duke Power Co. (Perkins Nuclear Station, Units 1, 2 and 3)*, ALAB-615, 12 NRC 350, 352-53 (1980).

²² Mr. Doherty points to our holding some years ago that, "[b]efore any suggestion that a [timely] contention should not be entertained can be acted upon favorably [by the licensing board], the proponent of the contention must be given some chance to be heard in response." *Houston Lighting and Power Co. (Allens Creek Nuclear Generating Station, Unit 1)*, ALAB-565, 10 NRC 521, 525 (1979). That holding has no pertinence here. It rests on the consideration that intervenors (or petitioners for intervention)

(Continued)

It is thus not surprising that the *Federal Register* notice specifically informed Mr. Doherty and others similarly situated that a belated intervention petition would not be entertained in the absence of a "substantial showing" by the petitioner that there was warrant for granting it — a showing that was to focus on the lateness factors.²³ Far less understandable, however, is why Mr. Doherty paid no heed to that admonition.

Our puzzlement in this regard is enhanced by the fact, noted by both the applicant and the staff, that Mr. Doherty is by no means a newcomer to NRC licensing proceedings.²⁴ Some six years ago, while a resident of Texas, he succeeded in obtaining intervenor status in the *Allens Creek* construction permit proceeding and actively participated in that proceeding until its termination three years later in October 1982.²⁵ Of greater present significance, after acquiring his current Massachusetts residence in June 1983, he filed a late intervention petition in the operating license proceeding involving the Seabrook nuclear facility on the New Hampshire seacoast. In light of his present line of argument, one might have thought that that petition similarly would have said nothing with respect to its tardiness. But such was not the case. Acknowledging that it was late, the petition devoted several pages to the reasons why, in Mr. Doherty's view, each of the factors favored the allowance of intervention.²⁶ In the circumstances, it would seem reasonable to infer that, at

"cannot be required to have anticipated *in the contentions themselves* the possible arguments their opponents might raise as grounds for dismissing them." *Ibid.* (emphasis in original). But, as seen above, late petitioners are not called upon to anticipate what their opponents might have to say about the untimeliness; rather, their obligation is to establish affirmatively at the threshold (i.e., in the late petition itself) that a balancing of the five lateness factors warrants overlooking the tardiness.

Mr. Doherty's reliance upon *Cleveland Electric Illuminating Co.* (Perry Nuclear Power Plant, Units 1 and 2), LBP-82-89, 16 NRC 1355, 1356 (1982), is equally misplaced. The situation in that case was markedly different from that at bar. There, an intervenor had sought to justify the filing of a late contention on the ground that it was based upon new information which had just recently become available. In response, the applicant asserted that the information had been available at an earlier time. Relying upon what it deemed to be "the rationale of *Allens Creek*," the Licensing Board decided to have the intervenor respond to this assertion.

²³ See p. 463, *supra*.

²⁴ We do not mean to imply that, had this been Mr. Doherty's first appearance in such a proceeding, his failure to comply with the Rules of Practice would have been excusable. As emphasized on more than one occasion, there is an "imperative necessity that *all* participants in NRC adjudicatory proceedings — whether lawyers or laymen representing themselves or organizations to which they belong — familiarize themselves at the outset with" those rules. *Perkins*, 12 NRC at 352, quoting from *Houston Lighting and Power Co.* (Allens Creek Nuclear Generating Station, Unit 1), ALAB-609, 12 NRC 172, 173 n.1 (1980).

²⁵ See *Houston Lighting and Power Co.* (Allens Creek Nuclear Generating Station, Unit 1), ALAB-535, 9 NRC 377, 384 (1979); ALAB-625, 13 NRC 13 (1981); LBP-82-94, 16 NRC 1399 (1982).

²⁶ John F. Doherty's Petition for Leave to Intervene (September 6, 1983), filed in *Public Service Co. of New Hampshire* (Seabrook Station, Units 1 and 2), Docket Nos. 50-443 and 50-444, at 5-7. The petition was denied by the Licensing Board on the basis of its balancing of the five lateness factors. On Mr. Doherty's appeal, we affirmed the result on an unrelated ground. See ALAB-758, 19 NRC 7 (1984).

one time at least, Mr. Doherty fully apprehended the reach of the affirmative obligation imposed upon the petitioner who appears on the scene after the prescribed deadline has passed.²⁷

B. It is manifest from the above analysis that, as he should have readily appreciated, Mr. Doherty possessed no *right* to respond to the applicant and staff answers to his petition — i.e., a second opportunity to make the “substantial showing” on the five lateness factors that should have been included in the petition itself. And, although the Licensing Board might have accorded him that opportunity as a matter of *discretion*, it was not obliged to do so. In short, Mr. Doherty ignored the procedural guidance contained in the *Federal Register* notice — as well as the terms of 10 C.F.R. 2.714(a)(1) and his own past practice in *Seabrook* — at his peril.

Nor are we inclined to exercise our independent discretion to allow Mr. Doherty a fresh chance to explain why a balancing of the lateness factors supports the grant of his petition.²⁸ Among other things, it does not appear that saddling Mr. Doherty with the consequences of his own dereliction might result in a possibly serious safety problem escaping proper scrutiny. While the merits of the proposed license amendment are not before us, it can be said at this juncture that we neither have been provided with nor know of any technical basis for questioning the staff’s judgment that, if approved by it, the 0.95 K-effective limit will furnish an adequate margin of safety.²⁹

²⁷ In contrast to the eight-day tardiness here involved, Mr. Doherty’s *Seabrook* intervention petition was almost two years late. But, contrary to his possible belief, that distinction has no legal importance insofar as concerns the necessity to bring the lateness factors into play (although, obviously, the extent of the tardiness may influence the outcome on the assessment of certain of those factors).

²⁸ In this regard, we find it curious that, in his appellate papers, Mr. Doherty has shed no light on what he would have told the Licensing Board on the lateness factors if given a second chance to do so. For all we know, his case on the factors is so weak that, had he possessed a right to reply, the denial of that right by the Licensing Board would have been harmless error. We expect parties taking appeals on purely procedural points to explain precisely what injury to them was occasioned by the asserted error. Cf. *Long Island Lighting Co.* (Shoreham Nuclear Power Station, Unit 1), ALAB-788, 20 NRC 1102, 1151 (1984).

²⁹ As the May 21 *Federal Register* notice observes (see p. 463, *supra*), a K-effective limit of 0.95 under all conditions is in accordance with current NRC staff requirements. It is also consistent with industry standards for spent fuel storage facilities. See *Big Rock Point*, 17 NRC at 567-68.

For the foregoing reasons, the Licensing Board's denial of Mr. Doherty's request for hearing and petition for leave to intervene³⁰ is *affirmed*.
It is so ORDERED.

FOR THE APPEAL BOARD

C. Jean Shoemaker
Secretary to the
Appeal Board

³⁰ LBP-85-24, *supra*.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

Gary J. Edles, Chairman
Thomas S. Moore
Dr. Reginald L. Gotchy

In the Matter of

Docket Nos. 50-456-OL
50-457-OL

COMMONWEALTH EDISON COMPANY
(Braidwood Nuclear Power Station,
Units 1 and 2)

September 6, 1985

The Appeal Board denies a motion by applicant for directed certification of a Licensing Board ruling that allowed intervenors to amend — after obtaining discovery from the NRC staff — a contention that the Board previously found to be insufficiently specific.

RULES OF PRACTICE: INTERLOCUTORY APPEALS
(DIRECTED CERTIFICATION)

In deciding whether to exercise its discretionary directed certification authority, appeal boards apply a two-part test. It considers whether a licensing board ruling either (1) threatens the party adversely affected by it with immediate and serious irreparable impact which, as a practical matter, could not be alleviated by a later appeal, or (2) affects the basic structure of the proceeding in a pervasive or unusual manner. *Public Service Co. of Indiana* (Marble Hill Nuclear Generating Station, Units 1 and 2), ALAB-405, 5 NRC 1190, 1192 (1977); *see, e.g., Metropolitan*

Edison Co. (Three Mile Island Nuclear Station, Unit 1), ALAB-791, 20 NRC 1579, 1582 (1984).

RULES OF PRACTICE: INTERLOCUTORY APPEALS

Since the admission of one or more additional issues into an ongoing case seldom has a pervasive or unusual effect on the basic structure of a proceeding, appeal boards have traditionally declined to review on an interlocutory basis rulings that simply admit another contention. *See, e.g., Cleveland Electric Illuminating Co.* (Perry Nuclear Power Plant, Units 1 and 2), ALAB-706, 16 NRC 1754 (1982).

RULES OF PRACTICE: INTERLOCUTORY REVIEW

The basic structure of an ongoing adjudication is not changed simply because the admission of a contention results from a licensing board ruling that is important or novel, *Metropolitan Edison Co.* (Three Mile Island Nuclear Station, Unit 1), ALAB-791, 20 NRC 1579, 1583 (1984), or may conflict with case law, policy or Commission regulations. *Cleveland Electric Illuminating Co.* (Perry Nuclear Power Plant, Units 1 and 2), ALAB-675, 15 NRC 1105, 1112-13 (1982); *see also Pennsylvania Power & Light Co.* (Susquehanna Steam Electric Station, Units 1 and 2), ALAB-641, 13 NRC 550, 552 (1981). Similarly, the mere fact that a party must litigate an additional issue, or that a matter will be subject to adversarial exploration rather than NRC staff review, does not alter the basic structure of the proceeding in a pervasive or unusual way so as to justify interlocutory review of a licensing board decision. *See Arizona Public Service Co.* (Palo Verde Nuclear Generating Station, Units 2 and 3), ALAB-742, 18 NRC 380, 384 (1983); *Virginia Electric and Power Co.* (North Anna Power Station, Units 1 and 2), ALAB-741, 18 NRC 371, 378 (1983).

RULES OF PRACTICE: INTERLOCUTORY REVIEW

Although the general standard for interlocutory review is the same whether or not undertaken on certification or by referral, *see Virginia Electric and Power Co.* (North Anna Power Station, Units 1 and 2), ALAB-741, 18 NRC 371, 375 n.6 (1983), an appeal board is more likely to intercede where a licensing board believes that its ruling has the type of overall impact on the proceeding that warrants the appeal board's immediate attention.

APPEARANCES

Joseph Gallo, Washington, D.C., and **Peter Thornton**, Chicago, Illinois, for applicant Commonwealth Edison Company.

Robert Guild and **Douglass W. Cassel, Jr.**, Chicago, Illinois, for intervenors **Bridget Little Rorem** and the **Appleseed** organization.

Janice E. Moore for the Nuclear Regulatory Commission staff.

MEMORANDUM AND ORDER

Opinion for the Board by Mr. Edles and Dr. Gotchy:

Before us is a motion of the applicant Commonwealth Edison Company for directed certification of a Licensing Board ruling.¹ According to the applicant, that ruling allowed intervenors, **Bridget Little Rorem** and the **Appleseed** organization (collectively **Rorem**), to amend — after obtaining discovery from the NRC staff — a contention that the Board previously found overly broad and nonspecific. For reasons set out below, we deny the motion.

1. In March of this year, **Rorem** filed a contention in this operating license proceeding asserting that serious deficiencies exist in the quality assurance program at the **Braidwood** facility.² The contention was predicated in large part on testimony in the *Byron* proceeding by **James G. Keppler**, Regional Administrator of the Commission's Region III office in **Glen Ellyn, Illinois**.³ Mr. **Keppler's** testimony was to the effect that there are serious quality assurance problems at the **Braidwood** facility. In a ruling admitting other contentions, the Licensing Board rejected the **Rorem** quality assurance contention.⁴ Because that contention was submitted after the deadline for filing contentions, the Board evaluated it in light of the lateness criteria set out in 10 C.F.R. § 2.714. It reached no definitive conclusion as to whether the proper balance of those criteria

¹ See 10 C.F.R. §§ 2.718(i), 2.785(b)(i); *Public Service Co. of New Hampshire* (Seabrook Station, Units 1 and 2), ALAB-271, 1 NRC 478, 482-83 (1975).

² The contention is set out in full in the Licensing Board's Special Prehearing Conference Order, LBP-85-11, 21 NRC 609, 627 (1985).

³ Docket Nos. STN 50-454, STN 50-455. See generally *Commonwealth Edison Co.* (Byron Nuclear Power Station, Units 1 and 2), LBP-84-41, 20 NRC 1203, 1216, *aff'd*, ALAB-793, 20 NRC 1591 (1984).

⁴ LBP-85-11, *supra*.

justified admission of the late contention, however, because it determined that the contention was in any event not sufficiently specific to justify admission for litigation.⁵

Even though the Board rejected the contention, it “permitted” Rorem to depose Mr. Keppler with a view toward resubmitting the contention if it could be made sufficiently specific.⁶ The Board also set a schedule for any resubmission and outlined the strict standards for specificity that it intended to apply if a new contention were to be tendered.⁷ Rorem subsequently filed an amended quality assurance contention. With certain exceptions not pertinent here, the Board found the amended contention possessed the requisite basis and specificity and concluded that the balance of section 2.714 factors favored acceptance of the contention. It thus admitted it for litigation.⁸

The applicant urges us to grant directed certification of the Board’s ruling permitting Rorem to resubmit a quality assurance contention and, in addition, requests that we strike the Keppler deposition and dismiss the amended quality assurance contention. In short, the applicant claims that the Commission’s regulations and policies do not authorize a licensing board to permit discovery on a defective contention with a view toward resubmission of a perfected contention following discovery. The applicant, however, expressly disclaims any argument that the Licensing Board improperly balanced the lateness factors or misapplied the basis and specificity requirements insofar as the refiled contention is concerned.⁹ The NRC staff does not seek interlocutory review of the Licensing Board’s ruling but in its answer to the motion supports the applicant. The intervenors oppose the grant of directed certification.

2. In deciding whether to exercise our discretionary directed certification authority, we apply the two-part *Marble Hill* test and consider whether a licensing board ruling either (1) threatens the party adversely affected by it with immediate and serious irreparable impact which, as a practical matter, could not be alleviated by a later appeal, or (2) affects the basic structure of the proceeding in a pervasive or unusual manner.¹⁰ The applicant’s assertion that the rulings at issue here have a pervasive

⁵ See 10 C.F.R. § 2.714(b).

⁶ LBP-85-11, 21 NRC at 634.

⁷ *Id.* at 636-37.

⁸ LBP-85-20, 21 NRC 1732 (1985).

⁹ See Commonwealth Edison’s Motion for Directed Certification (July 8, 1985) [hereafter Motion for Directed Certification] at 1.

¹⁰ See, e.g., *Metropolitan Edison Co. (Three Mile Island Nuclear Station, Unit 1)*, ALAB-791, 20 NRC 1579, 1582 (1984), applying the test enunciated in *Public Service Co. of Indiana (Marble Hill Nuclear Generating Station, Units 1 and 2)*, ALAB-405, 5 NRC 1190, 1192 (1977).

effect on the proceeding rests essentially on the novelty of the procedures adopted by the Board and an alleged violation of the Commission's regulations.¹¹ Pointing to our decision in the *Catawba* case,¹² the applicant also claims that we have undertaken interlocutory review to resolve novel issues and correct violations of the Commission's regulations even where the *Marble Hill* test is not strictly satisfied.¹³ The staff's arguments in support of the applicant's position are predicated largely on the view that it is preferable to commit staff resources to assuring that quality assurance deficiencies have been corrected, rather than litigating the quality assurance problems.¹⁴

Even assuming a violation of the Commission's regulations as claimed by the applicant and our dissenting colleague, the net effect of the Board's rulings is simply to admit one additional contention to a proceeding that already involves litigation of various matters. Because the injection of one or more additional issues into an ongoing case seldom has a pervasive or unusual effect on the basic structure of a proceeding, we have traditionally declined to review on an interlocutory basis rulings that simply admit another contention.¹⁵ The basic structure of an ongoing adjudication is not changed simply because the admission of a contention results from a licensing board ruling that is important or novel,¹⁶ or may conflict with case law, policy, or Commission regulations.¹⁷ Similarly, the mere fact that a party (even the NRC staff) must litigate an additional issue, or that a matter will be subject to adversarial exploration rather than staff review, does not alter the basic structure of the proceeding in

¹¹ Motion for Directed Certification at 12-14.

¹² *Duke Power Co.* (Catawba Nuclear Station, Units 1 and 2), ALAB-687, 16 NRC 460, 465-67 (1982), *aff'd in pertinent part*, CLI-83-19, 17 NRC 1041 (1983).

¹³ Motion for Directed Certification at 12-15.

¹⁴ NRC Staff Response to Applicant's Motion for Directed Certification (July 23, 1985) [hereafter Staff Response] at 10-11.

¹⁵ See, e.g., *Cleveland Electric Illuminating Co.* (Perry Nuclear Power Plant, Units 1 and 2), ALAB-706, 16 NRC 1754 (1982).

¹⁶ *Three Mile Island*, 20 NRC at 1583.

¹⁷ *Cleveland Electric Illuminating Co.* (Perry Nuclear Power Plant, Units 1 and 2), ALAB-675, 15 NRC 1105, 1112-13 (1982). See also *Pennsylvania Power & Light Co.* (Susquehanna Steam Electric Station, Units 1 and 2), ALAB-641, 13 NRC 550, 552 (1981) (directed certification denied despite allegations that the Licensing Board's ruling was "in the teeth of the Commission's regulations and the Administrative Procedure Act" and "may have erroneously expanded the issues to be tried"). We do not disagree with the notion that a violation of the Commission's regulations could in some circumstances contribute to a pervasive or unusual effect on a proceeding. But that is not the case here. The applicant objects to the admission of a quality assurance contention. In terms, however, the Board merely admitted a contention earlier rejected for lack of specificity — a course of action plainly not foreclosed by the regulations. It may be, as Mr. Moore urges, that the Board violated the regulations by authorizing discovery against the NRC staff after dismissing the original contention. But we are unprepared to conclude that such action had a pervasive or unusual effect on the proceeding, especially where the staff itself did not find the matter sufficiently disruptive to seek relief from us in its own right.

a pervasive or unusual way so as to justify interlocutory review of a licensing board decision.¹⁸

Nor does our decision to accept the referral of the Licensing Board's ruling in *Catawba* justify our intercession here. There we reviewed the Licensing Board's ruling because it raised an issue potentially affecting every operating license proceeding then pending.¹⁹ That is plainly not the case here. Indeed, in *Catawba*, we specifically eschewed applying the resolution of the generic issue before us to the individual contentions before the Licensing Board — a situation analogous to that present here. Moreover, we were asked by the *Catawba* Licensing Board to resolve a novel and recurring legal issue. Although the general standard for interlocutory review is the same whether or not undertaken on certification or by referral,²⁰ we are obviously more likely to intercede where a licensing board believes that its ruling has the type of overall impact on the proceeding that warrants our immediate attention. We find no justification for our involvement in this case on an interlocutory basis.²¹

The motion for directed certification is *denied*.

It is so ORDERED.

FOR THE APPEAL BOARD

C. Jean Shoemaker
Secretary to the
Appeal Board

¹⁸ See *Arizona Public Service Co.* (Palo Verde Nuclear Generating Station, Units 2 and 3), ALAB-742, 18 NRC 380, 384 (1983); *Virginia Electric and Power Co.* (North Anna Power Station, Units 1 and 2), ALAB-741, 18 NRC 371, 378 (1983).

¹⁹ See *North Anna*, 18 NRC at 376-78, explaining our *Catawba* ruling and circumscribing its application.
²⁰ See *id.* at 375 n.6.

²¹ In support of the applicant's motion, the staff indicates that the substance of the intervenors' amended quality assurance contention rests on documents available to the public prior to the deposition of Mr. Keppler. See Staff Response at 9-10. If the staff is correct, this circumstance further illustrates why this case is an unfit candidate for interlocutory review. Here, even were we to strike the deposition and reject the contention as the applicant asks, the intervenors would be free to refile the same contention using the publicly available documents as the basis for their contention. Because the Licensing Board's balancing of the section 2.714 factors already weighed the first factor (i.e., good cause for late filing) against the intervenors, the end result would be the same unless the Board were to reverse itself with respect to the other factors. LBP-85-20, 21 NRC at 1744-49. Thus, in all probability the contention once again would be admitted.

Opinion of Mr. Moore, dissenting:

The Licensing Board's April 7, 1985, ruling purported to reject the intervenors' quality assurance contention for lack of specificity but nevertheless permitted discovery by the intervenors on that same issue.¹ Pursuant to the Licensing Board's order, the intervenors deposed Mr. Keppler and another NRC staff employee and filed an amended quality assurance contention based on the depositions. The Licensing Board then admitted the new quality assurance contention.² Because the regulations proscribe any form of discovery on an issue that has not been admitted to the proceeding, the applicant seeks directed certification asserting that the Licensing Board's ruling "compels the conclusion that the Board knowingly violated [10 C.F.R.] Section 2.740 by allowing discovery on a rejected contention."³

The majority assumes the validity of the applicant's assertion that the Licensing Board's ruling violates the Commission's regulations but finds that the ruling does not affect the basic structure of the proceeding in a pervasive or unusual manner — the second *Marble Hill* test. I disagree. Without any mention of the significance of the regulations involved, or the breadth and complexity of the contention admitted as a result of this violation, the majority dismisses the Licensing Board's transgression because the "net effect" of the ruling is simply to admit one additional contention to a proceeding that already involves the litigation of several other issues.⁴

¹ LBP-85-11, 21 NRC 609, 627-38 (1985). In rejecting the contention in the Special Prehearing Conference Order, the Licensing Board found that "[t]he contention's language is so broad and the lack of specificity so damaging that it cannot be admitted under traditional contention admissibility criteria." *Id.* at 636. The Board stated, however, that

[s]etting forth with specificity the contention's basis is crucial to the submission of any contention, but particularly one involving potentially broad quality assurance and quality control issues. The Board will accommodate Intervenor's need to provide specificity to develop what we believe may become an important part of the record, by permitting Intervenor to depose Mr. Keppler before submitting an amended contention.

Id. at 634. Additionally, the Licensing Board directed that the deposition "shall take place as soon as the parties can reasonably coordinate their schedules" and suggested that the intervenors may wish to depose other NRC staff members as well. *Id.* at 635.

² LBP-85-20, 21 NRC 1732 (1985).

Pursuant to 10 C.F.R. § 2.751a(d), both the applicant and the staff objected to the Licensing Board's discovery order and requested that the Board reconsider its ruling because the Commission's regulations only permit discovery regarding a contention after it has been admitted. See Applicant's Objections to Board Order (April 29, 1985) at 9-12; NRC Staff's Objections to and Motion for Reconsideration of Licensing Board's Special Prehearing Conference Order Dated April 17, 1985 (LBP-85-11) (May 6, 1985) at 6-8. The Licensing Board waited to rule on these objections until after the intervenors deposed the staff employees and filed an amended quality assurance contention. See LBP-85-20, 21 NRC at 1737-39.

³ Commonwealth Edison's Motion for Directed Certification (July 8, 1985) at 15-16.

⁴ See p. 474, *supra*.

Because the Licensing Board's ruling directly contravenes the explicit discovery provisions of the Commission's Rules of Practice, that ruling, in the circumstances presented, clearly affects the basic structure of the proceeding in a pervasive or unusual way. The Commission's Rules of Practice establish the exclusive hearing procedures for all operating license proceedings. Accordingly, those procedures establish the basic structure of this proceeding and all other operating license proceedings. Central to the scheme of the rules is the fundamental tenet that specific contentions must be admitted to the proceeding *before* discovery is permitted,⁵ and "the filing of a vague, unparticularized contention, followed by an endeavor to flesh it out through discovery against the applicant or staff," is strictly prohibited.⁶ Thus, the rules provide that "discovery shall begin only after the prehearing conference provided for in § 2.751a and shall relate only to those matters in controversy which have been identified by the . . . presiding officer in the prehearing order . . ."⁷ When the NRC staff is a party to the proceeding, the Executive Director of Operations must designate what staff employees may be deposed on any matter, and "a particular named NRC employee" may be deposed only upon a finding of "exceptional circumstances" by the Licensing Board.⁸ Moreover, the rules provide that "[n]o deposition of a particular named NRC employee . . . shall be required before the matters in controversy in the proceeding have been identified by order of the . . . presiding officer . . ."⁹

Yet here the Licensing Board ignored these express prohibitions in the Rules of Practice. Instead the Board allowed the intervenors to depose a particular named NRC employee concerning the applicant's quality assurance program before this issue was a matter in controversy and invited the intervenors to ignore their "ironclad obligation to examine the publicly available documentary material pertaining to the facility in question . . . to uncover any information that could serve as the foundation for a specific contention."¹⁰ This Licensing Board action, in turn,

⁵ See *Northern States Power Co.* (Prairie Island Nuclear Generating Plant, Units 1 and 2), ALAB-107, 6 AEC 188, 192, *aff'd*, CLI-73-12, 6 AEC 241 (1973), *aff'd sub nom. BPI v. AEC*, 502 F.2d 424 (D.C. Cir. 1974). In *Prairie Island*, we long ago rejected the argument that it is not possible for an intervenor to state specific contentions until after they have had discovery. Rather, we found that argument "ignores the fact that there is abundant information respecting the particular facility available to the public . . ." and that "prospective intervenors have the benefit of the Freedom of Information Act (5 U.S.C. 552) . . ." *Id.*

⁶ *Duke Power Co.* (Catawba Nuclear Station, Units 1 and 2), ALAB-687, 16 NRC 460, 468 (1982), *aff'd in pertinent part*, CLI-83-19, 17 NRC 1041 (1983).

⁷ 10 C.F.R. § 2.740(b)(1).

⁸ 10 C.F.R. § 2.720(h)(2)(i).

⁹ 10 C.F.R. § 2.720(h)(2)(iii).

¹⁰ *Catawba*, ALAB-687, 16 NRC at 468 (1982).

prejudiced the applicant by freely opening the door for the intervenors to file a new, detailed quality assurance contention that the applicant now has the burden of proving is incorrect. Contrary to the majority's view, such a wholesale disregard of the Commission's basic hearing procedures to permit the deposition of a particular staff employee about a subject not in controversy, and then admitting a contention based on that discovery, can only fairly be described as affecting the basic structure of the proceeding in an unusual manner. This is especially true when the ruling in question results in the introduction into the proceeding of a thirty-one page quality assurance contention that alleges multiple violations of twelve of the Commission's eighteen quality assurance regulations and requires an examination of the adequacy of applicant's extensive corrective action program. As the recent cases before us involving the litigation of quality assurance questions graphically demonstrate, the nature of litigation involving quality assurance issues is such that the addition of this "one" contention will add weeks of hearings to this proceeding.¹¹ I find, therefore, that the Licensing Board's ruling "fundamentally alters the very shape of the ongoing adjudication"¹² and

¹¹ See generally *Commonwealth Edison Co.* (Byron Nuclear Power Station, Units 1 and 2), ALAB-793, 20 NRC 1591 (1984); *Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-763, 19 NRC 571, review denied, CLI-84-14, 20 NRC 285 (1984).

The majority also suggests that interlocutory review should be denied because the intervenors would be free to refile their quality assurance contention based on publicly available documents in the event we struck the deposition and rejected the contention as the applicant asks. They then opine that the Licensing Board once again would likely balance the factors set forth in 10 C.F.R. § 2.714 in the same manner and admit the intervenors' quality assurance contention. See p. 475 n.21, *supra*. Unlike the majority, I do not believe it is appropriate to speculate on how the Licensing Board might balance the section 2.714 factors in considering a future hypothetical contention.

¹² *Cleveland Electric Illuminating Co.* (Perry Nuclear Power Plant, Units 1 and 2), ALAB-675, 15 NRC 1105, 1113 (1982).

In support of this position that the basic structure of a proceeding is not changed by a licensing board ruling that violates the regulations but only results in the admission of a contention, the majority also relies upon *Pennsylvania Power & Light Co.* (Susquehanna Steam Electric Station, Units 1 and 2), ALAB-641, 13 NRC 550 (1981). They seemingly equate the situation underlying the denial of directed certification in *Susquehanna* with the circumstances presented here. See p. 474 n.17, *supra*. The majority's reliance on ALAB-641, however, is misplaced. There we refused to direct certification of a ruling denying partial summary disposition of several portions of a properly admitted contention. The staff claimed that the Licensing Board's ruling met the second *Marble Hill* test for interlocutory review because the Board had made extra-record factual findings based on the intervenors' unsworn assertions in contravention of the Commission's regulations and the Administrative Procedure Act. We disagreed that the test for interlocutory review had been met and found that "[i]n the context of the denial of a motion for partial summary disposition, the staff's arguments do little more than state the apparent." We stated that "[t]he fact that the ruling below may have erroneously expanded the issues to be tried or done so on the basis of unsworn allegations does little to distinguish this case from any other where it is alleged that summary disposition was erroneously withheld." Thus, we concluded that "[i]n reality, adoption of the staff's rationale would alter the standard for discretionary interlocutory review; certainly where a denial of summary disposition is involved it would be reduced to a simple determination whether the Licensing Board erred." ALAB-641, 13 NRC at 552. Such is not the situation here. A ruling — even an erroneous one — denying a motion for partial summary disposition is not in any sense parallel

(Continued)

thus satisfies the second *Marble Hill* standard for interlocutory review. Accordingly, I would grant the applicant's motion for directed certification.

to a Licensing Board ruling claimed by the applicant to be a "knowing" violation of the explicit prohibitions of the Rules of Practice that establish when, and against whom, discovery may be conducted in an operating license proceeding.

Further, the majority apparently gives significant weight to the fact that the Licensing Board's ruling does not affect the basic structure of the proceeding in an unusual manner because "the staff itself did not find the matter sufficiently disruptive to seek relief from us in its own right." *See* p. 474 n.17, *supra*. Contrary to the majority's view, the impact of the Licensing Board's ruling on the structure of the proceeding is the same regardless of whether the applicant or the staff complains. In any event, the majority points to a difference without a distinction. The Commission's regulations specifically permit a party to file an answer "in support of" a motion. *See* 10 C.F.R. § 2.730(c). Here, the staff's answer supported the applicant's motion for directed certification in each particular and thus avoided the need for the staff to file a redundant motion seeking the same relief.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

**Sheldon J. Wolfe, Chairman
Dr. Jerry R. Kline
Dr. George A. Ferguson**

In the Matter of

**Docket Nos. 50-338-OLA-1
50-339-OLA-1
(ASLBP No. 83-481-01-LA)**

**VIRGINIA ELECTRIC AND
POWER COMPANY
(North Anna Power Station,
Units 1 and 2)**

September 3, 1985

The Licensing Board issues an Initial Decision authorizing the issuance of an amendment to the operating licenses of the North Anna Power Station, Units 1 and 2, which permits the receipt and storage of 500 spent fuel assemblies transshipped from the Surry Power Station, Units 1 and 2.

REGULATIONS: INTERPRETATION

The values in Table S-4 reflect the environmental risk of accidents involving the shipment of spent fuel in casks as well as accidents which might be caused by employee error in preparing the casks for shipment.

SABOTAGE: EVIDENCE

The record, in amplifying and supporting the analysis in the Safety Evaluation Report, establishes that the probability is remote of either a

sabotage attack being undertaken or being successful, and that, even if such an attack was successful, the impact upon the public health and safety and upon the environment would be very small.

NEPA: CONSIDERATION OF ALTERNATIVES (§ 102(2)(E))

Pursuant to § 102(2)(E) of NEPA, the Environmental Assessment must discuss whether a proposed action involves unresolved conflicts concerning alternative uses of available resources.

NEPA: COST-BENEFIT ANALYSIS

Consideration of an alternative based on economic superiority (and not environmental superiority) is not the responsibility of the NRC.

NEPA: AMENDMENT OF ENVIRONMENTAL ASSESSMENT

An ultimate NEPA judgment may properly be made on the basis of the entire record before adjudicatory tribunals.

TECHNICAL ISSUES DISCUSSED

Table S-4 values
Consideration of sabotage
Consideration of dry cask storage alternative.

APPEARANCES

Michael W. Maupin, Esq., and Marcia R. Gelman, Esq., for the Licensee

Henry J. McGurran, Esq., for the United States Nuclear Regulatory Commission

James B. Dougherty, Esq., for the Intervenor, Concerned Citizens of Louisa County

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INITIAL DECISION

(Operating License Amendment)

Opinion

I. INTRODUCTION

A. Background

On July 13, 1982, Virginia Electric and Power Company (Licensee) applied for an amendment revising the operating licenses of North Anna Power Station, Units 1 and 2, to permit the receipt and storage of 500 spent fuel assemblies from the Surry Power Station, Units 1 and 2. 47 Fed. Reg. 41,892 (Sept. 22, 1982).¹ The North Anna facility is located in Louisa County, Virginia, 40 miles northwest of Richmond. The Surry facility is located in Surry County, Virginia, 17 miles northwest of Newport News. The travel distance between the two facilities ranges between 159 and 177 miles depending on the selected route.

On July 3, 1984, the NRC Staff issued its Finding of No Significant Impact, the Environmental Assessment (EA) and the Safety Evaluation Report (SER). On July 30, 1984, Concerned Citizens of Louisa County (CCLC) submitted five contentions, two of which were ultimately withdrawn. During the course of a supplemental special prehearing conference held on September 7, 1984, CCLC orally argued in general with respect to its contentions that Table S-4 relied upon by the Staff in the EA was inapplicable in an operating license amendment case and that the Staff instead should have issued a final environmental impact statement. Consequently, the Board requested that counsel submit briefs on the question of whether there had been any administrative (NRC) and Federal court rulings on the question of whether Table S-4 in 10 C.F.R. § 51.52 applies only in construction permit proceedings or whether that Table is applicable also in operating license amendment cases. In a Memorandum and Order issued on October 15, 1984, noting that counsel had submitted briefs on the applicability of Table S-4 but that the Board would not decide the merits of contentions at this stage, we re-wrote and consolidated three of the contentions, admitted Consolidated

¹ In a companion case, OLA-2, wherein the Licensee had applied for an amendment of the North Anna operating licenses to permit the expansion of the spent fuel pool storage capacity, this Board rejected the proposed contentions of Concerned Citizens of Louisa County, denied its petition for leave to intervene, dismissed the case and authorized the issuance of the amendment. LBP-84-40A, 20 NRC 1195, *appeal dismissed*, ALAB-790, 20 NRC 1450 (1984).

Contention 1 as an issue in controversy,² and admitted CCLC as a party-intervenor. LBP-84-40A, *supra*.

Responding to the Board's Order of November 5, 1984 (unpublished), in a letter dated November 16, 1984, the parties requested that the Board treat their previous submissions as being motions for partial summary disposition and that, pursuant to § 2.749 of the Commission's Rules of Practice, we should rule on the applicability of Table S-4 as posed in Consolidated Contention 1. Thereafter, in a Memorandum and Order of January 7, 1985 (unpublished), we concluded in substance, as a matter of law, that the Staff's EA properly relied upon the values in Table S-4 to evaluate the environmental impact of the proposed transportation of spent fuel from Surry to North Anna in this operating license amendment case. Accordingly, we granted the Licensee's and the Staff's motions for partial summary disposition and denied CCLC's motion. We deleted wording from Consolidated Contention 1, and revised Consolidated Contention 1 to read as follows:

The Staff's Environmental Assessment is inadequate and an Environmental Impact Statement should be prepared. The bases for this contention are two-fold. First, the Environmental Assessment did not evaluate the probability and consequences of accidents occurring during the transportation of spent fuel casks from the Surry Station to the North Anna Station which might be occasioned by acts of sabotage or by error of Applicant's employees in preparing the casks for shipment. Second, contrary to the National Environmental Policy Act, 42 U.S.C. § 4332(2)(E), consideration was not given to the alternative method of constructing a dry cask storage facility at the Surry Station which is feasible, can be effected in a timely manner, is the least expensive and safest method for at least 50 years, and can be used on or off site.

The evidentiary hearing took place on May 21-22, 1985, in Charlottesville, Virginia. Limited appearance statements were also taken. On June 21, 1985, the Licensee filed its post-hearing brief, proposed findings of fact and conclusion of law, and a proposed order. On July 8, 1985, CCLC filed a post-hearing brief, and its proposed findings of fact and conclusions of law. On July 12th, the Licensee filed a reply to CCLC's

² As rewritten by the Board, Consolidated Contention 1 reads as follows:

The Staff's Environmental Assessment is inadequate and an Environmental Impact Statement should be prepared. The bases for this contention are two-fold. First, the Environmental Assessment, in relying upon the inapplicable values in Table S-4, did not evaluate the probability and consequences of accidents occurring during the transportation of spent fuel casks from the Surry Station to the North Anna Station or which might be occasioned by acts of sabotage or by error of Applicant's employees in preparing the casks for shipment. Second, contrary to the National Environmental Policy Act, 42 U.S.C. § 4332(2)(E), consideration was not given to the alternative method of constructing a dry cask storage facility at the Surry Station which is feasible, can be effected in a timely manner, is the least expensive and safest method for at least 50 years, and can be used on or off site.

post-hearing brief. The Staff filed its brief, proposed findings and conclusions of law, and a proposed order on July 18, 1985.

B. Content of Opinion

The first part of this Initial Decision begins with the Licensing Board's Opinion, which encompasses an Introduction, an analysis of Consolidated Contention 1, and Conclusions. The second part consists of our Findings of Fact, Conclusions of Law, and Order.

All of the proposed findings of fact and conclusions of law submitted by the parties that are not incorporated directly or inferentially in this Initial Decision are rejected as unsupported in law or fact or as unnecessary to the rendering of this Initial Decision.

II. CONSOLIDATED CONTENTION 1

1. Employee Error in Preparing Casks for Shipment (Fdgs. 2-28)

(Preliminary Discussion: In their respective briefs, the Licensee and the Staff argue that the issue of employee error (which they also refer to as "human error") in preparing casks for shipment should not have been considered in the hearing because the Board had previously concluded in the Memorandum and Order issued January 7, 1985, that the Staff's Environmental Assessment properly relied upon the values in Table S-4 to evaluate the environmental impact of the proposed transportation of spent fuel from Surry to North Anna.³ This argument presumes that this issue of employee error had been directly addressed by the Licensee and the Staff and specific citations had been furnished to the Board. However, in their briefs submitted prior to the issuance of the aforementioned Memorandum and Order, the Licensee and Staff merely discussed the applicability of Table S-4 at the operating license amendment stage, and cited WASH-1238⁴ and the Commission's State-

³ The Staff's EA stated that the environmental impact of the proposed transshipment of spent fuel from Surry to North Anna is within the scope of Table S-4 and therefore need not be addressed on a site-specific basis. After setting forth a table comparing the pertinent parameters for the proposed transshipment with the parameters used in WASH-1238 for calculating the environmental impacts contained in Table S-4, the EA concluded that the radiological impact on the environment would be less by a factor of at least 30 than that shown in Table S-4 and accordingly, the impact would be well within the scope of Table S-4. (Staff Exh. 1 at 27, 28, as admitted in the hearing). Table S-4, as well as the EA, did not refer to and discuss the environmental impacts occasioned by error of Licensee's employees in preparing the casks for shipment.

⁴ "Environmental Survey of Transportation of Radioactive Materials to and from Nuclear Plants," December 1972.

ment of Consideration (40 Fed. Reg. 1005 (1975)) for the propositions that Table S-4 is a generic rule, and that WASH-1238 provides the primary data base for Table S-4 in analyzing the probabilities of occurrences of transportation accidents involving nuclear fuel, the expected consequences of such accidents, and the potential radiation exposures to transportation workers and the general public under normal conditions of transport.⁵ Only at page 6 of its Reply Brief of October 1, 1984, did the Licensee refer in passing to "human error."

Thus, prior to the issuance of our Memorandum and Order and indeed prior to the hearing, the argument had not been presented to us, supported by specific citations, that Table S-4 includes consideration of accidents attributable to human error in preparing spent fuel casks for shipment. We were not told that WASH-1238, in Appendix A at 72, provided estimates which indicate that the possible frequency of casks being improperly closed prior to shipment is very low. Also, we were not told that WASH-1238 (at 16) concludes that the likelihood of an error, such as a package being used in a manner not in accordance with the design, is small in light of the regulatory requirements for quality assurance and for various observations and tests before each shipment.⁶ We neither understand nor appreciate Licensee and Staff counsels' failure to move for reconsideration of our Memorandum and Order of January 7, 1985, or their failure to pursue the recourse provided in ¶ 2 of our Order of November 5, 1984, which stated that "[w]ithin thirty (30) days after service of the Board's Order ruling upon the issue of the applicability of Table S-4, any further motions for summary disposition shall be filed with respect to the issues posed by Consolidated Contention 1."

Had we been presented in a timely manner with the argument and appropriate citations, we would have dismissed that portion of Consolidated Contention I which contended that the EA had not evaluated the probability and consequences of accidents occurring during transportation of spent fuel casks which might be occasioned by employee error in preparing the casks for shipment.)

Since, as a matter of law, it is clear that the Staff's Environmental Assessment, in relying upon Table S-4 and WASH-1238, did evaluate the probability and consequences of accidents occurring during the transportation of spent fuel casks from Surry to North Anna which might be oc-

⁵ See Licensee's Brief of September 20, 1984, at 6, 8 and 9, and its Reply Brief of October 1, 1984, at 4. See Staff's Brief of September 21, 1984, at 5, 6, and its Reply Brief of October 1, 1984, at 4.

⁶ Moreover, prior to the issuance of the Memorandum and Order and prior to the hearing, the Licensee and the Staff had cited neither NUREG-75/038, Supplement 1, April 1975, nor NUREG-0170, "Final Environmental Statement on the Transportation of Radioactive Material by Air and Other Modes," December 1977, at 4-31.

casioned by error of the Licensee's employees in preparing the casks for shipment, we would not have to set forth Findings of Fact, *infra*, and analyze these facts in this Initial Decision. However, not having been properly briefed upon this issue prior to the hearing,⁷ we have decided to issue factual findings and to discuss them.

Our factual findings, *infra*, confirm the conclusions in WASH-1238 which, being included in the values of generic Table S-4, were relied upon in the Staff's Environmental Assessment. In other words, the chances of employee (human) error in preparing the casks for shipment are small because of the Licensee's cask-handling training program, and because the handling procedures are thorough and require checking and doublechecking by the operators' supervisor. In addition, whenever a step is taken that requires that its performance be verified by readings of pressure, torque or visual examination, these values or attributes are confirmed by a quality control representative. Moreover, some of the safety-related design features of the model TN-8L cask to be used for the Surry-to-North Anna shipments make errors less likely and/or would minimize the effect of an error if committed. Thus, we conclude that an environmental impact statement need not be prepared because the Staff's EA, both as a matter of law and as supplemented by our findings, adequately evaluated the probability and consequences of shipping accidents, including those which might be caused by error of Licensee's employees in preparing the casks for shipment.

2. Sabotage (Fdgs. 29-49)

The subject of sabotage was not discussed in the Staff's Environmental Assessment issued on July 3, 1984. However, the Staff's Safety Evaluation Report (SER), issued on the same date, after observing that hijacking or sabotage of a spent fuel shipment has never been attempted, set forth four considerations and concluded that, on the basis of these con-

⁷ During the course of the supplemental special prehearing conference held on September 7, 1984 (Tr. 92), and again in its brief of July 8, 1985, at 1 and 2, CCLC's position is that the risks of sabotage and human error, standing alone, do not create such significant environmental effects as to require that an environmental impact statement be issued pursuant to the National Environmental Policy Act. In light of this position, CCLC neither proposed findings of fact upon these two issues nor discussed them in its brief. During the course of the supplemental special prehearing conference, however, CCLC stated that it had retained an expert witness and led us to believe that it intended to put on a full case demonstrating that the risks are significant and, therefore, that an environmental impact statement is required. Tr. 93. However, CCLC did not present any witnesses.

Finally, we note that CCLC requests at page 2 of its brief that we reconsider our ruling in the Memorandum and Order of January 7, 1985, on the applicability of Table S-4. Such a request is denied as untimely.

siderations, the probability of a sabotage incident is remote and the risk to the public is very small.

With regard to this subject, the thrust of Consolidated Contention 1 is that an Environmental Impact Statement should be prepared because the EA did not evaluate the probability and consequences of accidents occurring during the Surry-to-North Anna transportation of spent fuel casks which might be caused by acts of sabotage. However, CCLC has never challenged the SER's analysis of sabotage and did not object to the admission of the SER into evidence. Moreover, it presented no evidence and did not cross-examine the Licensee's and the Staff's witnesses on the subject of sabotage, and, indeed, as reflected in note 7, *supra*, neither proposed findings of fact nor discussed sabotage in its brief. Moreover, the Commission's Statement of Consideration, in noting that sabotage is not covered in WASH-1238 and is not accounted for in Table S-4, stated that the environmental effects of sabotage are subject to appropriate separate consideration in individual reactor licensing proceedings. 40 Fed. Reg. 1005 (1975). We believe we have given "appropriate" consideration to the issue of sabotage in this case.

The record made before this Board amplifies and supports the SER's discussion and conclusions. First, the probability of an act of sabotage being directed at a shipment of spent fuel is very remote — there is no history of such sabotage attacks despite the fact that there have been over 5000 shipments in this country since 1964. Second, even if a saboteur made the effort, there would be a high probability of failure because the cask design, the physical protection system required by 10 C.F.R. § 73.37, and time pressures would impede a successful attack. Finally, even assuming a sabotage attack was successful, extrapolations from two studies,⁸ evaluating releases of respirable material in a highly populated area such as New York City, show that the maximum possible harm to the public in Richmond, Virginia, the most populous area along the proposed route, would be one-half a latent cancer.

Thus, we conclude that an environmental impact statement need not be prepared because the intervenor has never challenged the SER's analysis of sabotage, and because the record, in amplifying and supporting the SER's analysis, establishes that the probability is remote of either a sabotage attack being undertaken or being successful, and that, even if such an attack was successful, the impact upon the public health and safety and upon the environment would be very small.

⁸ NUREG/CR-2472, "Final Report on Shipping Cask Sabotage Source Term Investigation," Battelle Columbus Laboratories, October 1982; SAND82-2365, "An Assessment of the Safety of Spent Fuel Transportation in Urban Environs," Sandia National Laboratories, June 1983.

3. *The Dry Cask Alternative (Fdgs. 50-71)*

In Part II.1, *supra*, we concluded that the Staff's EA of July 3, 1984, adequately evaluated the probability and consequences of shipping accidents, inclusive of those which might be caused by error of Licensee's employees in preparing the casks for shipment. In Part II.2, *supra*, we found that even if a sabotage attack was successful, the impact upon the environment and upon the public health and safety would be very small. In light of these conclusions, we agree with the EA's evaluation that the proposed receipt, storage and transshipment of the Surry spent fuel involved "no significant change in types or significant increase in the amounts of any effluents that may be released off-site, that there is no significant increase in individual or cumulative occupational radiation exposure," and that thus an environmental impact statement need not be prepared.

The Licensee's and the Staff's initial position is that, because the EA concluded that the proposed receipt, storage and transshipment of Surry spent fuel would not significantly affect the quality of human environment and because it determined that an environmental impact statement need not be prepared pursuant to § 102(2)(C)⁹ of the National Environmental Policy Act, there was no reason for the Staff to analyze the dry cask storage alternative pursuant to § 102(2)(E) of NEPA.¹⁰ In support of this position, they cite *Duke Power Co.* (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), *Virginia Electric and Power Co.* (North Anna Nuclear Power Station, Units 1 and 2), ALAB-584, 11 NRC 451 (1980), and *Portland General Electric Co.* (Trojan Nuclear Plant), ALAB-531, 9 NRC 263 (1979). We disagree with the Licensee's and Staff's position and conclude that pursuant to § 102(2)(E), the Staff was required to analyze the dry cask storage alternative in the EA. We read the *Trojan*, *Duke Power* and *North Anna* decisions to mean only that, after reviewing the record made during summary disposition proceedings or at a hearing, if a licensing board were to conclude that the Staff had correctly determined that an environmental impact statement was unnecessary because the proposed action would not significantly affect the quality of human environment, the licensing board would not have to consider the impacts of any

⁹ Section 102(2)(C) of the National Environmental Policy Act, 42 U.S.C. § 4332(2)(C) requires that a Federal agency include in a report on major Federal acts "significantly affecting the quality of human environment," a detailed statement on alternatives to the proposed action.

¹⁰ Section 102(2)(E) directs Federal agencies to "study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources."

alternative which necessarily would have to be equal or greater. These decisions, however, did not relieve the Staff of its obligation to comply with § 102(2)(E). Apparently, believing that the case made in the EA for the proposed transshipment was so strong, it opted not to discuss the dry cask storage alternative. Congress did not grant such an option.¹¹ Further, the Appeal Board stated in *Consumers Power Co.* (Big Rock Point Nuclear Plant), ALAB-636, 13 NRC 312, 332 (1981), “some factual basis (usually in the form of the staff’s environmental analysis) is necessary to determine whether a proposal ‘involves unresolved conflicts concerning alternative uses of available resources’ — the statutory standard of Section 102(2)(E).” As discussed, *infra*, the Staff’s failure to discuss this alternative is not fatal.

As reflected in note 7, *supra*, CCLC does not urge that a detailed final environmental impact statement should be prepared. Its position is that § 102(2)(E) requires that the EA be redone to include a discussion of or at least acknowledge the dry cask storage alternative. Apparently it argues that whenever a proposed action — here the proposed transshipment of Surry spent fuel — has “some” impact on the environment, the application of § 102(2)(E) is triggered and there must be an agency consideration of alternatives regardless of whether or not a § 102(2)(E) “unresolved conflict” exists. This argument is disingenuous. None of the cases cited by CCLC remotely suggest that the words “unresolved conflicts” are or should be excised from § 102(2)(E). Moreover, two of the cases cited by CCLC at page 4 of its proposed findings do not evidence that this issue “has badly split” the Appeal Board.¹² In the *Trojan* decision, the Appeal Board stated that “there is no obligation to search out possible alternatives to a course which itself will not either harm the environment or bring into serious question the manner in which this country’s resources are being expended.” Footnote 41 in the *Big Rock Point* decision is not in conflict in stating that “Section 102(2)(E) of NEPA is not limited to major federal actions with significant effects on the environment and may require consideration of alternatives even when an EIS is not otherwise required” inasmuch as on the same page, as noted *supra*, the Appeal Board reaffirms that “some factual basis (usually in the form of the staff’s environmental analysis) is necessary to

¹¹ The Staff points out in its brief that, at pages 2-3 of its July 3, 1984 EA, it referenced NUREG-0575, “Final Generic Environmental Statement on Handling and Storage of Spent Light Water Power Reactor Fuel,” August 1979, and noted that the finding of the FGEIS is that the environmental impact costs of interim storage are essentially negligible, regardless of where such spent fuel is stored. Apparently, in the alternative, the Staff is suggesting that in fact it did discuss the alternative of dry cask storage and that no further analysis was necessary. See Staff’s Brief at 16. The suggestion is without merit. Indeed, the Surry dry cask EA of April 12, 1985, accurately observed that the environmental impacts of the dry cask storage option had not been specifically addressed in the FGEIS. Staff Exh. 3 at 4.

¹² *Trojan*, ALAB-531, *supra*, 9 NRC at 266; *Big Rock Point*, ALAB-636, *supra*, 13 NRC at 332 n.41.

determine whether a proposal 'involves unresolved conflicts concerning alternative uses of available resources' — the statutory standard of Section 102(2)(E)."

The Licensee has submitted extensive proposed findings of fact, as modified by the Staff, in support of its secondary position that the record establishes that there are no § 102(2)(E) unresolved conflicts concerning alternative uses of available resources. We now turn to the record to make this determination.¹³ First, CCLC concedes that "[f]rom an economic point of view, dry cask storage appears to be no less attractive an alternative than transshipment." CCLC Proposed Finding 12. Thus, the costs are comparable. In any event, consideration of an alternative based on economic superiority (and not environmental superiority) is not the responsibility of this agency. *North Anna*, ALAB-584, *supra*, 11 NRC at 456. Second, the Staff's witness, Mr. Donald P. Cleary, testified that the proposed action will not involve any noteworthy conflict in the use of resources such as lead, steel, copper, resin, cement, labor, vehicles, casks and roadways. CCLC did not cross-examine Mr. Cleary. Thus, it cannot be heard to barrenly allege that the proposed action will require extensive commitments of those resources. See CCLC's Brief at 5. Finally, contrary to CCLC's allegation at page 5 of its brief, the Licensee's witness, Mr. Marvin L. Smith, at page 259 of the transcript did not acknowledge that the transshipment proposal would tie up the resource represented by the available storage capacity at North Anna. He merely indicated that storage space is a resource and that generally he was involved in the planning stages of activities that might impinge on the storage of spent fuel.

On the basis of this record, we conclude that the proposed transshipment of Surry spent fuel to North Anna would not significantly affect the quality of the human environment, that the transshipment inherent in the proposal does not involve unresolved conflicts concerning alternative uses of available resources, and that there is no basis for concluding that the dry cask storage alternative is environmentally preferable to the instant transshipment proposal. Such an ultimate NEPA judgment may properly be made on the basis of the entire record before adjudicatory

¹³ In passing, we note that, in its Proposed Finding 15, CCLC urges that even if the Surry spent fuel pool lost its full core reserve and the nuclear plant had to shut down, this would be preferable to need-less exposure to the public occasioned by the proposed shipment of spent fuel to North Anna. The record is not cited in support of this barren allegation. Also, we note that, in Proposed Finding 17, CCLC asserts that Licensee's plan to construct a dry cask storage facility at Surry is sufficiently advanced that it can be implemented in time to prevent the loss of full core reserve and thus avoid the need for transshipment. As our Finding 66 reflects, the dry cask storage license might not be granted or might be revoked at some future date.

tribunals. *Philadelphia Electric Co.* (Limerick Generating Station, Units 1 and 2), ALAB-262, 1 NRC 163, 197 n.54 (1975).¹⁴

III. CONCLUSIONS

The Board concludes that an environmental impact statement need not be prepared because the Staff's Environmental Assessment, both as a matter of law and as supplemented by the Board's findings, adequately evaluated the probability and consequences of shipping accidents, including those which might be caused by error of Licensee's employees in preparing the spent fuel casks for shipment. We also conclude that an environmental impact statement need not be prepared because the Intervenor has never challenged the Safety Evaluation Report's analysis of sabotage, and because the record establishes that the probability is remote of either a sabotage attack being undertaken or being successful, and that, even if such an attack was successful, the impact upon the public health and safety and upon the environment would be very small. Finally, the record establishes and we conclude that the transshipment proposal does not involve unresolved conflicts concerning alternative uses of available resources and that there is no basis for concluding that the dry cask storage alternative is environmentally preferable to the transshipment proposal.

FINDINGS OF FACT¹⁵

1. Consolidated Contention 1 reads as follows:

The Staff's Environmental Assessment is inadequate and an Environmental Impact Statement should be prepared. The bases for this contention are two-fold. First, the Environmental Assessment did not evaluate the probability and consequences of accidents occurring during the transportation of spent fuel casks from the Surry Station to the North Anna Station which might be occasioned by acts of sabotage or by error of Applicant's employees in preparing the casks for shipment. Second, contrary to the National Environmental Policy Act, 42 U.S.C. § 4332(2)(E), consideration was not given to the alternative method of constructing

¹⁴ Despite the *Limerick* decision, CCLC urges that NEPA requires that a discussion of alternatives to a given proposal be included within the environmental assessment of that proposal. It asserts that the North Anna transshipment EA should be remanded to the Staff for supplementation, lest the Staff's officials who will pass on the transshipment proposal not be aware of the dry cask proposal and its environmental assessment. We reject this argument, which if adopted by the Board, would produce nothing other than delay in the resolution of this controversy. There is nothing in the record to establish that the NRC Staff is so compartmentalized that responsible officials would be unaware of the dry cask storage proposal and the environmental assessment.

¹⁵ The factual background is set forth in the introduction to our Opinion, *supra*.

a dry cask storage facility at the Surry Station which is feasible, can be effected in a timely manner, is the least expensive and safest method for at least 50 years, and can be used on or off site.

A. Employee Error in Preparing Casks for Shipment

Cask Description

2. The cask to be used for the Surry-to-North Anna shipments is the model TN-8L cask manufactured by Transnuclear, Inc. The TN-8L cask is designed to carry three pressurized water reactor fuel assemblies, one in each of three compartments. The cask cavity consists of three stainless steel square pressure vessels welded to an end plate and circular stepped top flange, separated by a T-shaped copper plate, and surrounded with boron carbide and copper plates. The main shielding consists of 135 mm of lead, 26 mm of steel and 150 mm of resin. A wet cement layer is located between the lead and the outer steel shell to reduce heat flow in the event of fire. Radial copper fins are welded to the outer shell and cover the surface of the cask between the end drums. Each end of the cask is surrounded by stainless steel drums reinforced by radial gusset plates and filled with balsa wood. A disk-shaped shock-absorbing cover, constructed of carbon steel and balsa wood, is fastened to each drum with four, 1¼-inch bolts. The cask has six trunnions, which are the structures by which the cask is handled. Impact limiters are attached to the trunnions to reduce impact loads in the event of a side drop onto a trunnion. Certain vent and drain lines that penetrate the inner cavity are equipped with positive closures. All access ports are protected by the shock-absorbing covers. McCreery, ff. Tr. 220, at 3-4.

3. NRC has issued a Certificate of Compliance certifying that the cask meets the safety standards in 10 C.F.R. Part 71. *Id.* at 4 and Appendix 2.

4. The main cask penetration is the opening on the top of the cask through which spent fuel is loaded and unloaded. This opening is covered by a lid that is a welded stainless steel circular flanged shell containing lead and resin shields. The lid is secured by sixteen 1¼-inch-diameter bolts and is provided with a double seal consisting of two concentric Viton "O-rings" located within recessed grooves on the top flange. *Id.* at 4.

5. Three other penetrations lead to the fuel cavity — the "A," "B" and "C" penetrations. The "A" and "B" penetrations are located in the lid. The "C" penetration is located on the side of the cask near its bottom. The "A" penetration passes through the lid and is 1½ inches in diameter. The "A" penetration is used for cask evacuation and drying in

the vacuum drying test, and for venting when the cask is being filled with water. The “B” penetration is a penetration from the bottom of the lid that passes upward through a Hansen-valved quick-disconnect fitting. It is used to provide access for instrumentation to obtain pressure readings within the cask during cask handling operations, and for backfilling the cask with nitrogen. When the cask first arrives, the “B” penetration is used to compare the pressures inside and outside the cask. The “C” penetration is a penetration formed by the drain lines at the bottom of the cask that converge into a single Hansen-valved quick-disconnect fitting. It is used to drain water out of the cask and to fill the cask with water. *Id.* at 4-5.

6. The “A” penetration is sealed by the “A” plug, a lead-filled flanged cylinder that has one “O-ring” seal on the underside of the flanged portion and is secured to the lid by three bolts. The “B” penetration is sealed by a circular flange with a single “O-ring” and is held in place by three bolts. The Hansen-valved connector acts as a second seal. The “C” penetration is sealed by a flange cover, with one “O-ring” and three bolts. Again, the Hansen-valved connector acts as a second seal. *Id.*

7. The “D” opening is an opening into the lid that does not lead into the fuel cavity. It is an access port to the annulus between the two lid “O-rings.” It allows access from the top of the lid to the space between the two “O-rings” so that the integrity of the main lid “O-rings” can be checked. It is sealed by a threaded plug with an “O-ring” on the underside of the head of the plug. *Id.* at 6.

8. The three bolts in the “A,” “B” and “C” penetrations, the threaded plug in the “D” opening, and the sixteen bolts in the lid are torqued to levels specified in the operating procedure, in a specified sequence. The specified torque is applied to the bolts to compress the “O-rings” and to form a tight seal against the metal on both sides. The Hansen-valved connectors in the “B” and “C” penetrations act as a second seal. *Id.*

Safety-related Design Features

9. Both Staff and Licensee witnesses testified that certain design features of the model TN-8L cask minimize the potential for damage-producing human error in cask handling. Lahs *et al.*, ff. Tr. 346, at 19; McCreery, ff. Tr. 220, at 7.

10. As reflected in Findings 11-17, *infra*, some of the design features of the model TN-8L cask make errors less likely, and others would mini-

mize the effect of an error if one were committed. McCreery, ff. Tr. 220, at 7.

11. First, the cask is shipped “dry,” i.e., with no water in the fuel cavities. That precludes the development of steam pressures inside the cask, since there is no residual water that can turn to steam. The absence of steam pressure reduces the possibility of a release of radioactive gas in the event an employee erred and, for example, failed to properly tighten the lid bolts, or failed to detect a defective seal. If no positive pressure exists inside the cask, there is no driving force to force radioactive gases outside the cask. Also, the less pressure, the less chance for a seal to fail. *Id.*

12. Second, the casks were designed to carry fuel that has been discharged from the reactor only 6 months and is thus “hot” (thermally) with a decay heat of approximately 8 kilowatts per assembly (kW/assembly). The design parameters of the cask enable it to contain pressures of 105 psig, with a safety factor of 3. The Surry fuel that will be shipped to North Anna has been out of the reactors for over 5 years, with a heat output per assembly of less than 2 kilowatts, and so is producing heat at only a fraction of the design capacity of the cask. This is another important safety factor over and above the original design safety factor of 3. The fact that the fuel to be shipped is being selected from reactor discharges that indicated a low relative activity, and thus no major failures, also makes it less likely that a significant driving force would be created inside the cask. *Id.* at 8.

13. Third, the cask is designed to carry the maximum payload that can be transported by highway. One unloading/loading cycle removes as much fuel as three loads in the only other available highway cask model. The likelihood of handling errors is thus decreased during any given shipping campaign, since the Licensee will need one-third as many shipments with the model TN-8L cask. *Id.*

14. Fourth, while only one seal for each penetration will satisfy NRC requirements, the cask features double seals for the lid opening and two of the other three penetrations into the cask cavity. *Id.* at 8-9; McCreery, Tr. 224; Lahs, *et al.*, ff. Tr. 346, at 19. The NRC Staff testified that based on the cask closure design of the TN-8L cask, as well as on the cask handling procedures, a release of radioactive material due to employee error is unlikely. Lahs *et al.*, ff. Tr. 346, at 17-18.

15. Fifth, the cask uses seals made of a rubber-like material (Viton) rather than metallic seals. A seal containing this rubber-like material is less susceptible to damage than a metallic seal, in that if it is deformed during handling operations it will regain its original shape. This minimizes the possibility of additional handling, which would be required if a

seal had to be changed, and thus decreases the likelihood of error. McCreery, ff. Tr. 220, at 9.

16. Sixth, the cask is relatively simple in design, resulting in easy-to-follow operating procedures. The less complicated the operation of the cask, the less likely it is for an error to occur. And, if an error occurred, it would be easily detected and corrected. *Id.*

17. Finally, the cask is designed pursuant to 10 C.F.R. § 71.73 to withstand severe accidents without significant damage. The regulations require that it withstand a 30-foot drop onto an essentially unyielding surface, a side drop of 40 inches into a 6-inch-diameter steel bar, exposure for not less than 30 minutes to a fire of not less than 1475°F and immersion under at least 3 feet of water for not less than 8 hours. *Id.* at 9-10; McCreery, Tr. 226.

Cask Handling Procedures

18. From the time the empty cask is removed from the truck until it is placed back on the truck filled with spent fuel, the following procedures are prescribed:

- (1) Cask protective devices are removed.
- (2) Cask is taken to decontamination area.
- (3) Skirt (cover) is placed on it, so that radioactive contamination will not accumulate on fins while the cask is in the spent fuel pool.
- (4) Sixteen bolts that engage the cask lid are removed.
- (5) Cask is filled with water and then moved to the loading station in the pool.
- (6) Cask lid is removed while cask is under water.
- (7) Cask lid is lifted above the water with a crane.
- (8) Seals are inspected for defects.
- (9) Seals that have defects are replaced.
- (10) Three assemblies are loaded into the cask.
- (11) Cask lid is replaced while cask is under water.
- (12) Cask is lifted partially out of water, and four bolts are replaced, hand-tight, in lid.
- (13) Cask is moved to decontamination area, and the remaining 12 bolts are installed.
- (14) Numbered template prescribing the order for bolt tightening is placed on the cask.
- (15) All 16 bolts are tightened to 290 ft. lbs. with calibrated torque wrenches.

- (16) Water in cask is drained (gravity draining) through penetration "C."
- (17) Leak tightness of the lid seal is checked through the "D" opening.
- (18) Air is evacuated from the cask.
- (19) Any remaining moisture is evaporated by the vacuum drying system.
- (20) When pressure inside cask is less than 20 millibars, cask is tested for 10 minutes. If pressure increases no more than three millibars during this time, the seals are working and the cask is dry (vacuum drying test).
- (21) Evacuated cask is back-filled with nitrogen to prevent oxidation of the fuel.
- (22) Cask is back-filled with nitrogen to one atmosphere, in order to equalize the pressures inside and outside the cask.
- (23) Remaining penetrations into the cask are checked under vacuum for leak-tightness.
- (24) Skirt is removed, and the cask is ready to be moved to truck.
- (25) Cask is secured to its specially designed trailer by a system designed to restrain the cask in all three motion modes.
- (26) Cask protective devices are attached to ends and trunnions. Security seals are attached at each end.

McCreery, ff. Tr. 220, at 14-16; Licensee Exhs. 1 and 2.

19. These procedures are repeated when the shipment reaches its end destination and the cask is unloaded, except for the seal leak tests and except that four bolts remain in the lid until the loaded cask begins its descent into the fuel pool. McCreery, ff. Tr. 220, at 14-16; Licensee Exhs. 1 and 2.

20. A supervisor watches as the operator performs each step of the operating procedure. The supervisor's responsibility is to ensure that the operators perform each step in the proper sequence and as prescribed by the operating procedure. The procedure contains a "checkoff" space beside each step delineated to verify that each step has been properly performed. McCreery, ff. Tr. 220, at 16-17.

21. In addition, whenever a step is taken that requires that its performance be verified by readings of pressure, torque or visual examination, these values or attributes are confirmed by a quality control representative. Required quality control checkpoints provide an additional layer of assurance during the performance of the more important steps. *Id.* at 17.

22. The cask handling procedures are thorough rather than complex, and, as reflected above, require checks and doublechecks. *Id.* Not only is a seal visually inspected, and then subjected to a leak test (*id.* at 10),

but it is also replaced annually, whether or not it has deteriorated, despite a 5-year shelf life (*id.* at 12). It is then subjected to a still more demanding leak test. *Id.* A drying test is also a verification of proper installation of the lid seals. *Id.* at 11.

23. The procedures also include “self-checking” operation, i.e., procedures that would make manifest any earlier mistake. For example, the “dryness” test under vacuum will not pass if the lid or penetration bolts are not in place, or if the cask is not drained of water, or if the seals are defective. *Id.* at 17-18.

24. There is a great deal of redundancy in leakage barriers and in the tests performed on them, and so any error would likely be found by test or negated by a redundant leakage barrier. *Lahs et al.*, ff. Tr. 346, at 20.

25. These cask handling procedures are based on over 500 cask-years’ operating experience. Similar casks have been used in Europe since the 1970’s. There have been at least fifty loadings and unloadings of TN-8L casks in the United States. These cask handling procedures to be used in the shipment from Surry to North Anna evolved from this operating experience and from knowledge gained through technical investigations. *McCreery*, ff. Tr. 220, at 17.

26. The Licensee’s witness, the manager of Transnuclear Inc.’s Aiken Operations, testified that he is familiar with approximately one-half of this historical experience in shipping spent fuel in casks and that there is a fairly free exchange of information between companies in this industry. While an incident had occurred at a New Jersey reactor site, he stated that it posed no significant threat to the public health and safety or to workmen and that such an incident would be unlikely to occur at the Licensee’s reactor sites since a different type of mechanical joint is used which remains connected throughout shipment. *McCreery*, Tr. 218-19, 232-33, 235-36, 241.

27. A generic operating procedure has been approved by NRC along with the cask’s Safety Analysis Report. The site-specific procedures have been reviewed and verified by Transnuclear, Inc., to conform to the generic requirements. *McCreery*, ff. Tr. 220, at 17.

28. The employees that will be involved in shipping the Surry fuel have had 7 hours of classroom instruction in cask handling and have become certified operators after completing an 80-hour course in crane operation and rigging by the Crane/MIT Operator School. These employees also obtained hands-on experience with the cask at the Allied Gulf Nuclear Services facility in Barnwell, South Carolina, in August 1983. Additionally, these employees have gone through a “dry run” (without fuel) that took place at Surry in November 1983. A refresher course will be given, informing employees of any minor changes in cask handling

procedures before any spent fuel is shipped. Pickworth, ff. Tr. 222, at 2-3.

B. Sabotage

29. The subject of sabotage was not discussed in the Environmental Assessment issued on July 3, 1984. Staff Exh. 1. However, the Staff's Safety Evaluation Report, issued on the same date, stated that, so far as known, the hijacking or sabotage of a spent fuel shipment has never been attempted. The SER also stated that the following considerations indicate that the probability of such an event is remote and that the risk to the public is very small: (1) Extensive safeguards precautions minimize the probability of success. (2) Attempted sabotage, even if successful, would not produce serious radiological consequences. (3) Attempted theft and separation of plutonium or fission products, even if successful, would require complex equipment and time-consuming reprocessing. (4) The size and weight of the cask and the intense radioactivity of its contents would strongly militate against the successful theft of the spent fuel. Staff Exh. 2 at 4-3, 4-4.

Threat of Sabotage

30. More than 5000 shipments of spent fuel have been made in the United States since 1964. Except for pellets from a shotgun discharged during a labor dispute in the early 1970's which penetrated the siding of the tractor-trailer carrying a cask containing research reactor fuel elements, attacks upon this kind of transportation system have been virtually nonexistent. The cask in that incident was undamaged. Jefferson, ff. Tr. 326, at 9. The Staff regularly consults with law enforcement and intelligence-gathering agencies to obtain their views with respect to the possible existence of adversary groups interested in sabotage of nuclear activities. None of the information collected by the Staff confirms the presence of an identifiable threat to domestic spent fuel shipments. Laha *et al.*, ff. Tr. 346, at 8.

31. Saboteurs might consider attacking a spent fuel shipment for three different reasons:

- (a) to acquire nuclear material for weapons. However, materials for weapons use could be extracted from spent reactor fuel only by reprocessing. Since it is highly unlikely that a saboteur could manage successfully to reprocess stolen spent fuel and since there are other more promising targets, it is unlikely that he would attempt to purloin the material for that purpose. Jefferson, ff. Tr. 326, at 14.

- (b) to make a “political statement” in order to embarrass the government or the nuclear industry. However, historically, such attacks have been carried out at times and locations so as to minimize injury to the public whose support the terrorists seek. Moreover, given the dangers and obstacles, discussed below, a spent fuel shipment would not be an inviting target. *Id.* at 14-15.
- (c) to cause direct harm to the public. However, if a saboteur attempted directly to breach the cask in transit or to divert the shipment for use at a time and location of his choosing, he would face a significant threat from law enforcement agencies and/or from radiation. There are other more attractive targets that would provide far greater risk of harm to the public with far less risk of failure and possible injury or death to the saboteur. *Id.* at 15-16; Jefferson, Tr. 330.

Probability of Success

32. As discussed above in Findings 2 and 17, the TN-8L cask is designed to maintain radiation shielding in the face of severe accident conditions, which include conditions produced by certain accident-like events staged by saboteurs. A multiplicity of steel shells and thick, dense radiation shields enable the cask to withstand accident-like events caused by sabotage and attack by small arms or conventional explosives. Studies have indicated that it will require skillful use of explosives by persons with knowledge of both explosives and shipping cask design parameters to potentially achieve a release of radioactive material. Laha *et al.*, ff. Tr. 346, at 6-7.

33. The regulations contained in 10 C.F.R. Part 71 specify that the cask must be designed to survive a set of engineering criteria specified in the regulations as “hypothetical accident conditions.” These design criteria encompass impact, puncture, fire and immersion and, by inference, such other phenomena as crushing and tumbling. Jefferson, ff. Tr. 326, at 6.

34. While the TN-8L cask has never been subjected to actual test conditions, calculations contained in the Safety Analysis Report for Packaging (SARP) indicate that the cask can satisfy, without loss of containment and with minor loss of shielding, the regulatory requirements contained in the 10 C.F.R. Part 71 hypothetical accident conditions. While it might suffer some cosmetic damage in an accident (such as the bending of fins) the cask is capable of surviving the prescribed accident conditions with no structural damage. *Id.* at 8.

35. NRC has promulgated the physical protection regulations in 10 C.F.R. § 73.37 in direct response to the possibility of sabotage against a spent fuel shipment. Lahs *et al.*, ff. Tr. 346, at 8. These regulations require, for example, advance notification to NRC of each shipment, procedures for coping with threatening events, prior arrangements with local law enforcement authorities, and a continuously manned communications center. For shipments by road, such as those planned by Licensee, the shipping vehicle will be equipped with an immobilization device. Jefferson, ff. Tr. 326, at 10-11. Armed escorts or local law enforcement agents are required to accompany the shipping vehicle, and these escorts, the shipping vehicle, local law enforcement agencies and the shipper's communications center will be capable of contacting each other through communications equipment required by 10 C.F.R. § 73.37. *Id.*

36. The physical protection system is designed to increase the obstacles faced by a would-be saboteur and, in particular, to create substantial time pressures for the saboteur. Jefferson, ff. Tr. 326, at 11, 13. The saboteur would face armed resistance from the outset. The transport and escort vehicles could quickly alert local and State police. The transport vehicle could activate the vehicle's immobilization device at the first sign of a threat. *Id.* at 12-13. If the saboteur gained control of the vehicle, he could not swiftly drive it away; he would have to uncouple the heavy trailer from the immobilized tractor and recouple it with another tractor in full view of the public. *Id.* at 16-17. The time necessary to deal with this array of obstacles would greatly reduce the probability of success. *Id.* at 12-13.

37. A saboteur who overcomes the impediments described above might attempt any of the following three methods to breach the cask: (a) mechanical means, (b) use of projectiles, and (c) use of explosives. Lahs *et al.*, ff. Tr. 346, at 10.

38. The first of these methods would be extremely difficult, dangerous and time-consuming. *Id.* at 11; Jefferson, ff. Tr. 326, at 19. As previously indicated in Finding 33, the cask is designed to survive severe accident-like events. Thus, the saboteurs might attempt to disassemble the cask mechanically. Lahs *et al.*, ff. Tr. 346, at 10-11. Performance of this task would be difficult for several reasons. In the first place, the 37-ton cask is designed for vertical unloading but rests horizontally on the truck. The saboteur must either have access to a 50-ton crane or its equivalent in order to erect the cask or face the problems of removing the cover from the horizontal cask. Jefferson, ff. Tr. 326, at 19.

39. To remove spent fuel from the horizontal cask, the saboteur would first have to remove the 900-pound shock-absorbing cover. Then,

he would have to remove the lid of the cask, which weighs almost a ton and is designed to fit tightly into the cask. It is likely that the heavy, closefitting lid would bind during the process. Furthermore, a vertical steel wall, welded across the front of the trailer, would make it difficult to use cables to pull the lid off. *Id.*

40. In the event that a saboteur could remove the lid, the cask would then project a radiation beam that would be lethal near the cask opening. The saboteur would have to deal with this beam if he should attempt to remove the spent fuel assemblies. *Id.* at 19-20.

41. To remove the fuel assemblies, the saboteur would have to grapple blindly for a place to hook the spent fuel assemblies, probably with a specially constructed tool. This would be difficult, because the only grasping points lie flush against the chamber walls, making them difficult to hook. It would also be dangerous, as the saboteur might expose his arm to a high dose of radiation. Moreover, the vertical steel wall at the front of the trailer would block the complete extraction of the fuel assemblies from the cask. *Id.* at 20-21.

42. If the saboteur were to attempt to breach the cask in this manner, apart from the risks of irradiation and the difficulties of disassembly, he would have tremendous time constraints. If he wished to maximize his time to dismantle the cask fully before interdiction, he would not attack the cask near a heavily populated area where law enforcement agencies would be centered and the chance of detection would be greatest. Instead, he would attack the shipment in a remote area. If the attack were carried out in a remote area, however, the consequences to the public would be minimized. *Id.* at 22.

43. The second method might be an attempt to breach the cask by using projectiles. *Id.* However, the use of small firearms, high-powered rifles and machine guns would not result in the penetration of the spent fuel cask. Lahs *et al.*, ff. Tr. 346, at 11-12. Tests conducted by Sandia National Laboratories establish that neither light antitank weapons nor armor-piercing projectiles would be effective means of penetrating the casks. Jefferson, ff. Tr. 326, at 23. Light antitank weapons prove ineffective for two reasons: (a) the extremely accurate aim required (a skill not expected in those who do not use the weapons continuously) (*id.*), and (b) the limited penetration capability of the charges used. Jefferson, Tr. 334. Moreover, armor-piercing projectiles would be ineffective against the TN-8L cask because the lead shielding is not an effective transmitter of impact shock waves. Jefferson, ff. Tr. 326, at 23.

44. The third method, the use of explosives, is the most effective means available to breach the casks. Conical-shaped charges, while

requiring some skill, would be the most effective means available, and could cause a penetration of the cask. Lahs *et al.*, ff. Tr. 346, at 12-13.

Consequences of Explosive Attack

45. Two research programs provide experimental data to support estimates of the magnitude and the chemical and physical form of radioactive material released from a presumed successful sabotage attack. The first study was performed for the NRC — NUREG/CR-2472, *supra* note 8. Lahs *et al.*, ff. Tr. 346, at 14. The second study was performed for the Department of Energy — SAND82-2365, *supra* note 8. Lahs *et al.*, ff. Tr. 346, at 14; Licensee Exh. 3.

46. The Sandia Study measured the fuel material released from a full-scale cask containing a single unirradiated, depleted UO₂ fuel assembly when subjected to a full-scale conical shaped charge attack, Jefferson, ff. Tr. 326, at 26; Licensee Exh. 3 at 2-3; Lahs, Tr. 355. The Battelle Study utilized a ¼-scale cask containing irradiated fuel pins. Lahs, Tr. 355.

47. Health consequences were calculated using the following scenario: a three-assembly truck cask is successfully sabotaged in Manhattan during mid-afternoon of a weekday. Licensee Exh. 3 at 4; Lahs *et al.*, ff. Tr. 346, at 15.

48. The Sandia Study indicated that less than 34 grams of respirable material would likely be released; the Battelle program indicated a likely release of less than 18 grams. NRC considers these release results to be higher than releases would be under uncontrolled circumstances. The Sandia Study established that, in a highly populated area such as New York City, the release of this material would result in no early fatalities and an average of four latent cancer fatalities. The Battelle program indicated that, in a highly populated area such as New York City, there would be no early fatalities and less than one latent cancer fatality. *Id.* Early fatalities are defined as those occurring within 1 year after exposure to the radioactive material. Licensee Exh. 3 at 93. Early latent cancer fatalities occur at any time after the initial exposure and are the result of that exposure. *Id.* These fatalities include early fatalities. Jefferson, ff. Tr. 326, at 28. When the maximum value is assigned to each factor in the calculation, the maximum effect would be three early fatalities and fourteen latent cancers. Jefferson, ff. Tr. 326, at 28.

49. These predicted radiological consequences would be significantly reduced where, as in the case of the Surry-North Anna shipments, the fuel transported is 730-day-cooled fuel and the maximum population along the proposed route is 3.5% of the test population. *Id.* at 29. Under

these circumstances, and applying maximum values, the maximum possibility drops to one-half a latent cancer for a successful sabotage in Richmond, Virginia, the most populous area along the proposed route. *Id.* Assuming that the attack were to occur in a remote area, the consequences would be reduced to zero.

C. The Dry Cask Storage Alternative

Need for Additional Spent Fuel Storage Space

50. The spent fuel storage capacity of the Surry Units 1 and 2 spent fuel storage pool is 1044 spent fuel assemblies. Smith (I), ff. Tr. 247, at 3. At the end of 1985, 886 of the fuel storage spaces in the Surry pool will be occupied. *Id.* at 2 and Appendix 2. Thus, at the end of 1985 the Surry spent fuel pool storage racks will contain 158 vacant spaces. *Id.* at 3.

51. Each of the two Surry reactor cores contains 157 fuel assemblies. If the reactor core from either Surry Unit must be discharged, to permit either inspections or maintenance activities, 157 spaces must be available to store the spent fuel. *Id.* These 157 spaces will be referred to as "full core reserve." *Id.*

52. The Licensee has carried out several full core discharges in the past. *Id.* The Licensee presently plans a full core discharge at Surry during 1986 in order to carry out required inspections. Smith, Tr. 261.

53. If the Licensee were required in the future to remove a full fuel core from a Surry Unit in order to perform an inspection or work essential to continued operation, and if there were inadequate space to store the 157 fuel assemblies comprising the core, an outage would result and would last until additional space could be made available. Smith, ff. Tr. 247, at 3. This outage would be long and expensive. The Licensee estimates that the cost of replacing the power from one Surry Unit would be \$300,000 per day. Thus, prudent operation requires that the Licensee make every reasonable effort to maintain full core reserve. *Id.*

54. Pursuant to § 135(b)(2) of the Nuclear Waste Policy Act of 1982, 42 U.S.C. § 10,155(b)(2) (NWPA), the Commission made a generic determination that, for purposes of a determination under 10 C.F.R. Part 53, maintenance of full core reserve is necessary for continued, orderly operation of a nuclear power plant. *See* 50 Fed. Reg. 5548-67 (1985); 10 C.F.R. Part 53.

55. The Licensee currently plans to refuel Surry Unit 1 beginning July 5, 1986. This date assumes that Surry Unit 1 will be operated beyond its normal end-of-cycle date in a "coastdown" mode. But if Surry Unit 1 were to operate at a higher-than-anticipated capacity factor

prior to the 1986 outage or if an unplanned shutdown were to occur during the "coastdown," the refueling outage now scheduled for July 5, 1986, could start several weeks before that date. Smith (I), ff. Tr. 247, at 4.

56. The Licensee plans to discharge fifty-six fuel assemblies during the 1986 Surry Unit 1 outage. This would leave only 102 vacant fuel spaces in the Surry spent fuel pool, fifty-five fewer than necessary to maintain full core reserve. Thus, at least fifty-five fuel assemblies must be removed from the Surry spent fuel pool and stored elsewhere prior to the end of the 1986 Surry Unit 1 refueling outage. In fact, for reasons set out in the following finding, these fifty-five assemblies ought to be removed before the Surry Unit 1, 1986 outage begins. *Id.* at 5.

57. The Licensee prefers to avoid transshipping spent fuel between Surry and North Anna while a refueling outage is in progress at either station. This is because refueling outages are periods of intensive activity, and work that may increase the length of an outage should be avoided in order to minimize outage duration and replacement power costs. Shipment of spent fuel involves use of facilities in the spent fuel pool that are also needed during outages for core offloading and onloading. Also, some of the personnel required for spent fuel shipments would have conflicting responsibilities during a refueling outage. The Licensee presently has outages scheduled for North Anna Unit 1 during the period November 1 through December 19, 1985, and for North Anna Unit 2 during the period April 25 through June 12, 1986. *Id.* at 5 and Appendix 3.

58. In addition, the Licensee would prefer to avoid planning for spent fuel shipments during the period from mid-December through February because of the higher probability that bad weather would result in delays in the shipment of spent fuel. *Id.* at 5. Such delays would result in increased cask lease charges and personnel costs. *Id.* at 6.

59. The Licensee also has an outage scheduled for Surry Unit 2 during the period October 17 through December 14, 1986 (*id.*, Appendix 3), and it plans to discharge an additional sixty assemblies during that outage (*id.*, Appendix 2). Thus, prior to that outage, the Licensee must have provided storage space outside the pool for both the fifty-five Surry Unit 1 assemblies, discussed above, and these sixty Surry Unit 2 assemblies.

Dry Cask Storage

60. Dry cask storage involves the storage of spent nuclear fuel in large metal casks (dry casks) that, in the Licensee's case, would be

stored on site at the Surry Power Station. Smith (I), ff. Tr. 247, at 6. Although the Licensee filed the application at issue in this proceeding, it has continued to pursue the dry cask storage alternative. *Id.* In fact, the Licensee has (a) applied to NRC for a license for a dry cask storage facility at its own Surry Power Station and (b) entered into a cooperative development program with the Department of Energy (DOE) designed to demonstrate the feasibility of dry cask storage. *Id.* at 7-11.

61. In October 1982, the Licensee submitted to NRC a license application under 10 C.F.R. Part 72 for a dry cask storage facility at the Surry Power Station. The facility would consist of concrete pads and security facilities, which would be built by the Licensee, and dry storage casks, which the Licensee would purchase from one or more cask vendors. *Id.* at 7. The NRC Staff issued its Environmental Assessment for the proposed dry cask storage facility on April 12, 1985. Staff Exh. 3.

62. With respect to the public health and safety aspects of the application, by letter of March 15, 1984, the Licensee informed the NRC of its selection of the GNS Castor V type cask as the first to be considered for evaluation. LaHS *et al.*, ff. Tr. 346, at 22. The application incorporates by reference the topical report for the Castor V cask. The Licensee has answered all review questions except for those set forth in a March 7, 1985 request from the NRC. Smith (I), ff. Tr. 247, at 7. The Staff witness testified that the Licensee must still resubmit the dry cask safety analysis report incorporating the Castor V topical report. Roberts, Tr. 351. The Staff also testified that until it completes its review and Commission approval is obtained, it cannot be considered a viable alternative. LaHS *et al.*, ff. Tr. 346, at 21; Roberts, Tr. 348. The Staff testified that completion of its safety review could take "roughly" a month. Roberts, Tr. 350-51. On April 10, 1985, the Licensee requested permission from NRC to begin construction of the dry cask facility at Surry. The Licensee estimates that approximately 10 months will be required to build the dry cask facility. Smith (I), ff. Tr. 247, at 7. The testimony revealed that if the Licensee were to receive an early construction authorization from NRC, construction could begin as early as June 1985.¹⁶ In that event, the dry cask facility could be ready for operation as soon as April 1986. *Id.* at 8.

¹⁶ The Licensee proposed as a finding that on June 10, 1985, after the record was closed in this proceeding, NRC advised the Licensee that it "does not intend to invoke legal bars" to the pre-license construction work proposed by the Licensee. The Licensee reported on June 26, 1985, that this work would begin momentarily, and reported on July 30, 1985, that construction had begun but that the NRC had not yet issued a license for the dry cask storage facility. See Licensee's letters served on all parties. In a letter of July 9, 1985, we advised Licensee's counsel that we wished to be kept informed about intervening developments provided such information was served on all parties.

63. The Licensee has ordered the first dry storage cask for use in the facility. The cask, which will hold twenty-one assemblies, is scheduled for delivery in November 1985. *Id.* The Licensee expected to order four additional casks during May 1985 (Smith, Tr. 255) and plans to order still more casks for Surry as often as necessary to maintain full core reserve in the Surry fuel pool. Once the facility is completed, the first cask is delivered, and personnel training is finished, the twenty-one assemblies could be loaded into the first cask in about a week. Smith (I), ff. Tr. 247, at 8.

64. Pursuant to § 218(a) of NWSA, 42 U.S.C. § 10198(a) (1982), the Licensee and DOE signed a Cooperative Agreement on March 29, 1984, to conduct a dry cask storage demonstration program. *Id.* The program will consist of (a) an NRC-licensed demonstration at the Surry Power Station, using the facility described in Finding 61, above, and (b) research and development activities to be conducted by DOE at a Federal site. Pursuant to the Cooperative Agreement, the Licensee had, at the time of the hearing, ordered two storage casks for delivery to the Federal site, one with a twenty-one-assembly capacity and one with a twenty-four-assembly capacity. The former was delivered in December 1984, and the latter is scheduled for delivery in February 1986. In addition, at the time of the hearing, the Licensee was in the process of ordering a third cask, this one with a capacity of twenty-four assemblies. This third cask is scheduled for delivery in September 1985. *Id.* at 9.

65. At the time of the hearing DOE was scheduled to begin receiving Surry spent fuel for storage in the already-delivered cask in July 1985.¹⁷ These shipments were expected to take about 2 months. *Id.* If this program was completed on schedule, the number of assemblies that would have to have been removed from the Surry spent fuel pool prior to the July 5, 1986, outage at Surry Unit 1 would have been reduced by twenty-one assemblies, leaving thirty-four assemblies to be removed in order to preserve full core reserve after that outage. Shipment of spent fuel for the next cask, consisting of twenty-four assemblies, was scheduled to begin in October 1985 and to require about 2 months. Successful completion of this portion of the program would leave the Licensee ten spaces short of full core reserve after the 1986 Surry Unit 1 refueling period. *Id.* If another cask were delivered, as planned, in February 1986, shipment of twenty-four additional assemblies could begin in March or April of that year. *Id.* at 10. Thus, if all three of these shipping campaigns

¹⁷ The Licensee reported in its letter of July 30, 1985, that DOE had accepted twelve of the spent fuel assemblies and shipped them to the DOE facility in Idaho, and that these shipments would continue until nine additional assemblies have been accepted and delivered to the Idaho facility, thus filling the first dry storage cask.

were carried out more or less on schedule, full core reserve would be assured, without any shipments to North Anna, for the period immediately following the Surry Unit 1 outage and until the October 17, 1986, outage at Surry Unit 2. *Id.* at 11; Smith, Tr. 258. Even so, an additional forty-six assemblies would have to be removed from the Surry pool before the October 17, 1986, Surry Unit 2 outage. *See* Smith (I), ff. Tr. 247, Appendix 2. Of course, if the Surry dry cask storage facility were licensed by NRC and completed in early-to-mid 1986, it could be used to avoid the loss of full core reserve during the October 17, 1986, Surry Unit 2 outage and thereafter. *See* Finding 62, *supra*.

66. The Licensee would prefer to use dry cask storage and forego shipping from Surry to North Anna to the extent consistent with the preservation of full core reserve at Surry. Smith (I), ff. Tr. 247, at 18. The foregoing discussion, of course, reveals that chances are very good that the Licensee's dry cask options will materialize in time to avoid the necessity for shipping fuel from Surry to North Anna at this time. *Id.* Nevertheless, the Cooperative Agreement Program, involving as it does a maximum of four casks, would not, in the best of circumstances, permit the preservation of full core reserve indefinitely. *Id.* at 9. The Licensee hopes, of course, that an NRC license for the proposed Surry dry cask storage facility will be issued during 1985, but that license has not yet been issued. It is conceivable, moreover, that the license will not be issued or that, if issued, it might be revoked by NRC at some future date for reasons that cannot now be foreseen. If that were to happen, the Licensee would have no immediately available option for providing additional storage for its Surry spent fuel unless it could ship spent fuel assemblies from Surry to North Anna. *Id.* at 18.

67. In addition, § 111(a)(5) of NWPA, 42 U.S.C. § 10,151(a)(1) (1982), explicitly makes utilities primarily responsible for interim storage of their spent nuclear fuel until a Federal repository is available. The Act provides for limited Federal interim storage for utilities, but only if they are unable to provide their own storage through the use of transshipment, dry cask storage or new fuel pools. 42 U.S.C. § 10,155(b)(1)(A), (B) (1982). Indeed, utilities are required by 10 C.F.R. Part 53, if they are to qualify to use Federal interim storage, to demonstrate to NRC that they have "diligently" pursued these options. Smith (I), ff. Tr. 247, at 18-19. In the event that both dry cask storage and transshipment were unavailable, the Licensee might have to apply for Federal interim storage. The Licensee could qualify for Federal interim storage only if it could show that it had diligently pursued the authorization for receipt and storage of Surry fuel at North Anna that it seeks in this proceeding. Thus, given its shortage of spent fuel storage space at

Surry, Licensee has little choice but to seek the authorization that is the subject of this proceeding. *Id.* at 19.

Comparative Costs

68. Under various scenarios, the cost of the dry cask storage option would probably be within the range of 11 to 18 million dollars, and the cost of transshipment would probably be within the range of 8 to 22 million dollars. Smith, Tr. 268-70.

Comparative Environmental Effects

69. The Staff's Environmental Assessment of July 3, 1984, noted that inherent in the Licensee's application for an amendment to its operating licenses to allow the receipt and storage at North Anna of 500 spent fuel assemblies from Surry is the transshipment of this spent fuel. To the extent pertinent in this case, the EA concluded that an environmental impact statement need not be prepared since the receipt, storage and transshipment involved "no significant change in types or significant increase in the amounts of any effluents that may be released off-site and there is no significant increase in individual or cumulative occupational radiation exposure." Staff Exh. 1 at 4, 29-30. Attached to the EA was the Staff's Finding of No Significant Impact which stated that, in light of the conclusions in the EA, the transshipment, receipt and storage of Surry spent fuel assemblies will not either separately or combined significantly impact on the quality of the human environment, and thus that an environmental impact statement need not be prepared.

70. The EA of July 3, 1984, did not discuss the alternative method of constructing a dry cask storage facility at the Surry Power Station. However, on April 12, 1985, the Staff issued an Environmental Assessment of the Licensee's proposal to construct a dry storage cask facility at its Surry Power Station (the Surry EA). Staff Exh. 3. The Surry EA examines a wide range of alternatives. *Id.* at 8-14. One of these alternatives examined in the Surry EA was Licensee's proposal to transship and receive Surry spent fuel at North Anna. The Surry EA observed that this alternative had been separately assessed in the Staff's EA and in the Finding of No Significant Impact issued July 3, 1984, which found that action to have no significant impacts. *Id.* at 9 and 64. It includes a description of the proposed Surry dry cask storage facility. *Id.* at 28-36. It analyzes the environmental impacts of construction on land use and terrestrial resources, on water use and aquatic resources, on air quality and on noise levels. *Id.* at 39-40. The Surry EA also examines the expected

operational effects of the facility including those due to direct radiation, to radioactivity releases in gaseous effluents and to radioactivity releases in liquid effluents. *Id.* at 41-51. It analyzes offsite dose commitments to individuals and to the nearby population, as well as collective occupational dose commitments. *Id.* at 42-44. The Surry EA reviews the potential environmental effects of accidents and the potential for sabotage attacks on the facility. *Id.* at 45, 56-58. The analysis concludes that no significant construction impacts are anticipated, that the radiological impacts from liquid and gaseous effluents during normal operation will fall within the scope of the impacts evaluated for reactor operations that were assessed in the Surry Units 1 and 2 Final Environmental Impact Statements, that the radiological impacts due to potential accidents are only a small fraction of acceptable limits, and that no significant nonradiological impacts are expected during operation. *See id.* at 60-61. The document's ultimate conclusion is that the dry cask storage facility at Surry will not significantly affect the quality of the human environment, and thus that an environmental impact statement is not warranted and a Finding of No Significant Impact is appropriate. *Id.* at 61-62.

Use of Resources

71. The proposed action will not involve any noteworthy conflict in the use of resources such as lead, steel, copper, resin, cement, labor, vehicles, casks and road systems. LaHS *et al.*, ff. Tr. 346, at 24-27; Cleary, Tr. 349. CCLC did not cross-examine the Staff's witness upon this subject. Any space in the North Anna spent fuel pool preempted by Surry fuel can be replaced when needed either by consolidating fuel in the North Anna pool or by installing dry casks at North Anna. Smith (I), ff. Tr. 247, at 14-15.

Conclusions of Law

The Board has considered all of the evidence presented by the parties. Based upon a review of the entire record in this proceeding and the foregoing Findings of Fact, the Board concludes that the Director of Nuclear Reactor Regulation should be authorized to issue to the Licensee, upon making requisite findings with respect to matters not embraced in this Initial Decision, an amendment to North Anna Units 1 and 2 operating licenses to permit the receipt and storage of 500 spent fuel assemblies from the Surry Power Station, Units 1 and 2.

Order

WHEREFORE, IT IS ORDERED, in accordance with the Atomic Energy Act, as amended, the National Environmental Policy Act, as amended, and regulations of the Nuclear Regulatory Commission, and based upon the findings and conclusions set forth herein, that the Director of Nuclear Reactor Regulation is authorized to issue to the Licensee, Virginia Electric and Power Company and Old Dominion Electric Cooperative, an amendment to their North Anna Units 1 and 2 operating Licenses (NPF-4 and NPF-7) to permit the receipt and storage of 500 spent fuel assemblies from the Surry Power Station, Units 1 and 2.

In accordance with 10 C.F.R. § 2.764, this Initial Decision will become effective immediately upon issuance. Pursuant to 10 C.F.R. § 2.760(a) of the Commission's Rules of Practice this Decision will constitute the final decision of the Commission forty-five (45) days from the date of issuance, unless an appeal is taken in accordance with 10 C.F.R. § 2.762 or the Commission directs otherwise. *See also* 10 C.F.R. §§ 2.764, 2.785, and 2.786.

Any party may take an appeal from this Decision by filing a Notice of Appeal within ten (10) days after service of this Decision. Each appellant must file a brief supporting its position on appeal within thirty (30) days after filing its Notice of Appeal (forty (40) days if the Staff is the appellant). Within thirty (30) days after the period has expired for filing and service of the briefs of all appellants (forty (40) days in the case of the Staff), a party who is not an appellant may file a brief in support of or in opposition to the appeal of any other party. A responding party shall file

a single, responsive brief regardless of the number of appellant's briefs filed. *See* 10 C.F.R. § 2.762(c).

IT IS SO ORDERED.

**THE ATOMIC SAFETY AND
LICENSING BOARD**

**Sheldon J. Wolfe, Chairman
ADMINISTRATIVE JUDGE**

**Dr. Jerry R. Kline
ADMINISTRATIVE JUDGE**

**Dr. George A. Ferguson
ADMINISTRATIVE JUDGE**

**Dated at Bethesda, Maryland,
this 3rd day of September 1985.**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

James P. Gleason, Chairman
Dr. Jerry R. Kline
Mr. Glenn O. Bright

In the Matter of

Docket Nos. 50-440-OL
50-441-OL
(ASLBP No. 81-457-04-OL)

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

September 3, 1985

The Licensing Board issues a Partial and Concluding Initial Decision in an operating license proceeding. Contentions on emergency planning, diesel generator reliability and hydrogen control are resolved in Applicants' favor and, the Decision authorizes issuance of an operating license, subject to the completion of several conditions.

RULES OF PRACTICE: HYDROGEN CONTROL SYSTEM

Where NRC rules do not define the scope of a preliminary analysis for a facility's hydrogen control system, the Board's standard of acceptance is whether a reasonable assurance of safety has been demonstrated in the record.

HYDROGEN CONTROL: PRELIMINARY ANALYSIS

Basic questions that have to be answered in evaluating a preliminary analysis required by 10 C.F.R. § 50.44 for a hydrogen ignitor system are whether the system has been installed, whether it will function as designed, and whether integrity of containment and essential equipment will be retained.

SAFETY STANDARDS: HYDROGEN RULE

Separate contentions should be proffered to challenge the adequacy of safety components that are not a part of the primary hydrogen control system even though these components might have a safety function in an accident that causes a release of hydrogen to containment.

TECHNICAL ISSUES DISCUSSED

- Emergency plan requirements
- Hydrogen ignition system
- Containment integrity
- Weld quality
- Dry well capacity
- Hydrogen combustion
- States blackout
- Containment response modeling
- Containment spray operation
- Suppression pool bypass
- Equipment serviceability
- Diffusion of flames
- Decay heat removal
- Secondary fires
- Diesel generator reliability
- Revalidation program for diesel generators
- Diesel component maintenance and surveillance.

APPEARANCES

On behalf of the Cleveland Electric Illuminating Company, *et al.*, Applicants: **Jay E. Silberg, Esq., Harry H. Glasspiegel, Esq., Michael A. Swiger, Esq., and Rose Ann C. Sullivan, Esq.**

On behalf of the United States Nuclear Regulatory Commission: **Colleen Woodhead, Esq.**

On behalf of the United States Federal Emergency Management Agency: **Brian P. Cassidy, Esq.**

On behalf of Ohio Citizens for Responsible Energy, Intervenor: **Susan L. Hiatt**

On behalf of the Sunflower Alliance, Inc., *et al.*, Intervenor: **Terry J. Lodge, Esq.**

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CONCLUDING PARTIAL INITIAL DECISION ON EMERGENCY PLANNING, HYDROGEN CONTROL AND DIESEL GENERATORS

I. OPINION

This Decision concerns an application for a license to operate a nuclear power plant with two boiling water reactors, Units 1 and 2, each rated at 1265 megawatts, and located at the Applicants' Perry plant site in Lake County, Ohio. The Applicants (Cleveland Electric Illuminating Company, Duquesne Light Company, Ohio Edison Company, Pennsylvania

Power Company and Toledo Edison Company) received permits to construct the facility in 1977, which is on Lake Erie approximately 35 miles northeast of Cleveland.

In this proceeding, held pursuant to the Atomic Energy Act of 1954, as amended, the parties, in addition to Applicants and the NRC Staff, are the Ohio Citizens for Responsible Energy (OCRE), and Sunflower Alliance, Inc., *et al.* (Sunflower). Admitted as government representatives under 10 C.F.R. § 2.715(c) of the Commission's rules, were the Lake County Board of Commissioners, Lake County Disaster Services Agency, the Ashtabula County Commissioners and Ashtabula County Disaster Services Agency.

During a prehearing phase, the Board admitted sixteen issues (contentions) to the proceeding. Twelve contentions were dismissed as a result of motions filed for summary disposition or pursuant to Commission rulemaking or policy statements.¹ The Board has previously issued a partial initial decision on a quality assurance contention in favor of Applicants. This has been affirmed by the Appeal Board. ALAB-802, 21 NRC 490 (1985).

Contentions were litigated during hearings on April 9-12, 1985 (emergency planning and diesel generator reliability issues), and April 30-May 3, 1985 (hydrogen control). The Applicants and Staff submitted proposed findings and conclusions in the form of partial initial decisions as have OCRE and Sunflower on their particular issues. Our Decision here resolves those three contentions remaining. Limited appearance opportunities were provided nonparty members of the public during both phases of the hearing proceedings.

The decisional record of the proceeding consists of the Commission's Notice of Hearing (46 Fed. Reg. 12,372 (1981)), petitions and findings filed by the parties, transcripts of the hearing and the exhibits received into evidence. In preparation of this Decision, the entire record has been reviewed and considered. The proposed findings of fact and conclusions of law that are not incorporated directly or by reference in this Initial Decision are considered to be unsupported by the record of the case or as being unnecessary to the rendering of this Decision.

The Board's jurisdiction is limited in this proceeding to issues placed in contention by the parties and to those concerns where the Board has

¹ LBP-82-114, 16 NRC 1909 (1982); LBP-82-119, 16 NRC 2063 (1982); LBP-83-18, 17 NRC 501 (1983); LBP-83-46, 18 NRC 218 (1983); LBP-84-40, 20 NRC 1181 (1984); Memoranda and Orders, February 27, March 13, April 9, 1985 (unpublished). *See also* Order of April 28, 1982 (unpublished); LBP-82-53A, 16 NRC 208 (1982). "Contention" and "Issue" are used interchangeably in this Opinion.

found a serious safety, environmental or common defense and security matter exists. The Board has made no additional determinations of this nature. 10 C.F.R. § 2.760(a).

A. Emergency Planning (Issue 1)

This issue was admitted by the Board prior to the development of off-site emergency plans and expressed a general deficiency in the adequacy of preparedness plans. After emergency plans became available, Sunflower was required to specify the inadequacies alleged to exist. Seven contentions and parts of two others, of eighteen specified, remained for litigation after Board rulings on motions for summary disposition. During the hearing, testimony was provided by witnesses for the Applicants, Staff, Federal Emergency Management Agency (FEMA), and Sunflower.

***1. Contention A: "Evacuation time estimates (ETE) have not been reviewed by State or local organizations"*²**

The Intervenors, Sunflower, cite herein an inadequacy in Applicants' emergency plan on grounds that State and local officials had not reviewed time estimates proposed for evacuation during an emergency.

The adequacy of State, local and Applicants' emergency plans is evaluated by guidance and criteria imposed by a joint NRC/FEMA document, NUREG-0654, FEMA-REP-1, Rev. 1. The time estimates for evacuation within a plume exposure zone are recommended to be in accordance with Appendix 4 of that document. The criteria call for the ETE draft to be reviewed by State and local organizations and comments received from such reviews are to be included in the plans when submitted for evaluation and appraisal to the NRC. Finding 1.

The evacuation time estimate study for the Perry emergency planning zone (EPZ) was performed by HMM Associates, Inc., a firm that developed ETEs for other nuclear power facilities; many of these were for plants with EPZs similar to Perry's. Finding 2.

The Applicants' testimony indicated that officials from the three counties located within the EPZ were, in fact, consulted concerning the study and concurred with its scope. These officials, who were County Directors of Disaster Service Agencies and County sheriffs, and the cognizant

² Applicants' witness: Scott T. McCandless, V.P., HMM Associates, Inc. Staff witness: Donald J. Perrotti, NRC Emergency Prep. Specialist. FEMA witness: Robert O. Shapiro, Emergency Management Specialist.

State Agency were subsequently forwarded copies of the draft ETE. Findings 3-4. The evidence reflects, contrary to allegations of the contention, that comments from State and local officials were included in a February 1985 revision of the Perry emergency plan and this document was forwarded to the Nuclear Regulatory Commission on February 20, 1985. Findings 5-6.

The Intervenor directed much of their cross-examination on an alleged failure by HMM Associates to consult with and receive comments on the ETEs from County engineers. In Intervenor's view, the holders of those offices should have been solicited for comments since County engineers have detailed responsibilities during an evacuation incident; these include road repairs, providing traffic control apparatus, dispatching school buses for carless population and similar duties. McCandless, Tr. 2795-2802; Shapiro, Tr. 3122-27.

Applicants' witness testified that in preparing ETEs, coordination work is accomplished with principal local offsite emergency response officials and their assistance is requested — as it was at Perry — to identify any other local officials to be involved. This approach has been accepted by FEMA. The guidance from NUREG-0654 does not indicate what individuals or offices within State and local organizations should review and comment on the proposed ETEs, but the intent is to have knowledgeable officials perform these tasks. Findings 7-8.

The Board concludes that Applicants have complied with the guidance and criteria of NUREG-0654, Appendix 4, in the preparation and review of their ETE study as there has been no evidence that the interests of State and local governments have been ignored; the opposite has been the case. Finding 9. Testimony by Applicants' witness indicated that, in response to Sunflower's concerns, a meeting was ultimately held with County engineers from the three counties and their concurrence to the basic assumptions, methodology and results of the ETE was in fact received. Finding 10. If NUREG-0654 required review and comments from County engineers — which it did not — this meeting accompanied by the written responses from the engineers would have sufficed to remedy the omission. The Board finds that evacuation time estimates have been sufficiently reviewed by State and local response organizations and that comments from these officials have been submitted as recommended by NUREG-0654. We find no merit in this contention.

2. Contention J: "Emergency Action Level indicators are incomplete in Applicants' emergency plan"³

This contention rests on an allegation that indicators in Applicants' emergency action level (EAL) scheme were incomplete. NRC regulations establish four classes of action levels according to severity, any of which can be initiated depending on the existence of certain plant conditions. Each of the four emergency classifications is characterized by a set of initiating conditions with corresponding emergency action levels which are observable and measurable indicators of plant status and condition. Finding 11; *see also* NUREG-0887, SSER-4 at 13-6.

In its third revision of the Perry emergency plan, 13 of more than 200 individual indicators were noted as incomplete. Applicants' testimony revealed that technical data were not available for appropriate values to be included in the thirteen indicators but comparable values were inserted in their place (Finding 12); however, by the time Revision 4 of the plan was issued, the missing values were either determined and specified or an alternate indicator for the EAL had been chosen instead. Both Applicants and Staff concluded that this action completed the regulatory requirement for EAL indicators. Findings 13-14.

Sunflower's witness complained that there had been insufficient time and technical information available to permit an adequate evaluation of the thirteen EALs. Sternglass, ff. Tr. 2566, at 3-4. Inasmuch as the missing indicator information was available in the February 1985 Revision 4 of Perry's emergency plan, the Board fails to comprehend a grievance concerning a lack of evaluation time. And, on the issue of needing additional information, Intervenor's attorney did not take advantage of the opportunity of examining Applicants' and Staff's witnesses on the technical foundation for the EALs submitted. Hulbert, Tr. 2966-76.

The Board, in a broad interpretation of Sunflower's contention, permitted its witness' testimony to be admitted over objections of the Applicant and Staff. *See* Tr. 2547-48. In doing so, Sunflower was able to raise an issue that nomograms were not included in the Perry Nuclear Power Emergency Plan. Nomograms are a graphic device containing a series of assumptions and variables and are recommended for use by EPA's Manual of Protective Action Guides and Protective Actions for Nuclear Incidents. Sternglass, Tr. 2648, 2701-04. The Intervenor's witness was also able to advance testimony that the Applicants' emergency plan

³ Applicants' witness: Daniel D. Hulbert, PNPP Emergency Planning Coordinator. Staff witness: Donald J. Perrotti, NRC Emergency Prep. Specialist. Intervenor's witness: Ernest J. Sternglass, Professor Emeritus of Radiological Physics, University of Pittsburgh.

included erroneous assumptions on the sensitivity of the fetus to radioactive iodine. Sternglass, ff. Tr. 2566, at 5-6. During the interrogation on nomograms, Intervenors' witness acknowledged that methods other than nomograms were recognized by the EPA guide. Sternglass, Tr. 2702-04; Finding 15. In fact, the Applicants utilized a different and, in their judgment, a better method for dose calculations. Hulbert, Tr. 2971-72. On Sunflower's claim that the Perry plan included inaccurate information on the sensitivity of fetuses to radiation exposure, cross-examination demonstrated that Intervenors' information was derived from a Food and Drug Administration recommendation which relates only to ingestion pathway protective action guides. Although Sunflower's witness made an effort to blur the distinction in the regulations, it is clear that this contention deals with EALs that concern the inhalation pathway area alone. Finding 16.

The Board finds the Applicants' EALs complete. A Staff witness indicated that conformity of the EALs to the initiating guidance of NUREG-0654, Appendix 1, is still under NRC review. Accordingly, the correction of any deficiencies forthcoming in such a review will be referenced as a condition in any license approval granted herein. Finding 17. In their reply to proposed findings of other parties, Applicants recommend that the failure of Sunflower to file proposed findings in this instance, as mandated by the Board, was grounds for treating the contention as uncontested. Accordingly, the reply recommends its dismissal on that basis. We are not inclined to adopt this advice here since the parties have not been previously warned that failure to file would warrant such action. The authority of the Board to dismiss contentions under 10 C.F.R. § 2.754(b) is, of course, discretionary.

3. Contention M: "Independent Data Monitoring Systems should be installed within all counties in the Emergency Planning Zone (EPZ)"⁴

Intervenors' witness on this contention presented arguments that a system of fixed electronic detectors was necessary for radiological accidents in order to provide an instantly available picture of the plume's shape, intensity and motion. It was alleged that monitoring deficiencies without such a system during the TMI accident handicapped public officials in making proper decisions. A report by Dr. Jan Beyea, stated that

⁴ Applicants' witnesses: Richard R. Bowers, CEI Corporate Health Physicist; Kenneth B. Cole, State Nuclear Operations Officer. FEMA witness: Shapiro. Intervenors' witness: Sternglass.

car-mounted or helicopter-mounted instruments failed to provide adequate dose information in the "shifting winds" during that accident. The witness also asserted the cost of a fixed system with 100 detector instruments would be minimal compared to the cost of the plant. It was further stated that C.H. Pelletier, an AEC expert, had reported that only many air samplers and fixed detectors could adequately characterize the extent of radioactivity in a timely fashion. The witness also testified that a mobile system could not adequately measure a plume that was close to inaccessible land surfaces or over water such as nearby Lake Erie. Sternglass, ff. Tr. 2566, at 7-9.

The Board denied a motion by Applicants, which was supported by Staff, to strike most of Intervenor's direct prefiled testimony on this issue. The Board ruled that consideration of the necessity for an independent monitoring system should include consideration of the adequacy or inadequacy of the system proposed. *See* Tr. 2549-53, 2559.

However, subsequent cross-examination throughout the proceeding raised serious questions concerning the probative and relevancy aspects of Sunflower's direct evidence. *See* Tr. 2667-76, 2702-09. The Intervenor's witness, Dr. Sternglass, whose qualification as an expert witness in the field of health physics was accepted by the Board, was questioned extensively for impeachment purposes by the Applicants. *See* Tr. 2596-2645. Although conceding the existence of an extensive list of adverse comments presented by Applicants' attorney on his prior testimony and writings before various scientific and governmental bodies, Dr. Sternglass' reply to these sallies was generally couched in terms that subsequent investigations or events confirmed his prior conclusions or that various governmental agencies deliberately suppressed important scientific data and information on radiation hazards. *See* Tr. 2612, 2615, 2635, 2637, 2638, and 2642. The Board notes that Sunflower's attorney made a limited but not convincing effort to rehabilitate the witness. *See* Tr. 2709-25. In view of the inability demonstrated to support important parts of his testimony, the Board concludes on this and several other contentions that Dr. Sternglass' credibility has been substantially impeached.

The evidence here shows that Applicants, and State and local governments have available independent monitoring services capable of responding in a timely manner to nuclear radiation emergencies around the Perry facility site. Offsite monitoring capability is recommended by NRC/FEMA regulations in NUREG-0654, and planning standards call for the Licensee and the State to have monitoring capabilities and that State or Federal resources be available to track airborne radioactive plumes. Findings 18-20. When Federal guidance and standards on

emergency response plans were initially being addressed by governmental agencies, fixed monitors were considered and rejected due to that system's complexity and cost. Finding 21. As a consequence, there is no regulatory requirement for a fixed system. At Perry, such a system was estimated to cost about \$2.7 million for installation alone. Findings 22-23. A mobile monitoring system is considered superior to a fixed system because of its capability to identify the critical center line of a plume while data from fixed systems cannot be extrapolated to project doses at other locations. Findings 24-25.

The State of Ohio has an independent capability of establishing a mobile monitor response within 3-3½ hours and before that, can rely, if necessary, on Applicants' monitoring team and other resources. Releases over Lake Erie can be tracked by a Department of Energy helicopter and mobile teams can be dispatched to cover shorelines for returning plumes. See Bowers, Tr. 2958-59; Cole, Tr. 2901. The State has the primary responsibility for independent monitoring, and even though Lake County also will have independent monitoring teams, all counties within the EPZ will rely on the State which has demonstrated an effective capability during eight emergency planning exercises. Findings 26-34.

The Board concludes that an effective independent monitoring system, which meets all regulatory guidance and standards, has been programmed for the Perry facility. Contention M has no merit.

4. Contention P: "Emergency plans are deficient with respect to hospital designations and medical services as well as procedures required to assist contaminated individuals"⁵

In support of Sunflower's contention, testimony was received from Dr. Sternglass that studies showed a serious radiation accident at Perry could contaminate large numbers of people which local medical services could not accommodate. See Sternglass, ff. Tr. 2566, at 13-14. A statement by Dr. Robert L. McTrusty, Chairman of the Ashtabula County Medical Center's Disaster Committee, averred that the Medical Center (one of four hospitals listed in local emergency plans) lacked proper equipment and facilities to decontaminate even minimal numbers of radiation victims. Based on a Sandia National Laboratory report (NUREG/CR-2239), Dr. McTrusty concluded that worst-case accidents could

⁵ Applicants' witnesses: Roger E. Linneman, Vice Chm., Radiation Management Corp.; Deborah Hankins, Principal Engineer, General Electric Co. FEMA witness: Robert O. Shapiro. Intervenor's witnesses: Ernest J. Sternglass, Robert L. McTrusty. Dr. McTrusty did not appear at the hearing due to a schedule conflict, but his testimony was stipulated by the parties for admission.

number in the thousands at Perry. His testimony stated that personnel at the medical center received only 2 hours of training and indicated that no requirement in the State's accreditation manual for the emergency handling of radiation victims could be found. *See* McTrusty, ff. Tr. 3149.

Under cross-examination, Dr. Sternglass admitted that the studies his testimony cited, and on which his predictions of radiation casualties were based, were not related to the Perry reactor design and he acknowledged that he was unaware of the specific type of containment used at Perry. Sternglass, Tr. 2685-90. Rebuttal testimony by the Applicants demonstrated the inapplicability of the Sandia study — which was for the purpose of developing NRC siting criteria — to the Perry facility. That study assumed a design substantially different from Perry and does not represent the risk of a severe nuclear plant accident at any particular site. The source term (SST 1) used was an estimate of the largest possible release of fission products from a pressurized water reactor and assumes worst-case conditions. The Perry design has mitigating features not considered in the Sandia Study, which reduce fatalities and injuries to a minimum in the event of a core-melt accident. *See* Findings 45-46.

NRC's regulatory requirements call for arrangements being made for medical services for contaminated injured individuals. *See* 10 C.F.R. § 50.47(b)(12). In NUREG-0654, the applicable criteria recommend arrangements for local and backup hospital services capable of evaluating radiation exposure and handling contamination and transportation of the injured. Finding 35. The testimony of Applicants' witness, the Chief Medical Officer of the Radiation Management Corporation (RMC), demonstrated that the four county hospitals within the EPZ listed in local emergency plans have trained personnel and equipment for handling contaminated injured individuals; letters of agreement for their services are being obtained. Finding 36. The State plan also lists an additional twenty-six hospitals and counties around the EPZ, all of which have diagnostic and/or therapeutic radioisotopic facilities which can provide medical support for contaminated injured individuals. Finding 37; *see also* Linneman, Tr. 2979, 2981. RMC has trained eighty-five personnel in the four hospitals within the EPZ, the State has provided additional training, and each of the County hospitals has equipment which allows detection of high and low levels of radiation. Findings 38-39. The hospital, with which Sunflower's witness, Dr. McTrusty, is affiliated, has a designated radiation emergency room with decontamination equipment and emergency personnel who received 24 hours of training for nuclear emergencies. The Ashtabula Hospital is also accredited by the

State and has been licensed by the NRC for handling contaminated individuals. Finding 40.

The Applicants' witness, Dr. Linneman, is a radiologist with 15 years' experience in the treatment of contaminated injured patients. He testified that radioactive injuries seldom required hospitalization and that the hospitals within the EPZ and the surrounding areas were adequate to accommodate the unlikely case of large numbers of casualties. Findings 41-42. County hospitals all have the capability of detecting radiation overexposure and local and State plans have provisions for the transportation of radiological accident victims. Findings 43-44; Shapiro, ff. Tr. 3111, at 7.

The Board found the evidence presented by the Applicants and Staff to be unchallenged and credible. We conclude that the training, personnel and equipment at the designated hospitals within the EPZ as well as the medical resources available outside of the EPZ are adequate to comply with the Commission's regulations and standards on hospital designations, medical services and procedures. The arrangements for medical services for contaminated individuals meet the requirements of 10 C.F.R. § 50.47(b)(12). In accordance with the Commission's policy statement of 50 Fed. Reg. 20,892, however, we will require the Applicants to fully comply with any additional requirements that may be forthcoming in the Commission's response to the U.S. Court of Appeals' decision in *Guard v. NRC*, 753 F.2d 1144 (D.C. Cir. 1985). In that decision, the Court vacated the Commission's interpretation that a mere listing of hospitals capable of caring for victims was a sufficient arrangement and the Commission is considering what additional medical service requirements it should impose.

5. Contention Q: "There are no letters of agreement regarding the availability of school buses"⁶

This contention was founded on the fact that letters of agreement have not been obtained for the use of school buses during emergency evacuations. Finding 47. School buses in Ohio are owned and controlled by local school districts and, consequently, their utilization, during an emergency evacuation, requires the consent of officials from those districts. Finding 48.

The Applicants and Staff provided evidence, which was unchallenged by Intervenor, that letters of agreement were in the process of being ob-

⁶ Applicants' witness: John Baer, Project Mgr., Emergency Management Services. Staff witness: Robert Shapiro.

tained, no difficulty was anticipated in obtaining them, and it was expected that their acquisition would be completed by the time for fuel load. There is a total of twenty-four school districts within and outside the EPZ where needed transportation resources might be available and no problem was foreseen in obtaining signed agreements. The Applicants are supplying radios for the buses and agreements are expected to follow the installation of the radios. Findings 49-52.

We conclude that since no evidence has been submitted to cast doubt on the letters of agreement being received prior to fuel load, there is no basis to support this contention. Negotiations are under way, no objections to the letters have been reported, and Intervenors submitted no witnesses on this contention. The Board does believe, however, that these letters should be obtained prior to issuance of an operating license.

6. Contention U: “Reception centers do not have the means or facilities for handling contaminated property”⁷

The Applicant and Staff witnesses provided testimony that local emergency plans and procedures include standard action levels in the three counties in the EPZ for monitoring and decontamination of clothing, isolation of vehicles, and other property. Each county also has standard operating procedures which provide specific directions to fire departments who are responsible for carrying out decontamination procedures. Finding 53.

An adequate number of fire department personnel are currently being trained for monitoring and decontamination duties and equipment and supply kits are being assembled for monitoring and decontamination purposes. This activity will be completed prior to fuel load. Findings 54-55. The County plans erroneously list the Cleveland Electric Illuminating Company as the entity to handle the disposal of decontaminated property. The Applicants’ witness stated that the State plan accurately provides that the Ohio Environmental Protection Agency will have that disposal responsibility and local plans are being changed to reflect that arrangement. Finding 56.

Intervenors’ cross-examination brought out the fact that the Ohio Disaster Service Agency’s radiological training manual, which is used to train firemen for decontamination procedures, implies that firemen and policemen would have to decontaminate their own vehicles. However,

⁷ Applicants’ witnesses: John Baer; John Wills, Radiological Analyst, Ohio Disaster Services Agency. FEMA witness: Robert O. Shapiro.

Applicants' rebuttal testimony from a DSA official corrected this impression by indicating that the manual reference did not apply to contamination received from accidents at nuclear power stations. Finding 57. The emergency plans and procedures call for using areas adjacent to reception centers for decontaminating vehicles. Finding 58.

The Board finds that the reception centers around PNPP will be adequately supplied with equipment and supplies for implementing monitoring and decontamination procedures in handling property and that trained fire personnel will be available to carry out this assignment. This contention is without merit.

7. *Contention Z: "The plants do not provide decontamination protection for bus drivers during an emergency"*⁸

Intervenors' witness on this contention urged the necessity of providing respirators and goggles to bus drivers alleging that repeated trips by buses into contaminated areas would make such equipment necessary. In support thereof, the EPA manual of protective action guides which recommends respirators for emergency workers was placed in evidence. There are NRC regulatory requirements to control radiation exposures to emergency workers. Finding 59.

Applicant and Staff witnesses testified that bus drivers would be exposed to little, if any, radiation since their duties would be completed prior to any serious contamination being experienced. In the possible event of some exposure, however, the plans do call for the issuance of dosimeters to bus drivers who will be trained in their use. Additionally, two-way radios are being supplied to buses by the Applicants which will facilitate the transmission of radiological information on evacuation routes to bus drivers. Findings 60-61.

Although the Ohio Department of Health currently requires that respirator equipment be provided to emergency workers, a rebuttal witness for the Applicants from the State's Disaster Services Agency testified that the applicability of that provision to bus drivers was being eliminated. Finding 62. The Board concludes that the duties of bus drivers during an emergency evacuation do not require the issuance of respiratory equipment and that the decontamination equipment that is being provided is adequate to conform to Federal regulations. This contention is found to be without merit.

⁸ Applicants' witnesses: John Baer, John Wills. FEMA witness: Robert Shapiro. Intervenors' witness: Ernest J. Sternglass.

8. Contention BB: "Offsite emergency plans are inadequate due to the planning deficiencies set forth in the Federal Emergency Management Agency Interim Report of March 1, 1984"⁹

The planning deficiencies referenced in this document were the result of a review of the draft local emergency plans by the FEMA Regional Assistance Committee (RAC). Of the 145 deficiencies listed in the interim report, more than half were corrected and accepted by FEMA in the report itself; the remainder have since been corrected or are being addressed. Finding 63. The few remaining deficiencies primarily involve an emergency information handbook which is to be available prior to fuel load. An NRC witness testified that his review of the information handbook found the handbook adequate to meet NRC regulatory standards. Finding 64.

All local plans have been revised since the 1984 Interim Report to reflect the action taken on the planning deficiencies, and Applicants submitted into evidence a list of actions on each of the deficiencies noted. Finding 65. In a full-participation exercise conducted in November 1984, no Category A deficiency (affecting public health and safety) was noted by FEMA. Finding 66.

The Board concludes that all deficiencies in the March 1984 Interim Report are remedied or are in the process of being corrected. Accordingly, local emergency plans are not considered inadequate due to these deficiencies and we find this contention to lack merit.

9. Contention CC: "The resolution items set forth by the staff in its Safety Evaluation Report, NUREG-0887, Supp. 4 (February 1984), pages 13-1 to 13-22, are uncorrected deficiencies in the emergency plans"¹⁰

There were thirty-five items identified in SSER-4 as requiring resolution in the PNPP emergency plan. The Applicants have since made several revisions to their plan in which the deficiency items were resolved. Finding 67. The Staff is currently reviewing the latest plan revision (Revision 4) to confirm that the Applicants have complied with the planning commitments previously identified. Finding 68.

The Board finds that the deficiencies noted by Intervenors, who conducted no-cross-examination on this contention, have been satisfactorily resolved. The contention is found to be without merit.

⁹ Applicants' witness: John Baer. FEMA witness: Robert Shapiro.

¹⁰ Applicants' witness: Daniel D. Hulbert. Staff witness: Donald J. Perrotti.

Conclusions

The Board has reviewed each of the emergency planning deficiencies submitted by the Intervenor and on the evidence of record found them to be unsubstantiated. This is not to state that certain activities do not require completion. Progress still has to be made in regard to EALs, letters of agreement on the use of school buses, training of fire personnel, equipment at reception centers and a formal commitment to the Commission's response on the availability of hospital facilities and services. The final accomplishment of these emergency plan activities the Board believes will be concluded, but to assure this result, conditions will be attached to the issuance of a license. Except for these items, the Board concludes that Applicants have met their burden of proof on Intervenor's allegations, the emergency plans are not inadequate based on those allegations and the contentions are accordingly dismissed.

B. Hydrogen Control (Issue 8)

Ohio Citizens for Responsible Energy (OCRE) and the Sunflower Alliance, Inc. (Sunflower) originally submitted hydrogen control contentions that were rejected for not meeting admission standards. Specifically, Intervenor failed to specify a credible accident scenario as required by a Commission Order. *Metropolitan Edison Co.* (Three Mile Island Nuclear Station, Unit 1), CLI-80-16, 11 NRC 674 (1980). Sunflower subsequently renewed its motion and the contention was approved on the basis that the Commission was considering a proposed rule which specifically addressed additional hydrogen control protection to be required in MARK III BWRs. The contention proceeded through a tortuous history which included at least one rewording and a later designation of OCRE as its lead intervenor. We need not recount that history here since it has been adequately discussed in previous rulings.

The Commission adopted a new hydrogen rule for BWRs with Mark III containments on January 17, 1985. 50 Fed. Reg. 3498. OCRE filed a motion requesting another rewording of Issue 8 so as to conform its language to that of the new rule. OCRE's motion was opposed by the Applicants and the Staff who sought summary disposition of the issue. The Board granted OCRE's motion, reworded Issue 8 in a Memorandum and Order of March 14, 1985, and dismissed the Staff's motion for summary disposition as moot.

The Contention

The contention reads:

The Perry hydrogen control system is inadequate 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 to the environment.

The wording basically alleges that Applicants' hydrogen control system does not conform to the new regulatory requirements of 10 C.F.R. § 50.44 and challenges both the hydrogen control system and the ability of the containment to withstand the consequences of large amounts of hydrogen release.

The Hydrogen Control Rule Controversy

The new rule requires BWR power plants having Mark III containment designs to install a hydrogen control system capable of handling an amount of hydrogen equivalent to that generated from a 75% metal-water reaction of the active fuel cladding without loss of containment integrity. A license for full-power operation can be granted on the basis of a satisfactory preliminary analysis of the effectiveness of the system which is approved by the Staff. The analysis may reference previously approved analyses for plants of similar design. A final analysis, addressing applicable provisions of § 50.44(c)(3)(iv), (v), (vi) of the Rule, must be provided by the Applicants after commencement of reactor operation at full power on a schedule to be established by the NRC Staff. 10 C.F.R. § 50.44(c)(3)(vii)(A), (B). The rule deals only with recoverable degraded core accidents. The Applicants' hydrogen control system also includes a combustible gas control system dealing with design basis accidents that was not litigated in this proceeding. Finding 74.

Pursuant to the new regulation, Applicants' analysis must (1) evaluate for Perry the consequences of the generation of large amounts of hydrogen, and include consideration of hydrogen control measures, as appropriate; (2) include the period of recovery from the degraded condition; (3) use accident scenarios that are accepted by the NRC Staff; (4) support the design of the hydrogen control system selected; and (5) show that (i) containment structural integrity will be maintained; (ii) that systems and components necessary to establish and maintain safe shutdown and to maintain containment integrity will be capable of performing their functions during and after exposure to the environmental conditions created by the burning of hydrogen. The effects of local deto-

nations are to be considered unless such detonations can be shown as unlikely to occur.

The new hydrogen rule is unclear as to the boundaries that distinguish a preliminary from a final analysis. It is clear that the rule permits the issuance of licenses for full-power operation on the basis of a satisfactory preliminary analysis. Not surprisingly, the parties dispute the scope of a satisfactory preliminary analysis. OCRE argues that the preliminary analysis must be all but complete before the Board can make a finding of reasonable assurance of safety. OCRE Proposed Opinion at 9-14. The Staff and Applicants, on the other hand, believe that a number of open or unresolved items can be deferred until the final analysis and have agreed to the scope of a preliminary evaluation and analysis for Perry. Finding 71. The Board finds no need to resolve the dispute in this instance. We find that the Applicants' preliminary analysis as described in the preliminary evaluation report and in Applicants' testimony, and as approved by the Staff and discussed in Staff's testimony, does address in detail the substantive provisions of the hydrogen rule.

In the rewording of the contention Order, *supra*, the Board defined the scope of the hearing to permit OCRE to challenge only the adequacy of the Applicants' preliminary analysis. The Applicants have no obligation under the rule to present a final analysis until some time after reactor startup and operation at full power. We did not, however, attempt to define the boundaries of the preliminary analysis in advance. During the hearing we permitted OCRE broad latitude in its cross-examination over the objections of Applicants and Staff who asserted that the questioning went beyond the scope of a preliminary analysis.

Our standard of acceptance in this case is simply that we will determine whether there is reasonable assurance of safety during operation at Perry based on our assessment of the record that was actually developed. The Board takes account in findings that, if a license to operate is granted, the final analysis will follow in a relatively short time after reactor startup. Finding 73.

Witnesses

Both the Applicants and the Staff presented the testimony of expert witnesses in panels.¹¹ The Board found the Applicants' and Staff's wit-

¹¹ Applicants' witnesses: Eileen M. Buzzelli, Senior Licensing Engineer at CEI; John D. Richardson, Vice President of Enercon Services, Inc.; Kevin W. Holtzclaw, Principal Licensing Engineer in the General Electric Safety and Licensing Operation of the Nuclear Energy Business Operation; Roger W. Alley, Manager of the Structural Engineering Nuclear Section of Gilbert/Commonwealth, Inc.,

(Continued)

nesses to be competent technical experts and qualified to testify on the issues presented. The Board rejects as not substantiated all assertions that one or more witnesses were incompetent, inexperienced, evasive or untruthful. OCRE presented no witnesses on this contention and relied on extensive cross-examination to make its case.

The Hydrogen Ignition System

The evidence shows that the Applicants have installed a distributed igniter system in the Perry containment, and analysis of its reliability has been performed. The igniter system, consisting of 102 glow plug igniters distributed throughout the containment, wetwell, and drywell, is designed to control large amounts of hydrogen that could be released in a degraded core accident. The system is powered by AC Class 1E power systems which are backed by diesel generators, and is designed to burn off hydrogen at low concentrations to prevent accumulation of high concentrations. The igniters are manually actuated when the reactor water level drops to the top of the active fuel. Intervenors do not contest the basic features of the igniter system. Findings 69-84.

Written procedures for operation of the igniter system were not available at the time of the hearing but will be before Perry exceeds 5% power. Finding 85. Intervenors urge the Board to find that the absence of final operating procedures constitutes a deficiency in the Applicants' preliminary analysis. OCRE Proposed Opinion at 15. OCRE believes that the procedures should not only be finalized prior to operation but that they should be available for scrutiny in our hearing because, in its view, these procedures are of sufficient complexity to warrant our thorough evaluation. Without this scrutiny, according to OCRE, we would have no way of assuring that the procedures used would be appropriate, that instruments relied upon by the operators are available, or that 10 C.F.R. Part 100 guidelines will be met for containment venting.

The Board concludes that the Applicants have installed and performed technical analyses of a distributed igniter system in the Perry containment and that the system is designed to cope with large amounts of hydrogen that could be released in a degraded core accident. Since Applicants have committed to providing written procedures prior to exceeding

Architect-Engineer for PNPP; Dr. Bernard Lewis, President of Combustion and Explosives Research, Inc. (Combex); Bela Karlovitz, Secretary-Treasurer of Combex; Dr. G. Martin Fuls, President of FMF Associates; and James H. Wilcox, Supervisor of the Test Support Group at PNPP. Staff witnesses: Allen Notafrancesco, NRC Containment Systems Branch (written testimony in two parts, designated I and II); Hukam Garg, NRC Equipment Qualification Branch; Li Yang, NRR Structural and Geotechnical Engineering Branch; and W. Trevor Pratt, Brookhaven National Laboratory.

5% power, this is not an element that will be deferred to the final analysis. OCRE has not alleged or pointed to any equipment that would not be available nor has it shown that NRC's new regulations on hydrogen control are the vehicle by which we test compliance with Part 100 in licensing proceedings. We need not address OCRE's concerns about releases of radioactivity because Perry will not be allowed to operate if the hydrogen control system proves to be inadequate. Thus, we reject these arguments as a basis requiring our scrutiny of written procedures. OCRE further bases its argument on the fact that the Applicants have not prescribed a vent path for containment in the event one is needed for a degraded core accident in conjunction with a station blackout event. We disagree with OCRE that the identification of a vent path from containment is a matter so complicated that it requires our scrutiny at hearing. It is sufficient to know that one will be chosen. The Board concludes that the Applicants' preliminary demonstration with regard to the installation, design and operation of igniters is adequate. Their commitment to produce written procedures prior to operation at full power is also adequate but it will be made a condition of licensing. If, when completed, the procedures are deficient in OCRE's judgment, it can seek relief through other NRC proceedings. *See* 10 C.F.R. § 2.206.

Containment Integrity

The evidence shows that an analysis of PNPP containment integrity was performed according to the requirements of the ASME Code service level C. The internal pressure capacity of the PNPP containment was evaluated by Applicants' consultant, Gilbert Commonwealth (G/C). Results are set forth in a report entitled "Cleveland Electric Illuminating Company, Perry Nuclear Power Plant, Units 1 and 2, Ultimate Structural Capacity of Mark III Containments" (Ultimate Capacity Report). This analysis presents one method pursuant to the rule by which Applicants can demonstrate the pressure-containing capacity of the Perry containment vessel and it disclosed that the most limiting penetration in containment, P414, had a pressure capacity of approximately 50 pounds per square inch (psig). The dome knuckle region and containment cylindrical shell all had pressure-containing capacities considerably above that limiting penetration. Findings 86-94.

OCRE criticizes Applicants' analysis because it did not include a consideration of dead load as required by the ASME Code, it neglected the effect of elevated temperatures on material properties due to hydrogen combustion and it neglected the stresses resulting from the as-built, out-of-tolerance conditions of the PNPP containment vessels. The evidence

shows, however, that Applicants considered all three of the foregoing factors. They concluded that the factors were insignificant and would not affect their analysis. Findings 90, 91, 95.

We do not find it impermissible to consider each of these quantities, to find them of small quantitative import and therefore to neglect them. We also cannot accept OCRE's invitation to consider these effects as additive. OCRE Proposed Opinion at 21. The three factors mentioned by OCRE do not converge in additive fashion on the limiting penetration. The out-of-tolerance condition was acknowledged by the Applicants but has its effect on the vessel shell and not the limiting penetration. Stresses during elevated temperatures were considered and shown to remain conservative, and the dead load contribution constitutes only 4.7% of the stress. It is properly neglected in an analysis having substantial conservative margins. OCRE's assertion that Applicants' containment vessel capacity analysis is inadequate or erroneous is not supported by the evidence.

We also cannot accept OCRE's assertion that containment penetration P205 was analyzed in an improper manner because Applicants took credit for actual material properties instead of lower-bound material properties. The analysis of that penetration adequately demonstrates that the conclusions regarding the limiting penetration in containment should not be altered. Findings 94, 110.

Applicants' containment analysis shows that the strength of containment is significantly greater than its design strength, that it can withstand negative pressures and that containment strength exceeds the pressure expected from hydrogen burning by a large margin. Findings 96-98.

Defective Welds

Some defective welds remain in the lower weld courses of the containment vessels in both Perry Units 1 and 2. Both Applicants and Staff are aware of the defects and a detailed analysis of their importance has been performed by the Applicants. Finding 99. OCRE challenges Applicants' weld flaw analysis on the basis that stress margins used were not conservative, that measurements of weld flaw size used some radiographs of poor quality, and that a faulty calibration was made of the radiographic analysis technique used by Applicants' consultant, APTECH Incorporated.

The evidence reflects that the Staff has accepted the digital radiographic enhancement technique used by APTECH and only has reservations on the depth-of-flaw measurement using this technique. Calibrations show that flaw depth measurements are conservative in that the digital

enhancement technique projects deeper flaws than actually exist in the material. Findings 100, 101. OCRE's assertion that inadequate margins were used in the stress analysis represents nothing more than a difference of opinion with experts and it ignores throughout the conservative aspects of the analysis. Findings 100-106.

OCRE criticizes Applicants' evaluation of stresses at these welds for 50 psig and their finding that the stresses at the higher internal pressures were less than at 15 psig as analyzed by APTECH. Contrary to OCRE's assertions, however, we do not find Applicants' witness to be noncredible on this matter. It is clear that Applicants conducted an additional analysis of hydrogen deflagration stresses that went beyond the analysis performed by APTECH. While APTECH's analysis did not consider the annulus concrete, the Applicants in their additional work did evaluate additional stiffening in the containment vessel due to it. Finding 103. We see nothing improper in this analysis. Clearly the annulus concrete now exists in the as-built structure and consideration of its additional strengthening characteristics seems to us appropriate. APTECH's choice not to consider the annulus concrete in its analysis adds to our confidence that the overall analysis is conservative relative to the final as-built containment.

Applicability of ASME Service Level C Limits

We reject OCRE's invitation to challenge the use of ASME service level C limits to ensure a leaktight containment. OCRE Proposed Opinion at 25. The newly promulgated hydrogen rule permits the use of service level C limits as a means of demonstrating containment shell integrity and that of its penetrations. The evidence shows that Applicants' analysis of the equipment hatch and other containment penetrations has been adequate and that all penetrations meet service level C requirements. Findings 107-111.

Penetration Seals

The Applicants performed an analysis of springback of the O-ring seals in the equipment hatch. Findings 107-108. Contrary to OCRE's assertion, we find that the Applicants did not neglect the effect of compression set which could result from thermal and radiation aging. Finding 108. Further, our analysis of the adequacy of the hydrogen control system is limited to the adequacy of the Applicants' preliminary analysis. We are responsible for making findings of reasonable assurance of safety

during the interim between reactor startup and the submission of Applicants' final analysis. Nothing in the record would cause us to conclude that radiation or thermal aging of materials could create serious compression set during this interim period. The Applicants have ample time to complete their commitment to prescribe what appears to be a purely routine procedure for maintenance and inspection of seals.

Manufacturers and contractors have brought to the Applicants' attention potential defects in inflatable seals. This notification caused a reevaluation of the integrity of seals and their possible degradation during design basis accident conditions. We do not accept OCRE's assertion that the discovery of such potential problems and their reporting — even though followed by assessment and corrective action — is a cause for concern regarding the integrity of penetrations. Finding 112.

OCRE argues that the ASME Code may not be the most conservative method for all parts and conditions encountered in PNPP containment. However, the new hydrogen rule permits the use of ASME service level C stresses in a demonstration of containment integrity, and the Applicants have presented even additional conservatism by providing an analysis based on service level D stresses, which the Code permits. Finding 92. Additionally, we see no reason for challenging Applicants' assertion that their techniques are applicable for the linear elastic stress ranges under consideration. Neither can we find a basis for challenging the finite element analysis used by Applicants for consideration of the stress ranges in the Perry containment. Finding 93.

We conclude that the Applicants have identified the controlling penetration in containment and that such penetration has an internal pressure capacity of 50 psig. We find that pressure limit is conservative and that in fact the pressure limits of the controlling penetration are higher than those stated. OCRE criticizes Applicants' analysis of negative pressure capacity of the containment because Applicants rely on the action of vacuum breakers during design basis events to establish that design negative pressure is not exceeded. No basis has been established in this record for challenging the actions of redundant vacuum breakers to relieve negative pressures in containment. Finding 97.

Drywell Capacity

The Applicants relied on the analysis of the Grand Gulf drywell to establish pressure-retaining capabilities of the Perry drywell. OCRE considers this inadequate because the Grand Gulf analysis did not consider the

effect of voids in the drywell. Voids were found in the Perry drywell concrete. However, they have been repaired and analysis has demonstrated that they have no effect on the pressure-retaining capacity of the Perry drywell. The concrete of the drywell has been inspected and the Applicants are confident that no further voids exist. Findings 114, 115.

We have no basis to challenge Applicants' analyses on concrete voids in the drywell. The hydrogen rule permits the referencing of previously accepted analyses for similar plants as part of the overall analysis for Perry. Thus, the Applicants' referencing of Grand Gulf drywell integrity is not inappropriate to establish, on a preliminary basis, the integrity of the Perry drywell.

Containment Response Analysis

Applicants have analyzed two accident scenarios to describe the behavior of the reactor system during and following a degraded core accident. These scenarios consist of (1) a small steam line break in the drywell with extended ECCS failure and (2) a transient with a stuck-open relief valve with extended ECCS failure. Recovery of coolant flow was assumed to occur at the point of a 75% metal-water reaction. Steam and hydrogen release during these accidents was analyzed using a computer code termed MARCH. Intervenor does not challenge the appropriateness of the two scenarios used nor does it challenge the use of the MARCH code in spite of its recognized shortcomings. OCRE Proposed Opinion at 16. We have found that an improved MARCH code would show less hydrogen release than the one used in the Applicants' preliminary analysis. Therefore that analysis is conservative. Findings 116-121.

OCRE is concerned that the scenarios chosen do not represent the most severe challenge to containment from hydrogen combustion. The Intervenor urges that Applicants should also have considered a station blackout degraded core accident, which assumes loss of both offsite and emergency electrical power. In this scenario, the igniters would not be available and hydrogen would accumulate to a concentration of 28% in containment. Deflagration of this amount of hydrogen when power is restored to the igniter system would produce high pressures in containment. Findings 144, 145.

Applicants argue that consideration of this scenario should be deferred to the final analysis stage. Staff agrees and will require evaluation of the station blackout in the final analysis unless the Applicants make an adequate demonstration as to why it should not be considered. Finding 158.

The Applicants, however, have in testimony given preliminary consideration of the station blackout situation. A degraded core situation is unlikely to arise during a station blackout because core cooling would be available up to 9 hours after the blackout occurred. As long as there is core cooling, there would be no hydrogen release. Finding 146. The Board concludes that the core cooling capability during station blackout gives the station substantial amounts of time to recover either offsite power or emergency power before any hydrogen release can be expected. If hydrogen is released during a station blackout event, however, the Applicants have options for venting containment rather than permitting a global deflagration to occur. Finding 145.

The hydrogen rule is silent on the question of whether station blackout must be analyzed in the preliminary analysis or, indeed, whether it must be analyzed at all as one of the scenarios employed by the Applicants. A judgment must be rendered on the basis of whether a finding of reasonable assurance of safety can be made in the absence of the analysis at the preliminary stage. We conclude that such finding can be made on the basis of the low probability of the event and the fact that although the formal analysis has not been made the Applicants are able to outline the general dimensions of their response. We find this to be adequate for a preliminary analysis.

We also note that the station blackout scenario has been addressed in the Staff SER as a generic unresolved safety issue (Perry SER). The station blackout scenario represents a safety problem, all aspects of which are not directly before us and the full dimensions of which are not on our record. Clearly our principal task under the admitted contention is to assess the adequacy of the hydrogen igniter system regarding its functional capability of coping with a 75% metal-water reaction without loss of containment integrity. Since the Staff intends to require that the Applicants analyze the station blackout with regard to hydrogen generation in their final analysis, we conclude that adequate assurance of safety at Perry is provided.

The Applicants used the CLASIX-3 computer model, originally developed by Westinghouse, for calculating their containment response analysis. That model predicts temperatures and pressures resulting from the combustion of hydrogen and it tracks concentrations of hydrogen, oxygen, nitrogen and steam in the containment. The model uses standard equations and assumptions and predicts, for both scenarios analyzed, a large number of hydrogen burns taking place primarily in the wetwell region of the Perry containment. Findings 122-124.

OCRE challenged the input parameters used in the CLASIX-3 model and the validity of the code itself. In doing so, it urged Board reliance on

a document produced by Sandia National Laboratories labeled NUREG/CR-2530 (OCRE Exh. 21). That report contains Sandia's comparative assessment of a number of computer models designed to calculate containment response during hydrogen combustion. The analysis was performed for the NRC Staff to assist it in the assessment of the hydrogen control system at Grand Gulf. One of the models advocated by OCRE that was compared in the Sandia analysis was termed HECTR. Results from HECTR consistently showed higher temperatures and pressures from hydrogen burning in reactor containment than CLASIX-3. However, Staff claimed that the HECTR model was crude and did not model a MARK III containment. Notafrancesco, Tr. 3688, 3724, 3733. We have examined OCRE Exhibit 21 and conclude that nothing therein gives us any more basis for relying on HECTR than on CLASIX. OCRE Exh. 21 at 12, 15-16. The Sandia report does establish that several models used in early attempts to model containment response produced variable results. Sandia's report, however, does not indicate which of the models was the more reliable although it accepts the CLASIX results with reservations. *Id.* at 11.

The Staff testified that the modeling of containment response has improved since the Sandia report was completed. Pratt, Tr. 3700. Indeed, even the HECTR model of later vintage shows lower containment temperatures and pressures than the earlier version. Notafrancesco, Tr. 3733-34. The Board concludes that the modeling of containment response is a rapidly changing and improving research and development effort. We do not put our reliance on the model comparisons of the Sandia report for assessing containment response in Perry since we accept that later improved versions of models have been developed and that later experiments tend to confirm the validity of CLASIX-3. Fuls, Tr. 3621. Additional subjective considerations also support a conclusion that CLASIX results are conservative. Finding 133.

The Sandia report identified numerous sensitivities of all the models to variations in input parameters, which we believe remain valid. One of these was flame speed during combustion of hydrogen. Sensitivity analyses established that high flame speed is accompanied by more rapid release of energy, and correspondingly high peak pressures and temperatures are attained. Thus accurate modeling results depend upon accurately known flame speeds. OCRE Exh. 21 at 16-17.

The flame speed used in CLASIX analysis was 6 feet per second (ft/sec). The Staff believes this is conservative and that the flame speeds used in HECTR were overestimated. Similarly, Applicants' experts on combustion believe that flame speeds could be lower than 6 ft/sec and that the assumption used in CLASIX is conservative. However, some

experiments have shown higher flame speeds and Sandia thought they should be higher as well. Finding 132; OCRE Exh. 21 at 16-17.

We accept that OCRE has established by its cross-examination and Exhibit 21 that flame speed is an uncertain quantity not known with high accuracy. The most we can deduce from the testimony presented is that the flame speeds used in CLASIX are not deliberately biased. We conclude that true flame speeds, if and when finally known with precision, could be lower or higher than the values used. Finding 132. This conclusion does not arise from any evidence of faulty craftsmanship on the part of those engaged in the construction of models. Rather, it appears to be an inherent uncertainty in the ability to measure a parameter that varies with environmental conditions.

In view of the uncertainty of the parameters which apply as well to HECTR as they do to CLASIX-3, we put no reliance on OCRE's detailed comparison of the results of CLASIX-3 with HECTR. OCRE Proposed Opinion at 33 and Appendix C.

OCRE also challenged the values for the ignition limit of hydrogen in air. The evidence shows that hydrogen has geometry-dependent ignition limits in air. Finding 126. Eight percent hydrogen concentration in air corresponds to the downward propagation limit. Sandia used 9% for a downward propagation limit and Applicants' expert thought that the downward propagation limit was in the range of about 8½ to 10%. Upward propagation limit is about 4% and horizontal propagation limits occur at around 6½% hydrogen by volume. The uncertainty in the ignition limits of hydrogen in air appears to be considerably smaller than the uncertainty for flame speeds, and a lingering dispute as to the correct values appears to be insignificant to the containment response analysis. Citing the Sandia report, however, OCRE claims that the placement of igniter assemblies close to ceilings and the spray shield of the igniter housing would inhibit combustion effectiveness. Sandia concluded, however, that ignition would reliably occur at the downward propagation limit but not at lower concentrations. We fail to see any important disagreement between OCRE and the Applicants since Applicants' witnesses also state that hydrogen combustion will not occur in downward propagation at concentrations less than about 8%. Eight percent hydrogen concentration is the concentration assumed for all flame propagation in the CLASIX model. It is, therefore, a conservative assumption since upward propagation or horizontal propagation will in reality occur at considerably lower concentrations. Findings 125, 126, 131.

Considering the undisputed fact that hydrogen tends to rise from lower to upper regions in the containment, we conclude that considerable amounts of hydrogen will burn at the upward propagation limits

before accumulating at higher concentrations at ceilings or spray shields on igniters. We agree, therefore, with Applicants that variations in the location of hydrogen igniters in containment is not critical to the overall analysis of hydrogen combustion. Finding 84. The igniters are placed in containment anywhere that hydrogen might go and there is no need to consider an igniter-by-igniter location analysis as performed by OCRE. OCRE Proposed Opinion at 35. Given the potential for combustion at lean concentrations during upward propagation or horizontal propagation, we see little hazard in the possibility that hydrogen might somehow escape these ignition sources and accumulate at higher concentrations in the containment dome or near ceilings. Findings 83-84. Even if hydrogen did accumulate, however, it would burn in downward propagation at approximately 8% concentration just as the CLASIX model assumes and we see no error in this aspect of modeling the behavior of hydrogen by CLASIX. Finding 81.

OCRE challenges the combustion completeness of hydrogen in air of 85% utilized in the CLASIX model. Other researchers have used 100% combustion of hydrogen at concentrations above 7.7%. There is no basis in the record for us to decide with any certainty on a correct value for combustion completeness, although we have found that as a practical matter much hydrogen will be burned at lower concentrations than 8%; this lends credence to the estimate of 85% completeness. We consider this to be a minor part of the intrinsic uncertainty in modeling.

We conclude that even current models have considerable parameter sensitivity and that at least some parameters are poorly known. Although the Staff acknowledged this in its testimony, it was not clearly highlighted. However, as already indicated by the Staff, we conclude that it is essential that Applicants in their final analysis perform appropriate parameter sensitivity analyses in their determination of containment response. Finding 158.

We reject OCRE's assertions that ionizing radiation will increase flame speed from deflagration to detonation. There is no evidence in our record that the specific chemical radicals needed to accelerate flame speed would be present in Perry containment or that ionizing radiation in any event could create enough such radicals to accelerate flame speed. OCRE's assertion was based on old and outdated evidence and there was no recent corroborating evidence to suggest that ionizing radiation in containment could have any effect. Finding 135. The evidence is clear that no detonation of hydrogen from any cause is likely in the Perry containment. Findings 127, 134.

Containment Spray Availability

OCRE also challenged the availability of containment spray operation during a degraded core accident. The evidence shows containment sprays are an important heat transfer mechanism that, during a hydrogen burn, would result in a significant reduction of pressure and temperature. Finding 129; OCRE Exh. 21 at 12. It is assumed in CLASIX-3 that containment sprays are automatically actuated after the first burn. No factual basis exists in the record, however, for challenging the availability of containment sprays. We cannot accept OCRE's assertion that containment spray unavailability can be deduced from the scenarios used by Applicants that postulated loss of core cooling. Finding 154. That assumption was necessary in order to produce a degraded core in the models and to produce a 75% metal-water reaction. That hypothetical is not improper since the hydrogen rule postulates the need to accommodate hydrogen generated from a 75% metal-water reaction without specifying the mechanism of generation. It is fruitless to compound hypotheticals, however, by deducing spray unavailability from a hypothetical loss of coolant. OCRE's assertion concerning spray unavailability is without merit and outside the scope of a test of compliance with the Commission's new rule on hydrogen control. The proper vehicle for challenging spray availability is by a separate admitted contention.

Suppression Pool Bypass

OCRE raised the question through its cross-examination of the possibility of hydrogen releases entering the containment or wetwell without first traversing the suppression pool. OCRE cites its Exhibit 21 at 197-98 correctly for the proposition that severe challenges to containment integrity could occur if hydrogen bypasses the suppression pool and leaks directly into the wetwell. OCRE calls for added analysis of the effects of drywell leakage on containment responses to a degraded core accident. However, the Sandia report goes on to say that the possibility of significant hydrogen releases directly into the wetwell/containment without first traversing the suppression pool is apparently extremely unlikely.

Applicants agree that leakage of hydrogen through the drywell leak paths could occur and that on the order of 14 to 19% of the total hydrogen could bypass the suppression pool. They conclude, however, that hydrogen leakage through the drywell leak paths in that amount could not affect the operation of the hydrogen control system or their conclusions. It is apparent that the scenario proposed by OCRE has been analyzed. The Applicants also considered an analysis that was performed by

General Electric for its assessments in a small-break LOCA of the effects of hydrogen bypass through the drywell. That analysis found that drywell bypass leakage is of no concern to the operation of the PNPP distributed igniter system. Even if hydrogen were to leak out through the drywell wall, the hydrogen transport and combustion characteristics analyzed in Perry's preliminary evaluation would not change. Richardson, Buzzelli, Tr. 3499-3501, 3615-16; Fuls, Holtzclaw, Tr. 3628-29; Pratt, Tr. 3726-27.

Equipment Survivability

OCRE urges the Board to find Applicants' analysis of equipment survivability to be inadequate based on its proposed finding that the CLASIX-3 analysis itself was inadequate. OCRE Proposed Opinion at 45. Equipment survivability analysis depends on containment environmental temperatures and pressures calculated by CLASIX due to hydrogen burning. These quantities are used in subsequent codes to calculate equipment temperatures which are then compared with equipment qualification temperatures. Findings 136-137. We cannot, however, reject the equipment survivability analysis since we do not find that the CLASIX-3 analysis is so flawed as to be rejected outright.

Applicants' principal method for demonstrating equipment survivability is by referencing the Grand Gulf equipment survivability analysis. As we have indicated, such referencing is permitted by the newly promulgated hydrogen rule. Confirmatory calculations for specific pieces of equipment in Perry have been made which show that the Applicants' conclusion that the Grand Gulf results will bound the Perry results is well founded. Findings 136-138. OCRE has not developed any basis for challenging the HEATING 6 computer code that is used for computing equipment temperatures at Perry. We conclude, therefore, that Applicants, in their preliminary analysis, have made an adequate demonstration of the survivability of equipment in the Perry containment.

The Board understands, as do the Applicants and Staff, that computations produced by the CLASIX-3 code have uncertainties in the results. We conclude that these uncertainties do not constitute fatal flaws. We are satisfied that the Applicants and Staff are making substantial efforts to improve computer codes for the prediction of containment response in hydrogen release scenarios and we expect that these will be used in the final analysis.

The existence of uncertainty dictates that we cannot find reasonable assurance of safety for operation in the interim based on model calculations alone. We conclude, however, that it is appropriate to also rely on

the fact that the analyses were consistently performed in conservative manner and that margins of safety exist. Thus, we conclude that CLASIX-3 computations, while not completely accurate, bound the conditions that would actually prevail during a hydrogen burn event in Perry containment. Findings 133-143.

The Staff has found that seals for locks and hatches and the transformer for the igniter assembly are not yet temperature-qualified. CEI is required by 10 C.F.R. § 50.49(i) to justify interim operation of this equipment and provide qualification for it by November 30, 1985. Staff Proposed Finding 23.

We have found, however, that the Staff has acknowledged in its SER that certain components in containment have very low qualification pressures but that it has an inadequate explanation on the record for its acceptance of that fact. Findings 139-142. We are not convinced from the Applicants' own analysis that compressors having a 24-psig qualification pressure are safe from failure in an environment calculated by CLASIX to have projected peak pressures of 21.2 psig. If we knew these numbers exactly, of course, the reasoning would be correct and we understand that Staff and Applicants believe the cited pressures are upper bound estimates of containment pressures. However, our assessment is necessarily subjective and we conclude that in this case the actual survival pressure approaches with small margin a calculated pressure having unknown bounds of uncertainty. Neither are we comfortable with the assertion that the active components of unqualified equipment will not be exposed to peak pressures. Thus, we conclude that the Applicants should make further confirmatory analyses of the equipment which has not been qualified for pressure survivability in containment and of equipment that has, in our view, inadequate margins of pressure survivability. These should be reviewed and approved by the Staff prior to exceeding 5% power at Perry.

Diffusion Flames

OCRE asserts that the possibility of diffusion flames occurring in a degraded core accident pose another form of thermal threat to equipment and penetration seals. Diffusion flames are continuously burning, standing flames that could occur at the surface of the suppression pool. The evidence shows that penetration seals would not reach a high temperature during hydrogen deflagration; there is a significant margin between the temperature from hydrogen burning and the qualification temperatures of the seal materials. This is because the seals are next to a large mass of metal which acts as a heat sink. In addition, the sealing

material for the equipment hatch is between the flange materials, which is essentially outside of the containment structure, and would not be exposed directly to the hydrogen-burning environment. Additionally, the personnel hatch has two doors, one inboard and one outboard, and only the inboard door would be exposed to the possibly high temperatures from hydrogen combustion. Finding 113.

The Owners Group plans to conduct quarter-scale testing of diffusion flames and to submit the results in its final analysis. The Group, however, will not consider diffusion flames resulting from a release history corresponding to a 75% metal-water reaction in its tests. The reason is that the rates of release and the volume of release required by that scenario would produce an unrecoverable accident. Findings 149-152. This is not realistic for conformance to the rule which is limited to consideration of a recoverable degraded core accident scenario. OCRE urges that we cannot ignore this matter and that we cannot defer its consideration to the final analysis. In its view, Applicants' plans for research constitute a defiance of the regulations which require evaluation of equipment survivability under a 75% metal-water reaction scenario.

We do not accept OCRE's argument that the scenarios that are going to be adopted for future research constitute a violation of NRC regulations. All the hydrogen rule requires is that a 75% metal-water reaction be considered. It does not specify particular scenarios and is silent on the question of diffusion flames. We do not expect that Applicants will perform unrealistic research. There is no evidence to indicate that a hydrogen release accident is likely to proceed through a 75% metal-water reaction with nothing but diffusion flames produced. Indeed, the evidence shows that hydrogen will escape for the most part to the containment atmosphere where it will be burned by multiple deflagrations. We consider the diffusion flame scenario to be an investigation of one among many possible occurrences during a hydrogen release event. Nothing in the hydrogen rule requires the Applicants to commit to evaluating the thermal environment and equipment response resulting from diffusion flames using a hydrogen release history resulting from a 75% metal-water reaction. OCRE Proposed Opinion at 47.

OCRE raises the issue of whether other effects of hydrogen control system operation will aggravate the course of an accident. For this proposition it cites three possible events that would have adverse effects on the course of an accident and could arise because of hydrogen combustion: these are excessive drywell pool loads, loss of decay heat removal capability and secondary fires in containment. OCRE Proposed Opinion at 47-50.

Drywell Pool Loads

OCRE's challenge concerning drywell pool loads is based on a paper presented at a scientific conference by one of the Applicants' witnesses. The paper outlines a scenario by which differential pressures between containment and drywell could result in a violent overflow of the suppression pool into the drywell. The analysis cited no adverse effects on essential equipment from such an occurrence but indicated that the effects would be evaluated. That scenario was evaluated as part of a number of sensitivity studies using conservative assumptions in the CLASIX model. These studies involved analyses beyond the design base case. The design base case evaluated the potential consequences of any reverse or forward pool swell. OCRE brought out on cross-examination that the Hydrogen Control Owners Group has a plan for long-term investigation of pool-swell loading from hydrogen combustion. However, in the case of Perry, the preliminary evaluation had considered differential pressures and those pressures were found to be less than the ones analyzed in the design basis case. Finding 153. The Board concludes that drywell pool loading is a design basis consideration which, for the most part, is beyond the scope of matters relevant to hydrogen control. It is analyzed separately in the Applicants' overall safety analysis. There is linkage with the hydrogen control problem because hydrogen combustion during the degraded core event could produce differential pressures between containment and drywell. However, those differential pressures have been considered and have been found to be less than the design basis case.

The Board does not find it unusual or alarming that sensitivity analyses utilizing very conservative assumptions might well show pool loading conditions as described in Applicants' paper. We disagree with OCRE, however, that such analyses need be accepted as literal descriptions of likely events during a degraded core accident at Perry. We conclude that the possibility of pool swell during a degraded core hydrogen release incident has been considered in Applicants' preliminary analysis and that it does not hold significant potential for further aggravating the course of an accident at Perry.

Decay Heat Removal

OCRE asserts that in a degraded core accident, hydrogen combustion adds heat to the containment atmosphere in addition to the decay heat being added to the suppression pool. It is therefore appropriate, in its view, to examine the decay heat removal capability in a situation where

heat from hydrogen combustion must also be removed from containment. The evidence shows that there are redundant safety-grade residual heat removal (RHR) loops available for suppression pool cooling. The active components for the RHR system are located outside containment and would survive hydrogen burning. Even if both RHR loops were lost for suppression pool cooling, elevated pressure in containment could be handled by the containment spray which passes through heat exchangers before being sprayed. Thus, long-term decay heat removal would be assured.

The Board concludes that active heat removal systems exist which would remove decay heat and the heat added by hydrogen combustion from the suppression pool. Beyond that, the PNPP evaluation shows that hydrogen burning occurs early in the scenarios and that peak suppression pool temperature occurs after several hours. Thus, hydrogen burning would have an insignificant effect on the overall suppression pool temperature. Finding 155.

Mr. John M. Humphrey is a former GE engineer who expressed some safety concerns regarding Mark III containment. OCRE referenced a so-called Humphrey analysis which indicated the containment spray operation might significantly reduce suppression pool mixing effectiveness and lead to pool stratification. The Board, however, is satisfied that the so-called Humphrey concerns were evaluated for Grand Gulf and that they have been adequately considered not only by the Applicants but by the NRC and the Advisory Committee on Reactor Safeguards. These concerns were determined not to raise significant safety issues. Finding 156.

We conclude that problems associated with decay heat removal would not be further aggravated by hydrogen combustion in a degraded core accident.

Secondary Fires

OCRE asserts that Applicants have not evaluated the potential for secondary fires in containment that could be initiated by hydrogen burning. Such fires, according to OCRE, would affect containment pressure and temperature profiles. There is no evidence in the record in support of these assertions. The potential for secondary fires, particularly cable fires, has been considered in tests at Fenwal and the Nevada test site. Cable burning has been shown only for hydrogen concentrations above 10%; although some burning was shown in other tests, they were not of the type of wire used in the Perry containment. Evaluations conducted

for Grand Gulf have shown that there is no potential for secondary fires for the temperatures predicted by CLASIX-3. The Applicants are confident that secondary fires will not occur because the temperature peaks predicted for PNPP are intermittent, of short duration, and not uniform throughout containment. The Board concludes that the risk from secondary fires initiated by hydrogen combustion in containment is low and that its consideration for the preliminary analysis by the Applicants has been adequate. Findings 147-148.

The Scope of the Preliminary Analysis

We stated at the outset that we did not intend to define the precise boundaries that separate the preliminary analysis from the final analysis because the Applicants submitted an extensive and detailed analysis of hydrogen combustion during degraded core events at Perry. We permitted OCRE considerable latitude in its cross-examination during the hearing because these boundaries were undefined. OCRE took advantage of the opportunity and included many subjects in its cross-examination that may well have gone beyond the bounds of a reasonable preliminary analysis on the comparatively narrow safety issue of hydrogen control. Now, having reviewed the entire record, we conclude that the basic questions that have to be answered at the preliminary analysis stage are whether an igniter system has been installed, whether it will function as designed, whether hydrogen will burn as predicted, and whether the containment and essential equipment will retain their integrity under the pressures and temperatures predicted. From this we conclude that it was appropriate to permit cross-examination on the CLASIX code which predicted the temperatures and pressures in containment. Cross-examination on defective welds was also appropriate since this appears to be directly related to containment integrity. We also believe it was appropriate to inquire into equipment survivability and the basis for the Applicants' confidence that essential equipment in containment would survive the temperatures and pressures produced by hydrogen burning.

The hydrogen rule for Mark III containments, however, is not the vehicle by which we test the comprehensive safety analyses of other systems that are performed by Applicants and Staff. Many of the systems that OCRE wanted to include within the scope of the hydrogen control issue are analyzed elsewhere in other parts of the overall safety analysis. Even though linkages exist we do not believe that an analysis of hydrogen control raises each and every other aspect of the Applicants' overall safety analysis. For example, we conclude that the issue of hydrogen control does not raise the question of containment spray availability

during a hydrogen event. This is not because spray availability is unimportant, but because that issue is analyzed elsewhere in the overall safety analysis. Similarly, the broad issue of station blackout, while important, is not raised by the hydrogen rule, even though linkages exist for which the Staff may require additional analysis.

We do not similarly analyze each of the other systems that OCRE challenged in this case since the foregoing is sufficient to highlight our concerns. The hydrogen control issue can become unnecessarily complex because of the number of systems and components in containment which could be brought into play during a degraded core event. We do not believe that safety is well served by conducting fragmented analyses of complex systems and we conclude separate contentions should be the means for challenging separate engineered safety systems and that the reliability of these systems should not be treated as collateral to a hydrogen control contention.

The analysis of hydrogen combustion during degraded core events is a new task in overall reactor safety assessment. New cases will produce new thinking on the issue which should be integrated with past analyses as provided for in the rule. In an area of actively developing technology, however, we are not comfortable in relying alone on references to similar reactors that have been licensed in the past. It would have been helpful had the Applicants and Staff referenced other portions of the Perry FSAR or SER for its confidence that other containment systems that could be linked to the hydrogen control issue would function and that the linkages to hydrogen control had been considered. We conclude, however, that the Applicants' analysis of hydrogen control at Perry was thorough and reasonably within the scope of the preliminary analysis prescribed by the hydrogen rule for BWR Mark III containments.

Conclusions

Based on the entire record in this matter, the Board concludes that the Applicants have made an adequate demonstration in their preliminary analysis that: a hydrogen ignition system has been installed at Perry; that the system will ignite hydrogen in lean mixtures, which will prevent the accumulation of large amounts of hydrogen in containment; that the Perry containment will survive the controlled combustion of hydrogen without failure; that essential equipment in Perry containment is qualified to withstand the temperatures and pressures likely to be generated during hydrogen combustion.

Our confidence that the Perry containment will survive hydrogen combustion is not based on computer analysis of containment response alone. We agree with OCRE that modeling of containment response is a process having some uncertainty. We are satisfied, however, that work is progressing on the problem of containment response analysis and that progress has been made since the time the Sandia report for Grand Gulf was published. We do not accept CLASIX-3 results regarding temperatures and pressures as exact representations of what would take place during hydrogen burns in containment. We do accept that these analyses are based on conservative assumptions, and are more likely to overestimate than underestimate the response. Succeeding versions of other models analyzed in the Sandia report also show that earlier models erred on the side of conservatism and that more recent results tend to show less severe conditions than earlier efforts.

In the face of analytical uncertainty, however, which we believe still lingers, we must also find that other aspects of the analysis are conservative or that margins of safety exist which could add to confidence that containment will not fail during hydrogen combustion. We find that substantial margins do in fact exist on containment strength. The ASME standards for analyses of stresses are conservative and show that there is likely added strength of PNPP containment and its penetrations beyond that performed under the service levels prescribed by the rule. Furthermore, there is considerable margin between the peak pressures shown by CLASIX and the ability of the containment to withstand internal pressure. The first yielding of containment conservatively could occur in a penetration at approximately 50 psig while the CLASIX-3 model shows that peak internal pressures would occur at slightly over 21 psig. The yield strengths are likely higher and the pressures generated are likely lower than those stated. Thus there exists a substantial, though not precisely measured, margin between the peak pressure likely to be generated and the pressure-containing capacity of the most limiting penetration in containment.

The overall shell of the containment is considerably stronger than the limiting penetration. We conclude that there is virtually no likelihood that the containment shell itself would fail catastrophically during a degraded core accident at Perry when the hydrogen ignition system functions as designed.

Based on the foregoing considerations, the Board finds reasonable assurance that the hydrogen igniter system at Perry will function as designed and that the containment will retain its integrity during a degraded core accident which generates up to 75% of the equivalent metal-water reaction.

The Applicants' analysis of its system is in compliance with 10 C.F.R. § 50.44(c)(3) as it addressed the preliminary analysis, provided applicable requirements stated herein are met. The items that the Applicants and Staff have agreed to defer to the final analysis were technically reasonable and were not selected, as alleged by OCRE (*see* OCRE Proposed Opinion at 52), for the mere convenience of Applicants and Staff. Findings 157-158. The deferred items represent events of remote likelihood or refinement of existing analyses and we see no basis for deferring reactor operation pending completion of those analyses. The Board finds that Applicants have carried their burden of proof on issue 8.¹²

C. Diesel Generators (Issue 16)

OCRE and Sunflower filed contentions concerning the PNPP diesel generators. By order of July 28, 1981 (LBP-81-24, 14 NRC 175), the Board dismissed both contentions for lack of specificity. OCRE submitted a motion to resubmit its Contention #2 on September 26, 1983. By Order of December 23, 1983 (LBP-83-80, 18 NRC 1404), the Board granted OCRE's motion in simplified form. As accepted by the Board the new Contention 16 reads as follows:

Applicant has not demonstrated that it can reliably generate emergency onsite power by relying on four Transamerica Delaval diesel generators, two for each of its Perry units.

The diesel generators installed at the Perry plant (PNPP) are meant to supply emergency power for the plant safety systems in case offsite power is not available. Finding 159. This requirement is set forth in General Design Criterion (GDC) 17 of 10 C.F.R. Part 50, Appendix A. Various models of Transamerica Delaval, Inc. (TDI) diesels are in use at a number of nuclear plants. When a TDI diesel at the Shoreham nuclear plant suffered a catastrophic failure of its crankshaft in 1983, a "TDI Owners Group" was formed for the purpose of developing a program to qualify the reliability of the units. The proposed program, which included design review, inspection and testing, was submitted to NRC in March 1984 and was approved in August 1984. Finding 160. The basic issue involved in this contention is the adequacy of the Owners Group plan.

¹² While our findings are adverse to OCRE, we compliment its representative for her efforts in making a substantial contribution to the record which aided materially in clarifying complex issues that surround the hydrogen control problem.

Applicants and Staff presented panels of expert witnesses.¹³ The witnesses' testimony described in detail the Owners Group plan and the implementation of it by PNPP. Phase I of the plan was to qualify components which, based on actual operating experience with TDI diesels, exhibited possibly generic problems. Sixteen components were identified as being of concern and were subjected to testing and detailed design review. Pacific Northwest Laboratory (PNL) reviewed the Owners Group effort for the Staff and Southwest Research Institute (SwRI) was retained by the Applicants to independently review the analyses. Both of these efforts were performed independently of TDI. Findings 161-165.

Phase II of the plan was aimed at all other components which were important to engine operability. These components were subjected to design review and/or quality revalidation (DR/QR). A "lead engine" concept for component testing was also employed, in which results of tests on engines using the same components could be applied to the same model engine at other sites. Findings 166-167.

A revalidation phase required that the engines be completely disassembled, inspected and reassembled under the owner's quality control and quality assurance program. The final phase of the Owners Group plan is an ongoing one: it involves the preparation and implementation of comprehensive maintenance and surveillance programs. As the Board understands it, this will be a "living document" which will be revised and refined as operational experience dictates. Findings 168-169.

Both Applicants' and Staff's witnesses testified that the following had been performed at PNPP:

1. All requirements of the Owners Group Phase I, including disassembly, inspection and replacement/repair/modification as necessary, of the sixteen critical components had been completed (Kammeyer, ff. Tr. 2179, at 12; Kammeyer, Tr. 2182; Christiansen, ff. Tr. 2179, at 11; Christiansen, Tr. 2499);
2. The Phase II design review and quality revalidation had been completed on all applicable components of the Unit 1 engines (Finding 167);

¹³ Applicants' witnesses: Edward C. Christiansen, Perry senior design engineer; John C. Kammeyer, a Program Manager, TDI Owners Group; and Charles D. Wood, III, representing Southwest Research Institute (SwRI). Staff witnesses: Dr. Carl H. Berlinger, NRC Project Group Manager of the TDI Diesel Task Force; Drew Persinko, a member of the NRC TDI project group responsible for review of the PNPP diesels; Dr. David A. Dingee, a representative of Pacific Northwest Laboratory (PNL) which was providing technical assistance to the Staff in its review of TDI engines; and four diesel engine and metallurgy consultants to PNL, Dr. Spencer A. Bush, Howard M. Hardy, Adam Henricksen and B.J. Kirkwood. Ohio Citizens for Responsible Energy (OCRE), lead intervenor for Contention 16, presented no direct evidence, but cross-examined Applicants' and Staff's witnesses.

3. The Unit 1 engines had operated for some 20 hours at the time of the hearing (May 1985) with no mechanical problems encountered (Christiansen, ff. Tr. 2179, at 31, 32); and
4. Applicants have developed and are performing maintenance and surveillance programs based upon recommendations by the Owners Group (Finding 169).

OCRE submitted extensive proposed findings, including not only findings in opposition to the Applicants', but also findings where OCRE agrees with Applicants. The Board commends OCRE for this helpful practice. The Board sees no reason to discuss in this Opinion items on which the Applicants, Staff and OCRE agree and are concurred with by the Board.

OCRE attacked the credibility of the Owners Group on grounds that it was a "lobbying force" rather than a "disinterested technical organization." OCRE references several Owners Group internal documents and meetings with NRC Staff on various subjects relating to the Owners Group program as evidence of an organization concerned more with its commercial interests than an objective requalification of TDI's diesel engines. OCRE Proposed Opinion at 13-16; OCRE Proposed Finding 57; OCRE Exhs. 2, 4, 5, and Staff Exh. 1 at 3. The Board finds no violation of 10 C.F.R. Part 50, Appendix B, Criterion I, in the activities of either the Applicants or the Owners Group as alleged by OCRE in this contention. We find no need to consider the motivation of the members of the Owners Group — the plan they produced is the Board's concern, and to that, the plan speaks for itself.

We have not burdened this Decision with a pointless finding-by-finding discussion of irrelevant matters. Those concerns which we consider to be of such significance as to possibly affect our decision are discussed below.

General Design Criteria 1 and 17

OCRE maintains that the TDI QA/QC programs have been shown to be inadequate, and alleges that the Applicants have not complied with either GDC 1 or 17 of Appendix A in 10 C.F.R. Part 50. OCRE Proposed Opinion at 11-13. GDC 1 requires that systems and components important to safety be designed, fabricated and tested to quality standards commensurate with the importance of the safety functions to be performed. GDC 17 requires an onsite electric power system with sufficient independence, redundancy and testability to perform its safety function assuming a single failure. The safety function is to assure that

design limits are not exceeded during operation and that the reactor's core is cooled while maintaining containment integrity.

OCRE contends that the performance specifications for Perry's diesel engines, SP-562 and its attachment SP-706, should be the standard by which the design criteria are measured. OCRE Proposed Opinion at 11-12. Although the Board agrees with OCRE's critical assessment of TDI QA/QC, we must view the entire record as the measure for evaluating the acceptability of Perry's TDI diesel engines. The question here is whether the requalification of Perry's engines through the Owners Group program meets the requirements of GDC 1 and 17. The TDI QA/QC program was audited in 1982 and was found to be adequate for the manufacture of spare parts. Nevertheless, PNPP assigned its own quality assurance representative full time to TDI to monitor any safety-related engine component ordered. Christiansen, ff. Tr. 2179, at 16; Christiansen, Tr. 2236-37, 2267.

Engine Maintenance and Surveillance

OCRE charges that PNPP's surveillance and maintenance program appears to be directed at only meeting requirements of 10 C.F.R. Part 21 and § 50.55(e). OCRE Proposed Opinion at 19. While the requirements of the regulations are in fact met, the PNPP program goes much farther, as it includes all the recommendations in the DR/QR report as well as those proposed by PNL and SwRI. Finding 169. OCRE also states that there is "no assurance that the maintenance and surveillance program will exist for the life of the plant, or that it will be implemented at all." OCRE Proposed Opinion at 19. The Board cannot find the basis for this statement in the record, but does find that testimony presented by the witnesses indicates otherwise. *See, e.g.*, Staff Exh. 4, Tr. 2468. The Board concludes that the PNPP maintenance and surveillance program at PNPP provides assurance of the reliability of the diesels.

OCRE has cited a failure in the Owners Group program in not preventing a crankshaft oil plug defect at Gulf States Utilities' River Bend reactor. The deficiency was reported by TDI on March 18, 1985, in a 10 C.F.R. Part 21 letter to the NRC. OCRE Exh. 8. It is not clear that the defect referred to, which apparently was a crack and not a failure in the oil plug, is a potential problem at Perry. Nevertheless, it is being subjected to inspections by the Applicants. Finding 170. The Board concurs with the view that the Owners Group program was never expected to eliminate all possible failures in TDI's diesel engine components. Kammeier, Tr. 2230-31; Christiansen, Tr. 2262-63.

Staff Review of Owners Group Program

OCRE criticizes the Staff's review of the adequacy of Perry's diesel engines for permitting plant operation prior to completion of the NRC's final approval and allowing Phase II requirements and diesel tests and inspections to be conducted after the reactor's first refueling outage. This, the Intervenor concludes, is tantamount to "interim licensing" which to OCRE is an illegal act that violates the dictates of GDC 1 and 17. OCRE Proposed Opinion at 19-23. The basis for OCRE's position is its interpretation of Staff's testimony that outstanding items in SSER-6 would have to be resolved prior to operation above 5% of power and that maintenance and surveillance programs could be deferred until the first fuel outage. Stefano, Tr. 2473-74; Berlinger, Tr. 2305; OCRE Proposed Opinion at 20-23.

Interim licensing is a concept developed by the Staff to apply to those plants who would otherwise be eligible for near-term operating licenses prior to their completion of the Owners Group program. Staff Exh. 1, ff. Tr. 2284, at 13-19; PNL-5161 at 19. However, the Intervenor concedes that Perry has not applied for an interim license (OCRE Proposed Opinion at 20) and most of the outstanding items in the Staff's evaluation have been considered and handled by the Applicants. Applicants' Rebuttal Testimony, Tr. 2489-2509. Additionally, PNPP has completed its Phase II program and the Staff will perform a reassessment after the first refueling outage to audit the reviews previously performed on the diesel engines by the Owners Group and the Staff. Berlinger, Tr. 2305.

The Staff review of the adequacy of Perry's diesel engines to perform reliably has been extensive. It has included: (1) a review of the Owners Group program; (2) a review of the adequacy of Phase I components at Perry and the results of the engines' disassembly and inspection; (3) Phase II DR/QR review by PNL of Comanche Peak's diesels and their similarity to Perry's; (4) previous conclusions by Staff on similar engines at Comanche Peak, Grand Gulf and Catawba; (5) preliminary findings by PNL on Phase I generic components; (6) proposed preoperational testing program at PNPP; (7) Applicants' commitment to a maintenance and surveillance program which will be reviewed by Staff; and (8) Applicants' commitment to a torsionograph test and several other technical commitments dealing with cylinder heads, push rods and water pump shafts. Staff, ff. Tr. 2281, at 12; Staff Exh. 2 at 1-2.

Phase I Components

Of the sixteen Phase I components, OCRE does not question the adequacy of the design or construction for eleven of them. OCRE Proposed

Opinion at 24-25. However, it expresses reservations about the maintenance and surveillance program as applied to these components. *Id.*; OCRE Proposed Findings 33-64. The Board, as a result of the assurances and commitments by the Applicants on the record, finds no reason exists to question the implementation of an adequate maintenance and surveillance program. The record shows that the requirements set by the Owners Group plan, the DR/DQ report, PNL, SwRI and the Staff have either been satisfied or committed to by PNPP. Findings 171-183. The Board finds that each of these components is suitable for its intended service.

The components contested by OCRE were the engine base and bearing caps, the turbocharger, the crankshaft, the cylinder block and cylinder liners.

Engine Base and Bearing Caps

Although OCRE did not contest design adequacy, it contends that the material properties of the base need to be analyzed to assure that the specifications are met. OCRE Proposed Opinion at 25-26. Its rationale for this position is the fact that the cylinder block, for which the Owners Group requires such analysis, is made from the same material. The Board is unpersuaded by this argument. The record shows that only one failure of an engine base has been reported for the hundreds of engines in operation. The Owners Group considered that, due to the low loading of the base and its excellent operational history, routine maintenance and inspection were adequate to assure the reliability of the base. Findings 184-185. The Board agrees and finds Applicants' procedures acceptable.

Turbochargers

OCRE contends that the TDI diesel's turbocharger is unsuitable for nuclear use because the fabrication technique used in assembly of the nozzle ring vanes does not permit the testing of the vanes for incipient failure. OCRE Proposed Opinion at 26-27. Staff agrees that due to visual and physical impediments such testing is not possible, but argues that enhanced surveillance and maintenance of the turbocharger will provide reasonable assurance of turbocharger reliability. Staff points out that while it is possible for vane failure to seriously damage the rotor, operational experience has shown that no turbocharger in nuclear service has shown severe damage from vane failure. Staff, ff. Tr. 2281, at 39-40. The Owners Group analysis of this problem also recommends that the

turbine exhaust temperatures be monitored, as high temperatures indicate a condition which might lead to a more likely failure situation. Kirkwood, Dingee, Berlinger, Tr. 2354-56. The Board agrees that it is unfortunate that the nozzle ring vanes cannot be tested for incipient failure by conventional nondestructive testing methods. However, on the basis of the record before us, which includes evidence of testing, commitments to the Owners Group recommendations on surveillance and maintenance, and the operational experience of these turbochargers, we find there is reasonable assurance that the turbochargers can be relied upon to perform adequately. Findings 186-187.

OCRE also questioned whether the turbochargers have been properly aligned to their mounting brackets. OCRE Proposed Opinion at 27. Staff testified that the mounting is adequate to prevent problems, and that the vibration testing to be performed will confirm it. Finding 188. The Board agrees that vibration testing is adequate to determine any misalignment problem.

Crankshaft

OCRE's concerns with the PNPP crankshaft are several: the results of tests on the San Onofre diesels, the use of the Diesel Engine Manufacturers Association guidelines rather than the European Ship Classification Societies rules, the lack of Staff review of the PNPP torsiongraph tests, and the Staff's recommendations for limiting the PNPP diesel's speed range and an evaluation of the effects of cylinder imbalance. OCRE Proposed Opinion at 27-29; OCRE Proposed Finding 83.

The results of the San Onofre inspections and tests are of dubious value in any direct comparison with the PNPP diesels. The San Onofre engine is a DSRV-20 model, as contrasted to the PNPP DSRV-16-4 models, and has a significantly different crankshaft. The Board notes, however, that Applicants have not ignored the San Onofre problems. The major problem was cracks in the crankshaft around the journal oil holes and PNPP inspected its crankshaft journal oil holes and subjected them to eddy current testing to show that they were free from such defects. Findings 180-190. OCRE states that Owners Group analytical and testing procedures failed to predict the San Onofre problem. OCRE Proposed Opinion at 28. However, the cracks in the San Onofre crankshaft were discovered during onsite inspection (Hardy, Tr. 2326) and were confirmed during onsite torsiongraph testing. Berlinger, Hardy, Tr. 2327-31.

The European Ship Classification Societies rules, which are applied to maritime diesels and which OCRE thinks should be applied to PNPP die-

sels, are quite conservative. They are meant to apply to continuous-use, variable-speed engines which are of various sizes. Finding 191. This contrasts with the Diesel Engine Manufacturers Association (DEMA) requirements that must be met by the PNPP diesels which are land-based, intermittent-use, constant-speed machines. The PNPP diesels comply with DEMA recommendations, and, in fact, go beyond them, as noted below. The Board finds that the DEMA recommendations, particularly with the additional tests done by PNPP, are suitably conservative.

Torsiograph tests on the PNPP diesels have been completed which show that DEMA guidelines have been met. Finding 192. At the time of hearing the Staff had not reviewed the tests, so this necessary review was carried as an "open item" in the Staff SER, Supp. 4. The Board has no reason to believe that this item will not be resolved before plant operation and notes that the Staff and its consultants have other bases for concluding that the PNPP crankshafts will be adequate. Finding 193.

The Staff has recommended that the operating speed range of the diesels be limited. PNPP standards were set limiting the speed range to between 90% to 110% of rated speed. Although it was found that the PNPP crankshaft has a fourth-order critical speed which is within this $\pm 10\%$ range, it was determined that the stress imposed was well within DEMA guidelines. To minimize steady operation at or near this critical speed, the engine's governor has been set to allow a speed range of $-\frac{1}{2}\%$ to $+6\%$ when manually controlled and the diesels are not attached to the grid. Finding 194.

The Staff also recommended that tests involving cylinder imbalance be made. Although not a DEMA requirement, the tests were conducted by cutting the fuel supply to one cylinder, and the Staff is evaluating the results. Finding 195.

The Board concludes that the record shows that the crankshafts are suitable for their intended service.

Cylinder Block

OCRE's concerns with these components are principally with block cracking and the Owners Group inspection interval. OCRE Proposed Opinion at 29-31. OCRE concludes that because the Owners Group recommends that the blocks be inspected after 572 hours of operation, the engines cannot meet the requirement for "continuous" operation at rated load. The Board views this conclusion as purely a misapplied semantic exercise. While the length of time that offsite power might be lost cannot be specifically defined, the length of time emergency power is needed for core cooling purposes is no more than a week. Kammeyer,

Tr. 2221-22. The Board finds that the diesels can fulfill their basic purpose even with the 572-hour inspection limit.

There are four types of cracks which were found in the Shoreham engine blocks. OCRE Proposed Opinion at 29; Wood, ff. Tr. 2179, at 56. All of these cracks connect with the top surface of the block and could be detected by surface inspection. Wood, ff. Tr. 2179, at 56. Applicants have conducted a 100% inspection of cylinder block tops and liner landings, and no evidence of cracking was discovered. Finding 196.

OCRE stated that the Owners Group analysis of the block “found that ligament cracks are predicted to occur, and that their presence then increases stresses in the block and increases the likelihood of stud-to-stud cracks.” OCRE Proposed Finding 87; OCRE Proposed Opinion at 29. After review of the appropriate document, Staff Exh. 5 at 4.5, the Board determined that the actual statement reads as follows:

- Initiation of cracks in the ligament between stud hole and liner counterbore was predicted to occur after accumulated operating hours at high load and/or engine starts to high load. These cracks were considered to be benign because the cracked section is fully contained between the liner and the region of the block top outside the stud hole circle. Field experience is consistent with both the prediction of ligament cracking and the lack of immediate consequences.
- The presence of ligament cracks between stud holes and liner counterbore increases the stress and the probability of cracking between the stud holes of adjacent cylinders, and stud-to-stud cracks are predicted to initiate after additional operating hours at high load and/or engine starts to high load.

In consideration of the above verbatim statement, OCRE’s interpretation is erroneous and the Board therefore finds that OCRE’s proposed finding has no probative value.

OCRE observes that actual loads to be carried by the diesel generators have not been determined (OCRE Proposed Finding 7) and that additional loads may be added in the future. OCRE Proposed Finding 8. Applicants plan to determine actual loads by testing in the near future and note that any additional loads in the future would require an FSAR amendment and would be reviewed by the Staff. Finding 197.

OCRE cites a disagreement between Dr. Bush, witness for the Staff, and the Owners Group over the acceptable length of stud-to-stud cracks in the block. OCRE Proposed Finding 92. However, Dr. Bush’s position assumes that ligament cracking already exists. Finding 198. As no cracks have been found during PNPP’s inspection of the block, the difference of opinion between Dr. Bush and the Owners Group is irrelevant.

Cylinder Liners

In order to reduce the possibility of cylinder block cracking, the cylinder liner proudness has been reduced. OCRE argues that the effectiveness of reduced proudness has not been determined. OCRE Proposed Finding 95. The Board notes that while no quantitative determination of the effectiveness of this procedure has been made (Kammeyer, Tr. 2508), witness testimony was submitted that reduced proudness, though still greater than zero, reduces pressure stress in the block and should reduce the probability of cracking. Finding 199.

In consideration of the record before us, the Board finds that the cylinder block and liners are adequate for the intended service.

Phase II Components

Dresser Couplings

OCRE believes that the Dresser couplings which are used in the water jacket and lube oil systems should be replaced prior to plant operation. OCRE Proposed Opinion at 31. Staff agrees that it would be better to replace them prior to plant operation but that in its judgment replacement could be delayed until the first refueling outage. Staff, ff. Tr. 2281, at 52. Applicants have committed to monitoring the couplings for leakage and replacing them as necessary. Christiansen, Tr. 2495. The Board agrees with the Staff that it would be better to replace the couplings before operation, but finds that, with careful monitoring by PNPP, replacement could be delayed until the first refueling outage.

Foundation

OCRE believes that there is insufficient contact between the engine base and its foundation. OCRE Proposed Opinion at 32. The PNPP requirement was for 85% contact between the engine base and the chock plates. The chock plates were inspected and an engineering evaluation was made for plates with less than 85% contact. Hot and cold crankshaft deflection measurements were then conducted which showed that the engine was well supported. Finding 200. The Board has no evidence from the record before us to suggest that this is not an adequate procedure, and therefore finds that the foundation is acceptable.

Conclusions

The Board finds that the Owners Group plan for the PNPP diesel generators, if followed, provides the requisite assurance of the reliability of the emergency power system. It is a straightforward program designed to eliminate generic design and maintenance problems. One purpose of the program is to make sure that any failure of a unit would be limited to some random or unpredictable event. It does not — and, indeed, cannot — claim that failures will never occur. PNPP has committed to following the Owners Group plan, as well as recommendations by the Staff as set forth by PNL. The Board finds that the Owners Group plan provides a well-thought-out program which, if implemented properly, provides reasonable assurance that TDI diesels will reliably carry out their intended function. We further find that Applicants' implementation of the plan meets or exceeds the requirements therein and provides further assurance that emergency power will be available when and if needed. We therefore find that Perry's diesel engines have met regulatory quality standards and that emergency power will be available when needed. We conclude that the Applicants have complied with GDC 1 and 17, and Contention 16 is accordingly dismissed.

II. FINDINGS OF FACT

A. Emergency Planning (Issue 1)

1. NUREG-0654 includes NRC/FEMA regulatory criteria which call for a review of evacuation time estimates (ETEs) by principal State and local organizations and the inclusion of such comments in the ETE submittal. Shapiro, ff. Tr. 3111, at 3.

2. The HMM Associates, Inc., prepared the ETE study for the Perry Nuclear Power Plant plume exposure pathway, Emergency Planning Zone (EPZ), and has performed similar ETEs at a number of other nuclear power facilities. McCandless, ff. Tr. 2791, at 1; Tr. 2793-94.

3. In preparation of the Perry ETE, officials of HMM met with officials from Ashtabula, Lake and Geauga County Disaster Services Agencies (DSA) and the Sheriffs' Departments. Agreement was reached with the governmental representatives on methodology, input data, assumptions used, and the plans and procedures for the study. McCandless, ff. Tr. 2791, at 2-3.

4. A March 1984 draft ETE was sent to DSA Directors and Sheriffs of the three counties and to the Ohio State DSA for review and comment. *Id.* at 3; Shapiro, ff. Tr. 3111, at 3.

5. The Agencies' comments have been reflected in the February 1985 revision of the ETES. McCandless, ff. Tr. 2791, at 3.

6. Comments on the ETES from local and State officials were submitted to the NRC with Revision 4 of the emergency plan on February 20, 1985. *Id.*; Perrotti, ff. Tr. 3111, at 2.

7. NUREG-0654 provides no indication that specific individuals must be contacted for review and comments on a nuclear facility's ETE and the intent is to have knowledgeable officials carry out this assignment. Perrotti, ff. Tr. 3111, at 3.

8. Both HMM Associates and FEMA rely on local emergency response officials to indicate who should be involved in commenting on ETES. Perrotti, Tr. 3122; McCandless, Tr. 2812-14.

9. Neither the State nor any of the three counties within the EPZ have indicated that they were not provided an opportunity to comment on the ETES. Shapiro, ff. Tr. 3111, at 3; *see also* McCandless, Tr. 2830.

10. HMM Associates met with the three county DSA directors and the county engineers in March 1985 and concurrences were received for the February 1985 revisions of the ETES. McCandless, Tr. 2795-99.

11. There are four classes of emergency action levels (EALs) — Unusual Event, Alert, Site Area Emergency, and General Emergency — which, based on the existence of specific plant conditions, can be declared. Hulbert, ff. Tr. 2965, at 2.

12. Revision 3 of the Perry emergency plan sets forth in Table 4-1 over 200 individual EAL indicators. Thirteen indicators were incomplete due to the fact that values which had to be included were unavailable at that time. A comparable value, however, was specified. *Id.*

13. Revision 4 of the Perry plant, issued in February 1985, includes either the required missing indicators or alternate indications that were selected. *Id.*

14. The Applicants' emergency classification and action level scheme is now considered complete and adequate. *Id.* at 3; Perrotti, ff. Tr. 3111, at 3-4.

15. Nomograms are recommended in EPA's Manual of Protective Action Guides but other methods can be used as well. Sternglass, Tr. 2728.

16. Information in the Applicants' emergency plan, Table 1.2, on radiation exposure of fetuses refers to the ingestion pathway area and not the inhalation pathway area with which EALs are concerned. Sternglass, Tr. 2650-54.

17. The conformity of Perry's EALs to NUREG-0654, Appendix I, which provides example initiating condition guidance, is under NRC

review. Any discrepancies will have to be corrected prior to licensing. Perrotti, ff. Tr. 3111, at 4.

18. NUREG-0654, Criterion H.7, states “[e]ach organization (Licensee, State and Local) where appropriate, shall provide for offsite radiological monitoring equipment in the vicinity of the nuclear facility.” Bowers, ff. Tr. 2914, at 2.

19. NUREG-0654, Criterion I.8, which calls for each organization — Licensee, State, and local — to provide for rapid assessments of radiological hazards, suggests the use of mobile monitoring teams to perform this assessment. *Id.* at 4.

20. The planning standards recommend in NUREG-0654, Criteria I.9 and I.11, that the Licensee and State have the capability to detect and measure radioiodine concentrations in the EPZ and also that arrangements be made with Federal and/or State resources to locate and track an airborne radioactive plume. *Id.* at 2.

21. A task force from FEMA considered the concept of a system of fixed monitoring locations as a method of estimating the dispersal of the plume and for projecting exposure patterns. However, the system was rejected because of the large number of sophisticated detectors and necessary telemetry required and a flexible system with portable instrumentation was considered more cost-effective. *Id.* at 2-4.

22. There is no regulatory requirement or guidance that each jurisdiction within the EPZ have an independent or a fixed radiation monitoring system. *Id.* at 2; Shapiro, Tr. 3136.

23. For the Perry facility, a fixed monitoring system would require 103 locations at an installation cost in excess of \$2,635,000. The maintenance of such a system would require three full-time people and the annual cost of calibrating each unit would be approximately \$400 per unit. Bowers, ff. Tr. 2914, at 3; Bowers, Tr. 2916-19.

24. Mobile survey teams that can move to where the plume is located to make measurements are the most effective method for evaluating accidental radiation releases. Bowers, ff. Tr. 2914, at 3.

25. To make meaningful projections for monitoring data, it is necessary to identify the center line of the plume. Mobile monitoring teams have this capability but fixed monitors do not. Dose measurements at fixed monitors could give instantaneous readout but their measurements cannot be extrapolated to determine doses at other locations. Bowers, Tr. 2927-32.

26. The State of Ohio maintains three trained and equipped radiological monitoring teams to respond to any radiation emergency. Cole, ff. Tr. 2835, at 1, Attach. 1, 2 and 3.

27. State teams which are dispatched at the alert stage can reach the Perry site area in 3-3½ hours and will transmit samples and data to the State's emergency operations center for assessment. Cole, ff. Tr. 2835, at 2-3.

28. A State response team supervisor is dispatched by air at the alert stage to monitor general plume direction, its center line and also to direct the monitoring teams' location and activities. A DSA employee who works and lives in Perry could, if necessary, take gross gamma readings prior to arrival of the State teams. The State has more than twenty-five helicopters available for emergency purposes and their response time to Perry is 1 hour and 15 minutes. *Id.* at 3-4; Cole, Tr. 2859, 2878.

29. State monitoring teams have demonstrated their capabilities during eight emergency planning exercises and have received no Category A deficiency reports. Cole, ff. Tr. 2835, at 5.

30. Emergency plans of the three counties in the EPZ provide that they will rely on the State's field monitoring capabilities. *Id.* at 5-6.

31. If necessary, the State, prior to the arrival of the monitoring teams, can make protective action recommendations based on data from the Applicants' monitors. Cole, Tr. 2888-91.

32. Both the Applicants and Lake County have monitoring teams for dispatch in a radiological emergency with an Applicant capability to deploy teams within 30-45 minutes of an alert declaration. The U.S. Department of Energy has a capability to provide offshore monitoring by helicopter on Lake Erie. The State, NRC and the Applicants also have a total of seventy-seven thermoluminescent dosimeters (TLDs) throughout the EPZ. Bowers, ff. Tr. 2914, at 4-6; Cole, Tr. 2901.

33. In addition to the State and Lake County, the U.S. Department of Energy, U.S. Environmental Protection Agency and the NRC all have a capability for radiological monitoring. A radiological monitoring and assessment center will be set up by the DOE to relay coordinated information and data. Cole, ff. Tr. 2835, at 5.

34. The State has the primary responsibility for independent offsite monitoring. Shapiro, ff. Tr. 3111, at 4.

35. Planning standard (L) of NUREG-0654 calls for "arrangements" to be made for medical services for contaminated injured individuals and three criteria — L.1, L.3, L.4 — apply to local and/or State governments. Shapiro, ff. Tr. 3111, at 6-7.

36. Four county hospitals referred to in emergency plans near the Perry facility (Lake County Memorial East, Lake County Memorial West, Geauga Community Hospital, and the Ashtabula County Medical Center) have facilities and trained personnel to handle contaminated injured individuals. Letters of agreement to carry out emergency plan

duties are being obtained. Linneman, ff. Tr. 2980, at 4-6; Shapiro, ff. Tr. 3111, at 6-7 and Attach. 6 at 5, 12, 15.

37. Additionally, there are twenty-six hospitals in counties around the EPZ which are accredited for providing emergency handling of contaminated individuals and are capable of dealing with radiation victims. All hospitals have written disaster plans which provide for emergency patient overflow from the hospital to be handled by other hospitals. The hospitals with capabilities to handle radiation victims are listed in State and local plans. Linneman, Tr. 2998-99, 3037, 3041; Shapiro, ff. Tr. 3111, at 6-7.

38. Approximately eighty-five personnel in the four county hospitals have received radiological training for treating injured persons. Linneman, ff. Tr. 2980, at 5; Linneman, Tr. 3010-13, 3023-25.

39. All four county hospitals have equipment for detecting high and low radiation levels. Linneman, Tr. 3025.

40. The Ashtabula General Hospital has a radiation emergency area designated with radiation measurement and contamination equipment available. The hospital is accredited not only under the State's Joint Commission on Accreditation of Hospitals but it also has an NRC nuclear license which requires the facility to demonstrate a capability to handle contaminated injured persons. Linneman, Tr. 2982-83, 3034-36.

41. Contaminated persons with injuries seldom require hospitalization and contaminated persons without injuries would be decontaminated outside of hospitals. Linneman, Tr. 2995, 2998, 3033.

42. Medical facilities within a 10- to 25-mile radius of the Perry facility are adequate to handle even the worst-case assumptions of consequences of a nuclear accident at Perry. Linneman, Tr. 3003.

43. The best equipment or procedure to diagnose radiation overexposure is for the obtaining of complete blood counts and platelet counts. This is available at the four county hospitals. Linneman, Tr. 3029-31.

44. Local plans are responsible for transportation of radiological victims to medical facilities. The State's emergency plan provides for sixty-five ambulances to be furnished by the Ohio National Guard, if necessary, for additional transportation needs. Shapiro, ff. Tr. 3111, at 7.

45. A siting study by the Sandia National Laboratory (NUREG/CR-2239) was inappropriate to cite for a reactor accident at a facility like Perry. The study is based on extremely conservative assumptions. Hankins, ff. Tr. 3158, at 2-7; Hankins, Tr. 3172-76.

46. Severe accident evaluations of the BWR/6-Mark III, comparable to the PNPP specific design, show releases orders of magnitude below those assumed in the Sandia study. Those design-specific releases cause no early fatalities and do not require emergency care. Hankins, ff. Tr.

3158, at 4-7. A GE study, utilizing Perry's specific site characteristics, shows that a core-melt accident produces low doses (less than 25 rem) as close as 1 mile to the plant. *Id.* at 9.

47. Letters of agreement from school districts for the use of school buses during emergency evacuation activities have not, as yet, been obtained. Baer, Tr. 3049.

48. Since school buses are owned and controlled by local school districts, it is necessary to obtain school officials' cooperation for the use of buses during emergencies. Shapiro, ff. Tr. 3111, at 9.

49. All three counties are in the process of obtaining the required letters of agreement and FEMA will review them for compliance with NUREG-0654. *Id.* at 9; Baer, Tr. 3049.

50. There are twenty-four school districts from which letters of agreement are being solicited. Baer, Tr. 3050.

51. It is anticipated that letters of agreement concerning school bus use will be obtained before fuel load. Baer, ff. Tr. 2047, at 2.

52. The letters of agreement are to follow the installation of school bus radios which are being provided by the Applicants. Most school districts appear receptive to issuing the letters. Baer, Tr. 3050-52.

53. The emergency plans of Lake, Ashtabula and Geauga Counties provide for monitoring, decontamination and evaluation of vehicles and property at reception centers. Standard operating procedures are maintained as supporting documents by the Disaster Services Agencies of the three counties and provide guidance to fire departments. The fire departments are responsible for monitoring and decontamination of property at reception centers. Baer, ff. Tr. 3055, at 1-2.

54. More than twice the number of fire department personnel needed for monitoring and decontamination activities at reception centers are in the process of being trained for this purpose and the training course has specific instructions for handling contaminated property and vehicles. *Id.* at 2-3.

55. Emergency kits containing equipment and supplies for monitoring, decontamination and handling of property and vehicles are being assembled and will be in place at each reception center prior to fuel load. *Id.* at 3; Baer, Tr. 3056.

56. The Ohio Environmental Protection Agency will have responsibility for disposal of contaminated property even though County plans mistakenly indicate the Applicants will provide this service. Baer, Tr. 3057; Shapiro, Tr. 3130.

57. The Ohio Disaster Services Agency Radiological Training Manual does not require fire and police department or individually

owned vehicles to be decontaminated at places other than reception centers. Wills, Tr. 3202-04.

58. Decontamination procedures for vehicles call for use of open fields adjacent to reception centers. If the fields are subsequently found contaminated, there are decontamination methods available, including spraying with water, to dilute the concentrations accumulated. Baer, ff. Tr. 3055, at 3; Tr. 3065-66.

59. Commission regulations at 10 C.F.R. § 50.47(b)(11) require that means be available for controlling radiation exposures to emergency workers. NUREG-0654, Criterion K.3, provides the guidance of recommending dosimeters for emergency workers. There is no regulatory requirement for bus drivers to be provided with protective gear such as respirators and goggles. Baer, ff. Tr. 3069, at 2; Shapiro, ff. Tr. 3111, at 11.

60. County emergency plans and school district procedures provide for the distribution and use of dosimeters for bus drivers. These dosimeters will be worn at all times and the drivers will be trained in their use. Standard operating procedures require bus drivers to report to decontamination stations if radiation exposure is indicated. Baer, ff. Tr. 3069, at 2-3; Shapiro, ff. Tr. 3111, at 11-12.

61. Bus drivers are unlikely to be exposed to radioactivity since their duties in an emergency call for their responsibilities to be carried out and completed prior to any significant releases; all buses will have radios for receipt of information from radiological monitoring teams. Baer, ff. Tr. 3069, at 3-4; Baer, Tr. 3073-74, 3080-82.

62. The Ohio Department of Health requires that respiratory equipment be provided to all emergency workers under certain airborne release deposit conditions. However, that requirement is in the process of being revised to eliminate any necessity for such equipment for bus drivers. Shapiro, ff. Tr. 3111, at 11; Wills, Tr. 3207.

63. More than half of the deficiencies reported in the FEMA Interim Report (March 1, 1984) were noted as corrected in the report itself and the remaining have since been corrected or are in the process of being corrected. Baer, ff. Tr. 3088, at 2.

64. The remaining deficiencies in the plans concern an emergency information handbook and this handbook has been reviewed by NRC and found adequate. *Id.* at 3; Baer, Tr. 3097-98; Perrotti, Tr. 3145-46.

65. All local plans have been revised to reflect corrective actions of the deficiencies noted in the Interim Report. Baer, ff. Tr. 3088, at 2 and Attach. A.

66. A full exercise in late 1984 was held and no Category A deficiencies were noted for any State or local response organization. Shapiro, ff. Tr. 3111, at 13.

67. The thirty-five deficiency items referenced by the Staff in SSER-4 have been resolved in subsequent revisions of the PNPP emergency plan. Hulbert, ff. Tr. 3091, at 2.

68. The Staff is reviewing the Applicants' commitments in the review it is undertaking of the PNPP Emergency Plan, Revision 4, dated February 1985. Perrotti, ff. Tr. 3111, at 5.

B. Hydrogen Control (Issue 8)

69. Applicants installed a distributed igniter system in PNPP to control large amounts of hydrogen that could be released in a degraded core accident. Applicants' Exh. 8-1.

70. Applicants prepared a preliminary analysis of the hydrogen control system at Perry and an analysis of its containment strength which have been submitted to the Staff. Applicants' Exhs. 8-1, 8-4.

71. Applicants have proposed a scope of the preliminary evaluation and analysis at Perry which was accepted by the Staff. Applicants' Exhs. 8-1, 8-2, 8-3.

72. Applicants' preliminary analysis references the hydrogen control system at the Grand Gulf plant which was analyzed and licensed by the Staff. Grand Gulf is similar in design to Perry. Applicants' Exh. 8-1.

73. Applicants' final analysis was expected to be complete by mid-1986. Applicants, ff. Tr. 3241, at 22. Applicants now expect the final analysis to be complete by the end of 1986 (Applicants' Letter to the Board, June 28, 1985).

74. Hydrogen control at the Perry plant will be achieved using two different systems. The first, a combustible gas control system, is designed to meet the original provisions of 10 C.F.R. § 50.44 for design basis accidents. Applicants, ff. Tr. 3241, at 36-37. The second, a hydrogen ignition system, is designed to control large amounts of hydrogen beyond those covered by design basis accidents. *Id.* at 35. The combustible gas control system is undisputed in this proceeding. OCRE Proposed Opinion at 14.

75. The Applicants' distributed igniter system is designed to burn an amount of hydrogen equivalent to that generated from a metal-water reaction involving up to 75% of the fuel cladding in the active fuel region. Hydrogen will burn at low concentrations below levels which

could potentially threaten containment integrity. Applicants, ff. Tr. 3241, at 29; Karlovitz, Tr. 3258; Notafrancesco I, ff. Tr. 3676, at 3.¹⁴

76. The distributed igniter system consists of 102 thermal glow plug igniters of a type used in diesel engines which are placed throughout the drywell, wetwell and upper containment at Perry. Applicants, ff. Tr. 3241, at 32-34. The igniters are powered from 120-volt AC class 1E power distribution panels and are also capable of being powered by the emergency diesel generators. *Id.*; Applicants' Exh. 8-1 at 9. The glow plug igniters have been tested and have demonstrated reliable ignition of hydrogen. Applicants, ff. Tr. 3241, at 30-31; Fuls, Karlovitz, Tr. 3639-40.

77. The igniters will achieve a service temperature of 1700°F which will cause ignition of hydrogen in a controlled manner at or near its lower combustion limit. Applicants, ff. Tr. 3241, at 32; Notafrancesco I, ff. Tr. 3676, at 3.

78. The 102 igniters are divided into six groups of approximately equal number and two power divisions: three groups are in Division 1 and three in Division 2. Each group is powered from a separate distribution power panel and each division from a separate power supply. Applicants, ff. Tr. 3241, at 32; Notafrancesco I, ff. Tr. 3676, at 4.

79. Spaced approximately 30 feet apart with alternating divisional power supplies, a distance of approximately 60 feet separates igniters powered from the same emergency power division. Two igniters, one from each power division, are located in enclosed containment areas that could accumulate hydrogen and the number and arrangement of igniter assemblies are similar to those at the Grand Gulf Nuclear Station. Applicants, ff. Tr. 3241, at 33-34; Buzzelli, Richardson, Tr. 3642-44.

80. Locations of the igniters have been changed as planning has progressed. OCRE's Exhibit 16 showed a draft description of the PNPP igniter locations which was superseded by location descriptions in the preliminary evaluation report (Applicants' Exh. 8-1). The changes were made to meet spacing criteria and to ensure availability of support structures in the containment. Buzzelli, Tr. 3503-05, 3607-08, 3640-42.

81. Applicants' combustion consultants have reviewed the PNPP igniter system and concluded that it will be able to safely and effectively burn large amounts of hydrogen. Applicants, ff. Tr. 3241, at 30-31. Neither the spray shield affixed to the igniter assembly nor the placement of assemblies underneath ceilings or near walls will inhibit hydrogen burning. Lewis, Tr. 3513-14. Hydrogen will be ignited at approximately 8% concentration in air by the igniters and burning of hydrogen

¹⁴ Mr. Notafrancesco of the NRC Staff submitted testimony in two parts which we designate I and II.

would be repeated as succeeding flammable mixtures are formed during an accident. This result is substantiated by both experimental and theoretical data. Applicants, ff. Tr. 3241, at 31.

82. The igniter system is designed for manual initiation when the reactor water level drops to the top of the active fuel. Applicants' Exh. 8-1 at 12; Applicants, ff. Tr. 3241, at 34; Buzzelli, Tr. 3424.

83. The distributed ignition system is designed to cover all of the area in the containment. When a particular area exceeds 6 to 8% of hydrogen, ignition will occur and hydrogen thus will not accumulate at higher concentrations. Hydrogen burns will take place at different places in the containment. Garg, Tr. 3749-50; Notafrancesco, Tr. 3749.

84. The igniters used at Perry have been tested under experimental conditions where only one igniter was used. There are 102 igniters in containment to account for variation in hydrogen concentrations at different locations. Karlovitz, Tr. 3639-40. An igniter is placed everywhere in containment that hydrogen can go and specific locations of igniters are not therefore significant to the overall analysis. Richardson, Tr. 3643.

85. PNPP emergency instructions for operation of the igniter system and the generic emergency procedure guidelines on which they will be based are currently under development and will be in place prior to exceeding 5% power. Buzzelli, Tr. 3425-27.

86. The Applicants have prepared an analysis of the PNPP containment ultimate structural capacity and an evaluation of the pressure capability of the PNPP drywell. Applicants, ff. Tr. 3241, at 24-25; Applicants' Exh. 8-1, §§ 3.1, 3.2 and 5.3; Applicants' Exh. 8-4.

87. The Ultimate Capacity Report contains analyses of the internal pressure capacity of the containment using ASME service level C and D stress limits as well as mean and lower-bound yield values using actual material strengths. Applicants' Exh. 8-4; Alley, Tr. 3253-54, 3283-85, 3583-85.

88. The ultimate pressure capacity of the Perry containment steel shell was analyzed in accordance with the requirements of the ASME Boiler and Pressure Vessel Code § III, Div. I, subarticle NE-3220 service level C limits. In performing this analysis, a combination of dead load and internal pressure load of 45 psig was used as required by the NRC. Yang, ff. Tr. 3676, at 2. The pressure capacity of the steel shell knuckle region is 78 psig and the capacity of the limiting shell penetration is 50 psig. The design pressure for the Perry containment is 15 psig and the design meets NRC requirements. The pressure capacity of the limiting shell penetration of 50 psig has a factor-of-3 margin with respect to the containment design pressure. This demonstrates a conservative Perry design. *Id.*

89. The Staff concluded that the analytical results demonstrate the adequacy of the pressure capacity of the PNPP containment steel shell and has accepted Applicants' analysis. *Id.* at 2; Staff Exh. 8 at 6-5; Applicants, ff. Tr. 3241, at 24; Alley, Tr. 3588-89.

90. The Ultimate Capacity Report established that the PNPP containment vessel and all key components meet the service level C requirements of the ASME Code considering pressure and dead load alone. Applicants, ff. Tr. 3241, at 26; Alley, Tr. 3590; Applicants' Exh. 8-4 at 1-2; Yang, ff. Tr. 3676, at 2.

91. The shell capacity in the cylindrical shell region is 79 psi, which is well above the 50-psi minimum for the controlling penetration, and is only marginally affected by slight increases in stress caused by the as-built condition. The pressure capacity of the dome is about 78 psi and cylindrical region about 79 psi. Alley, Tr. 3596-97.

92. Use of service level C limits to define the PNPP pressure capability represents a conservative approach to assuring that containment integrity will be maintained. The ASME Code permits higher service level D limits to be used where the primary intent is to assure that violation of the pressure-retaining boundary will not occur. The Code states that service level D limits are appropriate for extremely low probability postulated events. A degraded core accident addressed in the hydrogen rule would fall into this category. Applicants, ff. Tr. 3241, at 27; Staff Exh. 8 at 6-5. Staff Exh. 8, SSER-6, is not bound in the record.)

93. The service limits of the ASME Code are directly applicable to stress ranges that are within the elastic limits of the containment materials. The programs used by CEI used stresses within the elastic limits and do not consider inelastic nonlinear behavior of the structure. Codes for analyzing nonlinear inelastic behavior are limited in applicability, but these have not been used to predict ultimate capacity to failure of the PNPP containment structure. Alley, Tr. 3393.

94. The Applicants rely on ASME service level C limits to establish the pressure-retaining capacity of containment. The controlling lower-bound pressure capacity for the PNPP containment is 50 psig for penetration 414. Applicants, ff. Tr. 3241, at 24, 28; Alley, Tr. 3585-86; Applicants' Exh. 8-4 at 16-17, 20-23, Table 10.

95. The ASME Code provides for approximately a 10% reduction in stress allowables due to increased temperature in the range expected from hydrogen burns; this reduction also applies to the limiting containment penetration, P414. In the analysis performed of penetration P414, minimum specified material strength was used rather than actual material strength. The capacity would be 30% higher using actual material strength. Accordingly, the 10% reduction due to temperature effects is

not significant and the analysis remains conservative. Alley, Tr. 3286, 3586-87.

96. The actual pressure capacity of the containment is over three times greater than the design level of 15 psig. Applicants, ff. Tr. 3241, at 26; Yang, ff. Tr. 3676, at 2; Staff Exh. 8 at 6-5.

97. The PNPP containment design is adequate to handle negative pressures following the combustion of hydrogen since PNPP has redundant vacuum breakers which would alleviate such pressures. Applicants, ff. Tr. 3241, at 25; Applicants' Exh. 8-1 at 13-15.

98. The ultimate capacity of the PNPP containment structure for the limiting penetration is significantly above the pressures predicted for a hydrogen event at PNPP. *Id.* at 24. Applicants, ff. Tr. 3241, at 28.

99. The PNPP containment vessels contain welds inaccessible for repair that deviated from ASME Code requirements. OCRE Exh. 13 at 1-1 to 1-3; Staff Exh. 6 at 3-1, 3-2. The location of the inaccessible weld flaws is in the lower weld courses of the containment vessel for both Units 1 and 2. The Applicants' request for Staff acceptance of the flawed welds without repair or reradiography was supported by a technical report commissioned by the Applicants from APTECH Engineering Services, Inc. OCRE Exh. 13.

100. The APTECH report presents a fatigue and fracture mechanics analysis to predict the possibility of fracture based on weld flaw sizes, material properties, and operating conditions of the welds. The assessment depends in part on weld radiographs, some of which were of poor quality. Computer enhancement of the radiograph was used to aid interpretation. However, APTECH has demonstrated through calibration measurements that its method for flaw depth measurement, while not always accurate, is conservative (i.e., projects deeper flaws than actually exist.) OCRE Exh. 13, Appendix B at 9 and Table 2. APTECH concludes that sufficient data from radiographs exist to characterize the maximum extent of a defect that could remain in the structure and has conservatively analyzed the maximum potential defects. OCRE Exh. 13 at ii.

101. On the basis of its review of the APTECH Report, the Staff found that the analysis and techniques performed to assess the effects of the flawed welds demonstrate that General Design Criterion (GDC) 51, Fracture Prevention of Containment Pressure Boundary, would be met without repairing the flaws in the inaccessible welds of the containment shell. The analyses show that the flaws will have virtually no growth under the operating loads for which the shell was designed and that the steel materials used in the containment pressure boundary have adequate toughness so that a large through-thickness flaw would not cause a rapidly propagating fracture. Staff Exh. 6 at 3-2, 3-3.

102. The Staff accepted Applicants' proposal to leave the weld flaws in the containment shell without repair. The containment shell would not be strengthened significantly by repairing the welds which are a small percentage of the wall thickness, and that there could be added risks in making weld repairs because of the distortion induced and high restraint of the joint configurations. *Id.* at 3-3.

103. The APTECH report did not specifically consider fatigue crack growth in the containment shell due to multiple hydrogen deflagrations. Alley, Tr. 3306, 3325. Applicants have confirmed through additional analysis that stresses in the shell due to hydrogen burns would be less severe than those used in the APTECH analysis. Alley, Tr. 3313. Pressures from hydrogen burns are expected to be of such short duration that they would not be of significant concern to fatigue crack growth. Alley, Tr. 3325, 3592-93; Buzzelli, Tr. 3326; Wilcox, Tr. 3755. The APTECH conclusions are not affected by consideration of elevated temperatures expected from hydrogen burning. Alley, Tr. 3590-91.

104. The APTECH Report used the criterion of fracture initiation in containment as the definition of failure in its fracture analysis because the materials used in containment vessels have lower resistance to a propagating fracture than they do to fracture initiation. This criterion is therefore conservative. OCRE Exh. 13 at 2-3.

105. When the materials of the Perry containment were welded, a heat-affected zone, which is not reduced in strength due to welding, occurred in the base metal. Wilcox, Tr. 3753-54. Repeated repair of a weld on the materials used in the containment vessel does not cause embrittlement of the base metal and will not lessen the strength of the weld or the areas around the weld. Wilcox, Tr. 3754-55.

106. Brittle fracture is not a concern for the carbon steel used in the Perry containment because it is a ductile material and has excellent toughness properties even at room temperature. Wilcox, Tr. 3757.

107. Applicants have analyzed possible leakage in containment through the upper personnel airlock and the equipment hatch as well as through other containment penetrations. The personnel airlock, equipment hatch and penetrations meet the prescribed service level C limits of the ASME Code. The analyses showed that deflections at the cover flange and barrel flange of the equipment hatch would occur at 45-psig internal pressures. The magnitudes of the deflections were calculated and were found to be less than the O-ring compression on those flanges. Therefore, springback of the O-rings is sufficient to prevent leakage. The maximum permissible internal containment pressure to meet level C stress limits is 50.2 psig for the personnel airlock and 52.6 psig for the equipment hatch. Applicants' Exh. 8-4 at 14-15.

108. The integrity of O-ring seals is not a safety problem at temperatures up to 300°F. Compression set is not likely for the temperature range and durations of temperatures that are likely to occur in a hydrogen burn event considering the specific materials from which the O-ring seals are fabricated. Alley, Tr. 3581-82. Maintenance of seals will be performed. Alley, Tr. 3278.

109. The smoothness on mating surfaces of equipment hatch flanges is 80 micro-inches, which is more than adequate to facilitate leaktightness of the seals. Alley, Tr. 3583.

110. One penetration, numbered 205, does not satisfy the service level C limits of the ASME Code when minimum specified material strengths are used to perform the analysis. However, when the analysis is based on actual material certification data, the stress is smaller than the Code-allowable stress. Applicants' Exh. 8-4 at 16.

111. All lower containment penetration analyses showed that actual stress intensities were less than allowables without consideration of the annulus concrete that fills the space between the steel containment and the outer concrete shield building. This is a conservative analysis since the stiffness of the concrete would prevent the steel containment vessel and penetration area from being stressed to as great a value as used in the analysis. Applicants' Exh. 8-4 at 18.

112. The PNPP personnel airlocks use inflatable seals to prevent leakage. Alley, Tr. 3362. Evaluation of inflatable airlock seals at Perry found them to be qualified for use at Perry during accident conditions at anticipated drywell temperatures. OCRE Exh. 14. An equipment qualification program which includes qualification of the drywell personnel airlock and the containment personnel airlock seals is in progress. Buzzelli, Tr. 3375.

113. Seals used in the Perry drywell equipment hatch and lower personnel airlock hatches would be able to survive expected temperatures from diffusion flame burning. Richardson, Tr. 3623-24.

114. The Applicants demonstrated the pressure capacity of the containment drywell structure by referencing a similar structure at the Grand Gulf Nuclear Station. The Grand Gulf drywell structure had a positive pressure capacity of 67 psig and a negative pressure capacity of 89 psig. The Staff accepted the Applicants' referencing of the Grand Gulf results as appropriate for demonstrating that substantial margin and capability above required capacities are expected for the Perry drywell structure. Yang, ff. Tr. 3676, at 3; Staff Exh. 8 at 6-5.

115. Voids found in the concrete wall of the Perry drywell consisting of small gaps behind a quarter-inch liner have no effect on the drywell structural capacity. A few larger voids were found and subjected to a

detailed evaluation. All voids have been repaired. An inspection program was instituted to make sure there were no other voids. Alley, Tr. 3415-17.

116. The purpose of containment response analysis is to predict the thermal and pressure environments in containment as a result of burning large amounts of hydrogen. The analysis depends on postulated accident scenarios and computer models to predict hydrogen releases, combustion, temperatures, pressures and effects on equipment survivability. Applicants, ff. Tr. 3241, at 37.

117. Two postulated accident scenarios for containment response analysis were selected on the basis that they represent probable events initiated by plant transients and they are scenarios which dominate plant risk. *Id.* at 37-39.

118. The Staff considers the scenarios used by the Applicants for their preliminary analysis to be adequate. Notafrancesco II, ff. Tr. 3676, at 2-3.

119. A computer program termed MARCH used in the analysis was developed by Battelle-Columbus for the NRC and models the release of hydrogen with steam from whatever openings in the primary system may be appropriate to the scenario. Applicants, ff. Tr. 3241, at 40.

120. In their preliminary analysis, the Applicants adopted the hydrogen and the steam release rates calculated for the Grand Gulf plant. Because Perry has fewer fuel bundles than Grand Gulf, the releases would be bounded by the rates calculated for Grand Gulf. The Staff considers the MARCH 1.1 code, which was used to calculate the hydrogen release rates, appropriate for the preliminary analysis. Notafrancesco II, ff. Tr. 3676, at 3-4.

121. The Staff is aware of MARCH code shortcomings and newer versions of MARCH have incorporated corrections which show substantially less hydrogen production. *Id.* at 4-5.

122. Containment response to hydrogen combustion was analyzed using the computer program termed CLASIX-3. The code takes into account Mark III containment features including the suppression pool, refueling pool, vacuum breakers, and drywell purge system. It computes temperatures, pressures and the distribution of atmospheric components in containment which are oxygen, nitrogen, hydrogen, and steam. Applicants, ff. Tr. 3241, at 41, 48.

123. The CLASIX-3 model used for PNPP analysis is identical to that used for the preliminary Grand Gulf analysis, but input parameters were modified as necessary to account for differences in design features or design values. Hydrogen and steam release calculated by the MARCH code are provided as input to the CLASIX code. *Id.* at 42-44.

124. Additional input parameters needed to model ignition and combustion of hydrogen in CLASIX-3 are based on experimental data and plant design values and also come from engineering judgment or hand-book values. *Id.* at 44-45.

125. Theoretical and experimental data show that hydrogen, given an ignition source, will burn in a propagating manner at concentrations in air above 8%. The pressures calculated from hydrogen burn are conservative because experimental results show that theoretical pressures are not realized for burns of hydrogen below about 12% concentration. *Id.* at 45.

126. The hydrogen concentration range over which burning can occur is bounded by the limits of flammability. The lower deflagration limit of hydrogen in air is 4% hydrogen by volume for upward propagating flame, about 6½% hydrogen for horizontal propagation and about 8% for downward propagation. The CLASIX-3 analysis conservatively assumes ignition and propagation of hydrogen at 8% concentration. *Id.* at 46.

127. Detonation of hydrogen in the Perry containment by acceleration from deflagration cannot occur with thermal igniters. Lewis, Tr. 3617.

128. The CLASIX-3 analysis shows that frequent periodic deflagrations occur in the wetwell for both scenarios analyzed. Applicants, ff. Tr. 3241, at 47.

129. Most temperature excursions peak at around 800°F and pressure excursions peak at around 6 pounds per square inch (psig). *Id.* at 47-48.

130. Results of CLASIX-3 analysis show that a peak temperature of 1700°F is attained during a hydrogen release event in the wetwell under the scenario of the stuck-open relief valve. Peak pressure of slightly over 21 psig in both the wetwell and the containment also occur under the scenario. *Id.* at 48.

131. Hydrogen flame will propagate from an igniting source which is the glow plug. If the concentration is in the right range, the flame will move downwards, sideways, and upward and closeness to a wall, ceiling or shield are not impediments. The criterion for downward propagation is that hydrogen concentration be on the order of 8½% to 10%. Lewis, Tr. 3514.

132. A flame speed of 6 feet per second in hydrogen-air mixtures is conservative for use in the CLASIX analysis. Lewis, Tr. 3520-21. Lower flame speeds have been measured, and, at concentrations of 8% hydrogen, speeds of 20 meters per second have occurred due to acceleration of flames by obstacles in experimental devices. Lewis, Tr. 3523.

133. The CLASIX-3 model for containment response is conservative because hydrogen combustion will take place at varying locations in the containment; the postulated hydrogen release rates are overestimated, and the natural upward propagation behavior of hydrogen will result in burning at lower-than-postulated concentrations. The result is that a piece of equipment in the wetwell would be exposed to fewer burns and the burns would be spaced further apart than those shown in the CLASIX results. The concomitant pressure pulses would likely be less than the containment design pressure as distinguished from the containment pressure capacity. Notafrancesco I, ff. Tr. 3676, at 8.

134. The detonatable concentration range for hydrogen ranges from a lower limit of about 14% to an upper limit of about 60%. Lewis, Tr. 3523-24.

135. Detonations of hydrogen-air mixtures can be promoted by the presence of certain reactive chemical radicals. However, no evidence exists that such chemical radicals would be present in the Perry containment or that ionizing radiation could produce specific reactive chemical radicals that could accelerate deflagrations into detonations. Lewis, Tr. 3526-28.

136. Applicants' preliminary analysis of the survivability of the essential equipment exposed to the thermal environment postulated in containment during a hydrogen burn demonstrated a similarity between equipment in the Grand Gulf and Perry plants. The analysis determined the thermal response of a selected piece of essential equipment exposed to a hydrogen burn in containment. The maximum temperature reached by equipment in Perry was found to be lower than the corresponding temperature calculated for Grand Gulf and the analysis demonstrates on a preliminary basis that essential equipment in Perry will survive a hydrogen burn. Garg, ff. Tr. 3676, at 2-4; Applicants, ff. Tr. 3241, at 49-51. A preliminary identification and evaluation has been performed at Perry on equipment required to survive a hydrogen burn based on its function during and after a postulated degraded core accident. *Id.* at 50.

137. The thermal response analysis used the HEATING computer code in comparing Perry equipment with that in Grand Gulf. Garg, ff. Tr. 3676, at 5.

138. The Applicants' conclusion, with which Staff agrees, is that the thermal response of all safety-related equipment in Perry will be less severe because of lower temperatures at Perry than at Grand Gulf. *Id.* at 5. However, two items, containment locks and hatch seals and a transformer, have not been qualified. *Id.* at 6.

139. The Staff concluded that there is reasonable assurance that essential equipment will survive the pressures generated during a hydrogen

burn. Staff testimony did not explicitly demonstrate that the exceptions listed in Applicants' preliminary analysis had been considered. *Id.*; Applicants' Exh. 8-1 at 21D.

140. The Applicants' analysis of equipment pressure survivability concluded that qualification or design pressures bound the calculated peak pressures from hydrogen combustion in all cases except the containment vacuum breaker, the hydrogen mixing compressors and the discharge check valves. Applicants' Exh. 8-1 at 21D.

141. Active components of the vacuum breakers and check valves were accepted in the preliminary analysis because they will not be exposed to peak external pressures and are expected to function during hydrogen burning. Hydrogen mixing compressors of identical design at Grand Gulf were shown to survive pressures of 24 psig which bounds the peak calculated containment pressure of 21.2 psig at Perry. *Id.*; Staff Exh. 8 at 6-11.

142. The Board finds that the Staff and Applicants have given inadequate explanation for their acceptance of the exceptions of equipment pressure survivability noted by Applicants. Applicants' Exh. 8-1 at 21D; Staff Exh. 8 at 6-11; Buzzelli, Tr. 3570-71.

143. The Staff accepted the Applicants' analysis of equipment operability during a hydrogen event for four reasons. (1) The list of equipment identified in the Applicants' submittals is similar to the list of equipment found acceptable by the NRC during the Grand Gulf licensing review; (2) the comparative analysis of thermal response of similar equipment in the Perry and Grand Gulf plants shows that equipment temperatures in Perry will be lower; (3) the qualification temperatures for Perry equipment are higher than the corresponding qualification temperatures for Grand Gulf equipment; and (4) the pressures developed during hydrogen burns are smaller than the design or qualification pressures. The Staff concludes that it has been satisfactorily demonstrated from the preliminary analysis that essential equipment can reasonably be expected to survive such pressures. Garg, ff. Tr. 3676, at 7.

144. In a station blackout that had progressed to a degraded core accident which was generating hydrogen, there would be no power to the igniters. Buzzelli, Tr. 3428, 3432, 3438.

145. In a station blackout accompanied by 75% metal-water reaction, hydrogen could accumulate to a concentration of around 28% in the containment. Buzzelli, Tr. 3438. Under those conditions, hydrogen could ignite if electric power is restored to the plant but it would not detonate. Lewis, Tr. 3440. High pressures are produced by deflagrations in the station blackout scenario and 100 to 110 psi could be attained. *Id.* In the

event of station blackout, containment venting could be utilized to dissipate hydrogen rather than permitting large deflagrations. Buzzelli, Tr. 3441-42. The vent path that might be used in such an accident at Perry has not been established. However, it is under review and evaluation by plant engineering staff and consultants. Richardson, Buzzelli, Tr. 3443.

146. The probability of a need for venting the containment during a hydrogen generation event in a station blackout situation would be low, since in a station blackout, the reactor core isolation cooling system would still be operable and would maintain coolant makeup. The system has the capability to maintain core makeup in a station blackout for at least 9 hours. As long as coolant flow is occurring or is maintained, there would be no hydrogen generation. Richardson, Tr. 3609.

147. No burning of cable insulation has been observed for hydrogen concentrations less than 10% in tests at the Nevada test site. Garg, Tr. 3748. Burning has been observed at hydrogen concentrations of 10% and above. At 13% the burning was for a long time while at 10% it was for a short time. The burning of the cable did not affect its function in tests. *Id.*

148. Applicants have considered the potential for combustible material in the containment or drywell to be ignited by hydrogen burning. It was concluded in the Grand Gulf analysis and the Perry analysis that there is no potential for secondary fires. Richardson, Tr. 3580-81. However, the thermal environment from diffusion flames has not yet been defined. The capability of equipment to survive will be evaluated after the thermal environment of diffusion flames is defined. *Id.*

149. The Hydrogen Control Owners Group program intends to conduct large-scale tests on the thermal environment from diffusion flames. Richardson, Tr. 3552. Results of past 1/20th scale tests are inconclusive with regard to their applicability to a full-scale containment like Perry because the scaling relationships break down yielding conservative temperatures. Richardson, Tr. 3557.

150. Equipment and hatch seals will be evaluated in future quarter-scale testing for thermal environments which could exist from diffusion flames. Richardson, Tr. 3558-59.

151. Applicants' experts on hydrogen combustion agree that the testing of diffusion flames above the suppression pool should be conducted. The test does not have to be full scale, however, since one-quarter-scale tests would be accurate. Karlovitz, Tr. 3560-65; OCRE Exh. 17.

152. Testing of diffusion flames will utilize hydrogen release rates which are consistent with the release rate from a degraded core which could reach 75% metal-water reaction. The hydrogen release history will not attempt to be equivalent to a 75% metal-water reaction because the

metal oxidation rate would be so high that it would lead to a very rapid and high degree of core melt; this is beyond the scope of degraded core accidents and beyond the scope of the tests. Richardson, Tr. 3568.

153. Applicants have considered in their design basis analysis the possibility of violent overthrow of the suppression pool into the drywell. Differential pressures between wetwell and drywell generated during hydrogen combustion are less than those considered for the design basis. Applicants reference the Grand Gulf analysis to show that such an event would not have adverse effects on essential equipment. Richardson, Tr. 3485-96.

154. The loss of low-pressure coolant injection has been postulated for the purpose of creating accident scenarios and specific means of how this would happen have not been established. The loss of containment spray cannot be inferred from a scenario which postulates that core cooling would not be available. Richardson, Tr. 3445.

155. Heat removal from containment during a hydrogen release event can be accomplished through the residual heat removal system (RHR). This redundant system is designed to meet long-term decay heat removal requirements and all active components are located outside of containment. Richardson, Tr. 3453-54, 3611-13.

156. Mr. John M. Humphrey, a former General Electric containment systems engineer, identified a number of concerns about Mark III containments. Richardson, Tr. 3478-79. Utilities having Mark III containments have considered the so-called Humphrey concerns and have concluded, along with NRC and ACRS, that all of these concerns are second- or third-order effects and not significant from a safety standpoint. Richardson, Tr. 3481-84, 3613-14.

157. The Staff concludes that the Applicants' preliminary analysis as required by the hydrogen rule is acceptable and that CEI is in compliance with the hydrogen rule. Notafrancesco II, ff. Tr. 3676, at 6; Staff Exh. 8 at 6-1 to 6-14.

158. The Staff will require additional work for the final analysis. The Applicants must consider ATWS and station blackout as initiating events, or provide suitable justification for their exclusion. Code deficiencies must be addressed in an acceptable manner and user input parameters to the Code must be treated in a sensitivity analysis. Notafrancesco II, ff. Tr. 3676, at 6. The Hydrogen Control Owners Group has been made aware of the Staff concerns. *Id.*

C. Diesel Generators (Issue 16)

159. Perry Nuclear Power Plant has installed four Transamerica Delaval (TDI) diesel generators to provide emergency power. The

generators are DSRV-16-4 models, with sixteen cylinders arranged in two banks in a V-type block. Kammeyer, ff. Tr. 2179, at 2. Each engine-generator set is rated for continuous operation at 7000 kilowatts with a short-term overload rating of 7700 kilowatts. Staff Exh. 5 at 2.1.

160. To resolve major problems in TDI diesel generators, an Owners Group was formed by thirteen TDI-using utilities in December 1983. A program plan was submitted to the NRC Staff in March 1984, and was approved by the Staff. The plan incorporated design review, quality revalidation, engine tests and component inspection to resolve concerns about the reliability of the TDIs and was made a condition for licensing for all TDI owners. Kammeyer, ff. Tr. 2179, at 7-10; Staff, ff. Tr. 2281, at 14; Staff Exh. 1 at 1-2, 6-7.

161. The Owners Group plan consists of four parts: a resolution of known generic problems (Phase I), a systematic design review and/or quality revalidation (DR/QR) of all components important to engine reliability and operability (Phase II), engine inspection and testing in accordance with Phase I and Phase II results, and appropriate maintenance and surveillance programs. Kammeyer, ff. Tr. 2179, at 10-11, Tr. 2181-83.

162. The Owners Group plan did not rely on TDI's quality assurance program, but completely revalidated the diesels on site. Kammeyer, Tr. 2238, 2240. TDI evaluations and recommendations were considered, but were not relied on. Staff, ff. Tr. 2281, at 16.

163. In Phase I, an "Emergency Diesel Generator Component Tracking System" was developed which collected data on failures experienced in TDI diesels, both in nuclear and in other service. Sixteen components showed potential generic problems and were subjected to detailed design review. Technical problems were identified and resolved through analysis, testing and documentation reviews. Kammeyer, ff. Tr. 2179, at 11-14; Staff, ff. Tr. 2281, at 13; Dingee, Berlinger, Tr. 2470.

164. Southwest Research Institute (SwRI) reviewed, evaluated and independently verified the methodology, results and conclusions of the Owners Group studies for PNPP. Christiansen, ff. Tr. 2179, at 7-8. SwRI concluded that the sixteen Phase I components in the PNPP engines will perform their intended function. Wood, ff. Tr. 2179, at 86-87.

165. Pacific Northwest Laboratories (PNL) has reviewed for the Staff the Owners Group report on Phase I components applicable to PNPP. Berlinger, Tr. 2300-01, 2329. PNL considers that all the Phase I components are suitable for full-load operation, but will review the toriograph tests to independently evaluate results received from PNPP. Staff Exh. 5 at 3.1; Hardy, Tr. 2416.

166. Phase II of the program examined the design and quality of those components important to the operability of the engines which were not examined in Phase I. The components were reviewed in a DR/QR program. The function and role of a specific component determined whether a DR/QR or both were performed. For the PNPP engine, 171 components were selected for review. Kammeyer, ff. Tr. 2179, at 16-24.

167. The DR/QR program is based on a "lead engine" concept. A DSRV-16-4 engine installed in the Comanche Peak Steam Electric Station was chosen for the lead engine. This engine was subjected to extensive evaluation and review. Each of the 171 Phase II components at PNPP was evaluated to see if the Comanche Peak review was applicable, and the PNPP DR/QR review was applied accordingly. One hundred and fifty-three components were found to be the same. *Id.* at 23; Kammeyer, Tr. 2224, 2492-95.

168. The third phase of the Owners Group program required a complete disassembly of the PNPP engine, field inspection and reassembly. Christiansen, ff. Tr. 2179, at 7, 11; Christiansen, Tr. 2499.

169. The final requirement of the Owners Group plan consists of an ongoing comprehensive set of surveillance and maintenance procedures. PNPP is implementing all Owners Group and regulatory recommendations, as well as additional surveillance and maintenance recommendations made by PNL and SwRI. Christiansen, ff. Tr. 2179, at 12-13, 18; Christiansen, Tr. 2498. The Staff will review PNPP's implementation of the various recommendations, and believes that proper implementation will guarantee that the engines will meet GDC 17 requirements throughout the life of the plant. Staff, Tr. 2303, 2468.

170. A deficiency was reported to the NRC from Transamerica Delaval, Inc., on March 18, 1985, as required by 10 C.F.R. Part 21. OCRE Exh. 8. The potential defect was the failure of an oil plug in a DSRV-16 crankshaft which could result in engine nonavailability. The problem was apparently caused by the use of a plug made with 22- rather than 16-gauge material. PNPP diesels use plugs made of 16-gauge material, but will inspect them in any event. Kammeyer, Tr. 2230-31; Christiansen, Tr. 2262-63.

171. The failure history of TDI connecting rods principally involved use of 1-7/8-inch bolts. Wood, ff. Tr. 2179, at 82. The PNPP design uses 1½-inch bolts, which reduce stress levels in the master rod box. *Id.* There have been no failures with the use of 1½-inch bolts at the current torque level. Staff, Tr. 2435-37. Preventive maintenance at PNPP will include torque checks. Christiansen, Tr. 2489-90.

172. Connecting rod bearing shell failure has been caused by a large chamfer (1/4-inch x 45°). PNPP connecting rod bearing shells have a smaller chamfer (1/6-inch x 45°) which relieves the problem. Wood, ff. Tr. 2179, at 21-22. The bearings in place at PNPP have been inspected and found to meet Owners Group criteria. *Id.* at 26; Henricksen, Tr. 2440. The Staff agrees that the bearings are adequate. Staff, ff. Tr. 2281, at 36.

173. Cracking in the skirt-to-crown stud attachment bosses in AF model pistons at the Shoreham plant has been observed. However, the PNPP pistons are model AE, which have a lower ferrite content and are structurally stronger. The Owners Group and SwRI conclude that the PNPP pistons are capable of unlimited life under full-load conditions. Wood, ff. Tr. 2179, at 49-55. The Staff finds them to be satisfactory. Staff, ff. Tr. 2281, at 28.

174. Some instances of fretting and chrome flaking have been observed in the AE pistons. Fretting is not a serious problem. Henricksen, Tr. 2426-27; Staff, ff. Tr. 2281, at 26. Chrome flaking from piston rings and wrist pins has shown no serious damage. *Id.*

175. The friction-welded pushrods used at PNPP have experienced no failure, although there have been problems with other designs. The Owners Group conducted intensive analysis and testing of pushrods, including nondestructive tests and metallurgical evaluation. The conclusion was reached and concurred in by SwRI that the friction-welded pushrods were satisfactory. Wood, ff. Tr. 2179, at 38-42.

176. PNL has concluded that the PNPP pushrods are adequate. Staff Exh. 5 at 4.24-4.25. PNPP will confirm that Owners Group requirements for random sample testing have been followed. Christiansen, Tr. 2499.

177. Rocker arm capscrews have experienced random failures due to insufficient preload. After intensive evaluation, the Owners Group and SwRI have concluded that the capscrews are adequate. Maintenance will assure that proper preload is maintained. Wood, ff. Tr. 2179, at 6-11. PNL also found that the capscrews were satisfactory. Staff Exh. 5 at 4.27.

178. Fuel oil injection tubing has shown some problems involving leakage. The Owners Group conducted an extensive analysis of the tubing, including eddy current testing to assure the absence of flaws. Both the Owners Group and SwRI concluded that the tubing in place at PNPP is adequate for continued use. Wood, ff. Tr. 2179, at 11-14. PNL concurred that the tubing is suitable for its use. Staff Exh. 5 at 4.33.

179. TDI identified two potentially defective engine-mounted cables that did not meet IEEE-383-1974 standards. The Owners Group evaluated the PNPP design and concluded that the PNPP wiring is suitable;

SwRI agreed with their conclusion. Wood, ff. Tr. 2179, at 27-29. PNL agrees that the PNPP wiring is acceptable. Staff Exh. 5 at 4.36.

180. Airstart capscrews supplied by TDI to one utility were too long for their bolt holes, thus not allowing the airstart valves to seat properly. The Owners Group conducted an analysis and evaluation, and SwRI performed a number of analyses to determine the functional attributes of the capscrews. Wood, ff. Tr. 2179, at 34-36. PNPP inspected every bolt hole depth to determine that the capscrews would not bottom out. Christiansen, Tr. 2223; Persinko, Tr. 2420-21. The Owners Group and SwRI concluded that the capscrews were adequately designed and satisfactory for nuclear service. PNL concurs. Wood, ff. Tr. 2179, at 36; Staff Exh. 5 at 4.35.

181. Isolated failures of cylinder head studs have occurred due to insufficient preload. The Owners Group performed stress analyses of two types of studs: straight-shank and neck-shank (which are used at PNPP). SwRI reviewed the Owners Group work and agreed with the results. They both concluded, and PNL concurs, that either stud design is satisfactory. Wood, ff. Tr. 2179, at 29-33; Staff Exh. 5 at 4.23. The necked design was recommended by SwRI in part because it is less likely to lose preload. Maintenance procedures will assure that preload is maintained. Wood, ff. Tr. 2179, at 33.

182. Although the jacket water pump used on DSRV-16-4 engines does not have a history of failures, it was included in Phase I components because of failures on the DSR-48 engines used at Shoreham. Both the Owners Group and SwRI analyzed the component and concluded that the pump design at PNPP was adequate. *Id.* at 69-73. PNL concurred in their analysis. Staff Exh. 5 at 4.31.

183. Cracking in TDI cylinder heads has been observed in a number of locations. The Owners Group evaluated the cylinder heads, and a number of recommendations have been implemented by PNPP. The more important recommendations are:

- (a) The PNPP cylinder heads have been stress-relieved and welded. This treatment assures that valve seat cracking will not be a problem. Staff, ff. Tr. 2281, at 6; Kammeyer, Tr. 2232-35.
- (b) A recommendation by PNL was that none of the PNPP heads have through-wall weld repairs on one side only to avoid stress concentration. Staff Exh. 5 at 4.20. None of the cylinder heads at PNPP have such weld repairs. Berlinger, Tr. 2428-29.
- (c) All of the cylinders meet minimum fire deck thickness requirements. Kirkwood, Tr. 2431.
- (d) PNPP engines will be air-rolled prior to any planned startup and after each operation to check for water leakage from the

head to the cylinders. Christiansen, Tr. 2489, 2501; Staff, ff. Tr. 2281, at 6.

- (e) Inspection of the heads will be made regularly. Berlinger, Tr. 2427-28.

The Owners Group, SwRI, the Staff and PNL consider that the design of the cylinder heads at PNPP is adequate. Wood, ff. Tr. 2179, at 48; Berlinger, Henricksen, Tr. 2427-28.

184. Various failures in the engine bases and bearing caps have occurred which include cracking in a DSR-4 model, a nut pocket failure in a DSRV-16-4 model and through-bolt failures on a DSR-46 model. The Owners Group conducted a thorough analysis, reviewed by SwRI, of the saddle and caps, the through-bolts and the bearing cap and fastener system. The nut pocket failure was found to result from impurities in the casting material. The results of the analyses show that there would be no lateral movement of the cap due to the horizontal force of the crankshaft. Wood, ff. Tr. 2179, at 16-20.

185. Only one failure in an engine base due to material abnormalities has been reported for hundreds of diesel engines in various uses. The Owners Group did not perform metallurgical or material composition tests on the base due to the low loading of the base and its operational history. Kammeyer, Tr. 2216-17, 2504-05. The NRC Staff and PNL agree with this conclusion. Staff, ff. Tr. 2281, at 37-38. Inspection of the most highly loaded bearing cap and the most highly stressed saddle, with routine maintenance and visual inspection at each outage, is sufficient. PNPP routinely performs maintenance which includes visual inspection of each bearing saddle area. Kammeyer, Tr. 2216, 2239; Christiansen, Tr. 2260.

186. The turbochargers on TDI diesels have experienced failures in the thrust bearing, nozzle vane, nozzle ring capscrew and washer, and nozzle ring. PNPP replaced or refurbished bearings and thrust collars damaged by shop testing, and has implemented prelubrication systems recommended by the Owners Group. Staff, ff. Tr. 2281, at 38-39.

187. Vane cracking initiates below the surface of the vane hub in the vane root and cannot be detected by visual or liquid penetrant testing. Berlinger, Tr. 2353-54. Due to this impediment, vane failures can be expected to occur in the future, and could possibly severely damage the rotor; however, no turbocharger in nuclear service has ever been seriously damaged by vane failure. Staff, ff. Tr. 2281, at 39-40; Henricksen, Tr. 2443-45. The turbocharger will be subjected to stringent maintenance and surveillance to identify problems at an early stage. Berlinger, Dingee, Tr. 2470-72; Christiansen, Tr. 2490.

188. Proper alignment of the turbocharger on its mounting brackets is important as vibration or distortions can be deleterious to proper oper-

ation. However, when misalignment is discovered, it can be properly resolved. Staff, ff. Tr. 2281, at 6, 41-42.

189. While there have been no failures of the 13" x 13" crankshafts used in the DSRV-16-4 engines, the catastrophic failure of an 11" x 13" crankshaft in one of the Shoreham engines, and cracks found in the other two Shoreham crankshafts prompted an extensive Owners Group detailed design review. Wood, ff. Tr. 2179, at 74-81.

190. At San Onofre, cracking was observed in the main journal oil holes of one of the TDI engines. As the San Onofre machine was a DSRV-20 model with a significantly different crankshaft, the problems experienced at San Onofre are irrelevant to the PNPP crankshafts. Berlinger, Tr. 2329, 31; Hardy, Tr. 2409. However, the PNPP oil holes were inspected and eddy-current tested to a depth of 3 inches, as recommended by the Owners Group. Kammeyer, Tr. 2210. The eddy current tests indicated that the journal oil holes were free from defects. Christiansen, ff. Tr. 2179, at 12.

191. The PNPP diesels are not required to meet the European Ship Classification Societies rules, and the NRC Staff does not recommend that they be applied to land-based units. These requirements are inapplicable to land-based units used in nuclear service. Staff, ff. Tr. 2281, at 25. PNPP crankshafts are required to meet the Diesel Engine Manufacturers Association (DEMA) recommendations. Wood, ff. Tr. 2179, at 75.

192. The Owners Group analysis showed that crankshaft stresses satisfied the DEMA requirements. Torsiograph testing, as required by the Group, was conducted on both PNPP engines to confirm the Owners Group analysis. *Id.* at 78-81; Kammeyer, Tr. 2245-46. Tests showed that the PNPP crankshaft has a fourth-order critical speed which is close to the engines' operating speed, but the resulting stresses were well within the DEMA-allowable stresses. Kammeyer, Tr. 2245-46. The engines therefore meet PNPP's specifications. Christiansen, Tr. 2196.

193. The Staff's and PNL's interim basis for evaluating the PNPP crankshafts is the torsiograph testing previously conducted by TDI, the fact that the Owners Group calculations confirmed the previous test results, and results of torsiograph testing of other crankshafts at other plants. Hardy, Tr. 2324-26.

194. PNPP's specification on speed ranges requires that there be no deleterious critical speeds within $\pm 10\%$ of operating speed. Christiansen, Tr. 2187. Although the fourth-order critical speed is well within this range, it was found to be within allowable DEMA stress requirements. Kammeyer, Tr. 2245-46. However, PNL recommended, and the Staff concurred, that steady operation of the engines below 450 rpm, the

operating speed, be minimized. Staff Exh. 5 at 4.10; Staff, ff. Tr. 2281, at 9. PNPP has set the governor on the engines to limit the speed range to between $-\frac{1}{2}\%$ to 6% of 450 rpm during manually controlled operation when the diesels are not attached to the grid. Christiansen, Tr. 2498.

195. The Staff recommended that cylinder imbalance tests be made. Radical imbalance was simulated by cutting off all fuel to one cylinder on a PNPP engine. Christiansen, Tr. 2265; Kammeyer, Tr. 2511. Cylinder imbalance can be determined by monitoring cylinder firing pressures and exhaust temperatures. Staff, ff. Tr. 2281, at 9. This will be performed at PNPP. Christiansen, Tr. 2497.

196. PNPP conducted a 100% inspection of cylinder block tops and liner landings and no evidence of any cracking was found. Christiansen, Kammeyer, Tr. 2222.

197. Actual electrical loads to be carried by the diesel generators and their time sequence are set forth in Applicants' Exhibit 16-1 and will be verified by testing. Christiansen, Tr. 2215. Additional loads in the future would require an amendment to the FSAR and would be reviewed by the Staff. Christiansen, Tr. 2258.

198. After operation at over 50% of nameplate rating, the Owners Group recommends that blocks with ligament cracks should be inspected for stud-to-stud cracks. Any stud-to-stud cracks that extend less than 1.5 inches from the block top are acceptable. Bush, Tr. 2370, 2372; Wood, ff. Tr. 2179, at 62. Dr. Bush argues that he would limit the cracks to 0.4 inch to 0.5 inch in the presence of ligament cracks. Bush, Tr. 2372-74.

199. Cylinder liner proudness has been reduced on the PNPP engines to reduce pressure on the liner and thereby reduce the possibility of block cracking. Henricksen, Persinko, Tr. 2447-48; Christiansen, Tr. 2508. Cylinder lining proudness has been reduced to 2 mils, which will reduce stress but still maintain liner crush. Persinko, Tr. 2448; Christiansen, Tr. 2508.

200. PNPP's architect-engineer established an inspection requirement of 85% surface contact between the engine base and chocks. If contact was less than 85%, an engineering evaluation was required. The PNPP engines were inspected, and the requisite engineering evaluation was performed for chock plates with less than 85% contact. In all cases, the contact exceeded TDI's minimum requirement. Hot and cold crankshaft deflection measurements were performed which confirmed that TDI's criteria have been met and that the engine is well-supported. Christiansen, Tr. 2496-97.

III. CONCLUSIONS OF LAW

In reaching a decision herein, the Board has considered all of the evidence submitted by the parties on emergency planning, hydrogen control and diesel generators. Based upon the foregoing Findings of Fact, which are supported by reliable, probative and substantial evidence in the record of this proceeding, the Board, with respect to the issues and controversy before us, reaches the following conclusions pursuant to 10 C.F.R. § 2.760(a):

The Applicants, Cleveland Electric Illuminating Company, *et al.*, have met, subject to the conditions below, their burden of proof on each of the contentions decided in this Partial Initial Decision, and, as to these issues, there is reasonable assurance that the Perry Nuclear Power Plant, Units 1 and 2, can be operated without endangering the health and safety of the public.

In accordance with the Atomic Energy Act of 1954, as amended, and the Commission's regulations, and based on the Findings of Fact and Conclusions of Law, set forth in a partial initial decision on quality assurance previously rendered and in this Decision, the Director of Nuclear Reactor Regulation, upon requisite findings with respect to matters not resolved in the Board's Partial Initial Decision, is authorized to issue to the Applicants, licenses for the operation of the Perry Nuclear Power Plant, Units 1 and 2, upon the conditions set forth below.

Prior to the issuance of the aforementioned licenses, the Applicants shall demonstrate to the Director of Nuclear Reactor Regulation satisfactory completion of the following matters:

1. The Applicants' EALs conform to the initiating guidance of NUREG-0654, Appendix I.
2. Letters of agreement have been obtained from all school districts for the supply of buses for evacuation purposes.
3. Training of fire personnel in monitoring and decontamination procedures is complete and all reception centers are provided with necessary decontamination equipment.
4. Applicants have committed in writing to comply with the Commission's response to the remand in *GUARD v. NRC*, 753 F.2d 1144 (D.C. Cir. 1985). (Board has received notice of August 13, 1985, concerning a commitment on this issue.)
5. The items described in SSER-6 at 9-7, concerning the TDI diesels have been completed.
6. Written procedures for operation of the hydrogen igniter system are available before operation in excess of 5% power.

7. Applicants have made further confirmatory analysis of equipment in the containment that has not been qualified for pressure survivability, or that has narrow margins of pressure survivability; this includes containment vacuum breaker, hydrogen mixing compressor and discharge check valves.

IV. ORDER

Pursuant to 10 C.F.R. § 2.760 of the Commission's Rules of Practice, this Partial Initial Decision shall constitute the final decision of the Commission forty-five (45) days from the date of issuance subject to any review pursuant to 10 C.F.R. §§ 2.760, 2.762, 2.764, 2.785 and 2.786, or as the Commission directs otherwise.

A notice of appeal from this Partial Initial Decision may be filed within ten (10) days after its service in accordance with 10 C.F.R. § 2.762. A brief in support of the appeal shall be filed within thirty (30) days thereafter and forty (40) days if Staff is the appellant. Within thirty (30) days after the period has expired for the filing and service of the briefs of all appellants (forty (40) days in the case of the Staff), any party who is not an appellant may file a brief in support of or in opposition to the appeal of any other party. A responding party shall file a single responsive brief *only* regardless of the number of appellants' briefs filed. *See* 10 C.F.R. § 2.762.

IT IS SO ORDERED.

THE ATOMIC SAFETY AND LICENSING BOARD

James P. Gleason, Chairman
ADMINISTRATIVE JUDGE

Glenn O. Bright
ADMINISTRATIVE JUDGE

Jerry R. Kline
ADMINISTRATIVE JUDGE

Bethesda, Maryland

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

**Dr. Robert M. Lazo, Chairman
Dr. Richard F. Cole
Dr. Emmeth A. Luebke**

In the Matter of

**Docket Nos. 50-250-OLA-2
50-251-OLA-2
(ASLBP No. 84-504-07-LA)
(Spent Fuel Pool Expansion)**

**FLORIDA POWER AND LIGHT
COMPANY
(Turkey Point Nuclear Generating
Plant, Units 3 and 4)**

September 16, 1985

In this Order the Licensing Board rules on a nontimely amended petition to intervene, granting Petitioner's motion that the filing date be extended, and admitting seven contentions for litigation.

**RULES OF PRACTICE: NONTIMELY INTERVENTION
PETITION**

A late intervention petitioner must address the five factors specified in 10 C.F.R. § 2.714(a) and affirmatively demonstrate that on balance, they favor his tardy admission into the proceeding. The burden is on the petitioner to make such a demonstration.

MEMORANDUM AND ORDER

I.

Florida Power & Light Company ("Licensee") is licensed to possess, use and operate Turkey Point Nuclear Generating Plant, Units 3 and 4, two pressurized water nuclear reactors located in Dade County, Florida. On June 7, 1984, pursuant to 10 C.F.R. § 2.105(a)(4)(i), the NRC published in the *Federal Register* a notice of consideration of the issuance of amendments to the facility licenses and offered the opportunity for hearing on the amendments. 49 Fed. Reg. 23,715. The amendments would allow the expansion of the spent fuel pool storage capacity. Pursuant to that notice, the Center for Nuclear Responsibility, Inc. ("Center") and Joette Lorion (collectively referred to herein as "Petitioners") filed a timely request for hearing on July 9, 1984.

By Order of February 7, 1985 (unpublished), the Licensing Board in this proceeding scheduled a prehearing conference for March 27, 1985, and set February 25, 1985, as the deadline to file a supplement to the intervention petition. On March 7, 1985, Petitioners filed an amended petition to intervene, which included ten contentions, and a motion to permit the late filing addressing the five factors for late intervention set forth in 10 C.F.R. § 2.714(a)(1). Amended Petition to Intervene (Amended Petition); Motion to File not in Accordance with the Board but in Accordance with the Rule (Motion). The Amended Petition (a) supplements the original petition by offering additional information on the interest of the Center, (b) supplements the original petition to intervene by proffering proposed contentions for litigation and (c) requests that the license amendments be revoked.¹ Licensee and the NRC Staff ("Staff") filed responses to the Amended Petition on March 21, 1985.

II.

In their responses to the original petition for leave to intervene, both the Licensee and the Staff agreed that Ms. Lorion appears to possess standing to intervene in her individual capacity. They each noted that the Center had not demonstrated any right to intervene on its own behalf. However, the Staff believed that the Center had adequately established derivative standing through the interest of at least one

¹ Pursuant to 10 C.F.R. § 50.91(a)(4), the Staff made a final no significant hazards determination and issued the contested amendments on November 21, 1984.

member. As noted above, the Center attempted to rectify any deficiency by offering additional information on its interest in its Amended Petition.

The issue of the Center's standing to intervene was laid to rest during the Prehearing Conference on March 27, 1985, when the Licensee, following an oral statement by a member of the public present in the hearing room confirming that he was a member of the Center and had authorized the Center to represent him in this proceeding, withdrew its objection on the basis of that representation. Thereupon, the Licensing Board ruled that Ms. Lorion and the Center had established standing to intervene. Tr. 13.

III.

The Petitioners were directed to file a supplement to their July 9, 1984 intervention petition by February 25, 1985. However, Petitioners failed to file their supplemental petition by that date. After the deadline had passed and in a conference call between the Board and parties on March 6, 1985, the Board directed Petitioners to file a supplement by March 7, 1985, and provide justification for the late filing. On March 7, 1985, ten days after the date prescribed in the Order, Petitioners filed their Amended Petition and a Motion which requested that their filing date be extended to March 7, 1985.

A late intervention petitioner must address the five factors specified in 10 C.F.R. § 2.714(a) and "affirmatively demonstrate that on balance, they favor . . . his tardy admission to the proceeding." *Duke Power Co.* (Perkins Nuclear Station, Units 1, 2 and 3), ALAB-615, 12 NRC 350, 352 (1980); see *Nuclear Fuel Services, Inc.* (West Valley Reprocessing Plant), CLI-75-4, 1 NRC 273, 275 (1975). These factors are:

- (i) Good cause, if any, for failure to file on time.
- (ii) The availability of other means whereby the petitioner's interest will be protected.
- (iii) The extent to which the petitioner's participation may reasonably be expected to assist in developing a sound record.
- (iv) The extent to which the petitioner's interest will be represented by existing parties.
- (v) The extent to which the petitioner's participation will broaden the issues or delay the proceeding.

The Commission has emphasized that licensing boards are expected to demand compliance with the lateness requirements of 10 C.F.R. § 2.714. See *Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power

Plant, Units 1 and 2), CLI-81-5, 13 NRC 361, 364 (1981). The burden is on the petitioner to demonstrate that a balancing of these five factors is in his favor.

In Licensee's opinion, factors (i) and (iii) predominate and should weigh against admission of the late-filed contentions. Staff asserts that the first and third factors weigh slightly against Petitioners, but conclude that on balance, the five factors to be considered weigh slightly in favor of permitting late intervention.

1. *Good Cause – Factor (i)*

Petitioners assert that there is good cause for late filing because as a *pro se* litigant, their representative, Ms. Lorion, followed the time for filing set forth in 10 C.F.R. § 2.714(b) and “the vicarious advice of counsel.” Motion at 2. Ms. Lorion also asserts that due to deadline and time constraints as a “researcher, writer, and mother,” she missed the February 25 deadline and was unable to file before March 7, 1985. *Id.*

The reasons proffered by Petitioners constitute, at best, only a minimally acceptable claim of good cause for the failure to file by February 25, 1985. Pursuant to 10 C.F.R. § 2.711(a), licensing boards are expressly empowered to extend or shorten the time periods provided in the rules. *Houston Lighting and Power Co.* (Allens Creek Nuclear Generating Station, Unit 1), ALAB-574, 11 NRC 7, 13 (1980); *Houston Lighting and Power Co.* (Allens Creek Nuclear Generating Station, Unit 1), ALAB-565, 10 NRC 521, 523 (1979).² Even as *pro se* litigants, Petitioners should be expected to comply with the procedural requirements of the regulations as well as Board-ordered filing dates. It was Ms. Lorion's inability to meet the deadline, as well as her erroneous conclusion as to the filing due date, which gave rise to the brief delay occasioned here. While it is understandable that Ms. Lorion may have been confused about her filing deadline and erroneously relied on the “vicarious advice of counsel” and her own reading of the rules, her failure to meet the Board's filing date, although innocent, is not totally excusable. If Petitioners were uncertain as to whether the Board schedule for the supplemental petition superseded the minimum time period permissible in § 2.714(b) (no later than 15 days before the prehearing conference) and were unable to comply with the Board's schedule, it was incumbent on Petitioners to seek, in advance, an extension of time for filing from the

² In *Allens Creek*, ALAB-574, the Appeal Board upheld the denial of intervention to a *pro se* litigant who filed his contentions 11 days late and had read neither the board's order directing the filing of contentions nor the Rules of Practice, but relied on advice of friends that he was entitled to file 15 days prior to the first prehearing conference. 11 NRC at 13.

Board, or seek clarification of its filing deadline from the Board. Because Petitioners have made a questionable showing as to good cause for the delay in filing their contentions, the first factor weighs slightly against intervention.³

2. *Availability of Other Means Whereby Petitioners' Interest Will Be Protected and Representation by Existing Parties — Factors (ii) and (iv)*

The second factor to be considered is whether other means are available to protect Petitioners' interest. This factor weighs in favor of granting the Amended Petition because there appear to be no means other than participating in the NRC licensing proceeding for Turkey Point which would enable Petitioners to pursue their interests. Similarly, the fourth factor (the extent to which petitioner's interest will be represented by existing parties) also favors Petitioners. There is no other party who might directly represent the interest of Petitioners. However, the Appeal Board has observed that the availability of other means whereby a petitioner can protect its interest and the extent to which other parties will represent that interest are properly accorded relatively less weight than the other three factors in § 2.714(a). *South Carolina Electric and Gas Co.* (Virgil C. Summer Nuclear Station, Unit 1), ALAB-642, 13 NRC 881, 895 (1981).

3. *Development of Sound Record — Factor (iii)*

The third factor, the extent to which petitioner can assist in developing a sound record, also weighs against permitting late intervention. Petitioners must affirmatively demonstrate that they have special expertise which would aid in the development of a sound record to prevail on this factor. *See Summer, supra*, 13 NRC at 892-93; *Cincinnati Gas and Electric Co.* (William H. Zimmer Nuclear Station), LBP-80-14, 11 NRC 570, 576 (1980). When a petitioner addresses this factor "it should set out with as much particularity as possible the precise issues it plans to cover, identify its prospective witnesses, and summarize their proposed testimony. . . . Vague assertions regarding [a] petitioner's ability or resources . . . are insufficient." *Mississippi Power & Light Co.* (Grand

³ *See, e.g., Florida Power and Light Co.* (Turkey Point Nuclear Generating Station, Units 3 and 4), LBP-79-21, 10 NRC 183, 190 (1979) (Board did not demand that the early performance of a *pro se* petitioner who had not shown good cause for its late filing adhere rigidly to the rules and did not weigh this factor as heavily as it otherwise might have).

Gulf Nuclear Station, Units 1 and 2), ALAB-704, 16 NRC 1725, 1730 (1982) (citations omitted).

In the instant case, Petitioners assert that their participation, "through research and expert testimony, will assist in developing a sound record" Motion at 3. This vague and unsupported assertion does not establish that Petitioners possess any special expertise or could assist in any manner in developing the record. Nor does the statement indicate that Petitioners have retained qualified experts who would aid in the development of a sound record since the substance of their testimony has not been summarized. Thus, petitioners have failed to meet their burden with regard to this factor.

4. Delay and Broadening of Issues — Factor (v)

Finally, the fifth factor, the extent to which a petitioner's participation will broaden the issues or delay the proceeding, does not significantly weigh against the Amended Petition. In this amendment proceeding where a hearing is not mandatory and would not be held were the Board to deny intervention, it is indisputable that participation by Petitioners, the only intervenor, will broaden the issues because absent Petitioners' intervention, there would be no issues for hearing. However, the delay which can be attributed directly to the tardiness of the petition is to be taken into account in applying this factor. *West Valley*, CLI-75-4, 1 NRC at 276; *Long Island Lighting Co.* (Jamesport Nuclear Power Station, Units 1 and 2), ALAB-292, 2 NRC 631, 650 & n.25 (1975). Because Petitioners' 10-day delay in filing the contentions was brief and, in fact, had no effect on the timing of the prehearing conference (in part through the efforts of the other parties) or on other progress in this proceeding, the Board does not believe this factor weighs against intervention.

In sum, the first and third factors weigh slightly against Petitioners. While there may not be any other forum (second factor) or party (fourth factor) which might afford protection to Petitioners' interest and these factors are accorded relatively less weight than the others, Petitioners' innocent, though mistaken, failure to adhere to the Board deadline has not resulted in any delay to the proceeding. On balance, the factors to be considered under 10 C.F.R. § 2.714 weigh slightly in favor of permitting late intervention. Accordingly, the Board finds that the Petitioners, if they have proffered at least one admissible contention, should prevail under the five-factor balancing test for late intervention and be admitted as a party to this proceeding. Petitioners' motion to extend the time for filing the Amended Petition to March 7, 1985, is granted.

IV.

The Amended Petition filed on March 7, 1985, includes ten proposed contentions numbered 1 through 10, which Petitioners desire to litigate. The full text of these ten contentions is set forth in the Appendix, attached hereto (not published).

In its March 21, 1985 response to the Amended Petition, Licensee argues that each of the proposed contentions raised by Petitioners is objectionable for lack of specificity or basis or for other reasons and that consequently, Petitioners' request to intervene should be denied. The Staff's response filed on the same day asserts that proposed Contentions 1, 2 and 9 are inadmissible and should be rejected. However, in the view of the Staff, proposed Contentions 3, 4, 5, 6, 7, 8 and 10 raise matters within the scope of the proceeding, are supported with adequate bases, and should be admitted for litigation.

In recognition of the fact that Petitioners cannot be required to have anticipated in the contentions themselves the possible arguments their opponents might raise as grounds for dismissing them, the Board at the prehearing conference on March 27, 1985, heard oral argument on the question of admissibility of the proposed contentions and provided Ms. Lorion, the proponent of the contentions, the opportunity to be heard in response to the objections which had been filed by Licensee and Staff. Tr. 19-73. Our ruling on each of the contentions set forth below has taken into consideration all of the pleadings which have been filed together with the arguments and comments received during the prehearing conference.

Proposed Contentions

Petitioners' Contention 1 seeks to litigate the validity of the Staff's "no significant hazards consideration" determination and contends that a public hearing must be held prior to the issuance of the spent fuel pool license amendments for the two Turkey Point units. For the reasons fully set forth in Licensee's and Staff's March 21, 1985 Responses, the Board finds that this contention is not admissible for litigation. It is not relevant to any issues properly before the Board and does not raise an issue as to which the Board may take effective action or provide an effective remedy.

Contention 2 alleges that an Environmental Impact Statement (EIS) must be prepared because expansion of the spent fuel pool constitutes "a major Federal action." However, Petitioners do not provide any arguable basis within the scope of this proceeding for concluding that

the expansion will cause significant environmental impact. Petitioners' assertion that there is a need to examine the effects of permanent waste disposal is clearly outside the scope of the current amendment. Further, Petitioners offer no basis for challenging the Commission's analysis of alternatives and conclusion that the environmental impact of expanded onsite fuel storage is negligible. Contention 2 is rejected for lack of adequate basis.

The Board admits Contention 3 but limits it to the basis asserted by Petitioners. The contention alleges that the calculation of radiological consequences resulting from a cask drop accident do not comply with Standard Review Plan criteria or Regulatory Guide 1.25 and thus the doses may exceed Part 100 criteria and ALARA. The reference to the ALARA principle is inappropriate because ALARA generally applies to routine operation, not accidents. However, Petitioners may properly allege that the release limits in Parts 20 and 50 will be exceeded in the event of an accident. As a basis for the contention, Petitioners state that the calculations are not adequately conservative because of the radial peaking factor used.

Contention 4 alleges that the Licensee has not provided a site-specific analysis of a spent fuel pool boiling event which demonstrates that onsite and offsite dose limits will not be exceeded. Licensee and Staff both note that the contention is based partly on Petitioners' misapprehension of the methodology used to analyze a spent fuel pool boiling event (the alleged use of a calculation performed for the Limerick plant). However, the contention raises an issue within the scope of the proceeding, is adequately specific and is supported by a minimally sufficient basis. It is accepted provided that personnel and offsite dose limits are specified as those in Parts 20 and 100 and litigation is limited to the factual basis provided.

Contention 5 asserts that rerack design is not safe because of the potential for liftoff during seismic events. Petitioners claim that the matter involves an unreviewed safety question demanding a safety analysis of all seismic and hurricane conditions which could cause damage to fuel rods and thereby create a criticality accident. The contention appears to pose a litigable issue. The Board agrees with the Staff that the issue, however, is not whether the potential for liftoff during a seismic event is an unreviewed safety question, but whether there is a deficiency in the current rack design and a necessity for a restriction on loading to prevent

potential liftoff.⁴ Petitioners' assertion that hurricane conditions will impact the storage racks demonstrates no nexus between hurricane loads and the instant rerack and must be rejected as a basis for Contention 5. Accordingly, the contention is admitted provided it is limited to whether the fuel can be stored safely in view of the potential for liftoff during seismic events.

Petitioners' Contention 6 asserts that the analysis performed by the Licensee and the Staff of the effect of increased heat and radiation from the expanded storage capacity and long-term storage on materials integrity is inadequate. The contention is reasonably specific and is supported by an adequate statement of basis. It is admitted provided that the reference to "long-term storage" is limited to the storage period authorized by the amendments.

Contention 7 asserts Licensee's practices during the reracking will not meet ALARA requirements and the limits of Part 20. Petitioners allege that the Licensee's estimate of occupational exposure is higher than the Staff estimate of 40-50 person-rem and much higher than those experienced at other plants. The contention is adequately specific and is supported by a minimally sufficient basis. Accordingly, it is admitted as limited to the basis offered.

In Contention 8 Petitioners state that the high-density storage design of the fuel racks will increase heat loads and water temperatures such that a loss-of-cooling accident may occur. It is alleged that the reduction in time to boiling may cause major releases to the environment. The temperatures mentioned by Petitioners are within the design basis of the spent fuel storage pool. However, the contention raises an issue within the scope of the proceeding and meets the requirements for admission for litigation. Therefore, Contention 8 is admitted provided it is limited to the basis offered.

Contention 9 alleges that the effects of a hurricane, tornado or other natural disasters, on the spent fuel storage facility or its contents have not been analyzed. This proposed contention is outside the scope of the proceeding. The effect of wind, tornado and hurricane flooding on the fuel storage building was evaluated at the operating license stage. Safety Evaluation, March 15, 1972, § 5.0. No nexus between the arrangement of the contents of the fuel storage building and the impact of winds,

⁴ Under 10 C.F.R. § 50.59, the decision as to whether a matter constitutes an unreviewed safety question rests with the Licensee in the first instance. The Licensee currently has administrative controls in place which prevent the occurrence of liftoff by not loading the overhanging rows while the remainder of the racks are empty. As a result, as indicated in a letter from the Staff to Licensee, the conclusions of the Staff's safety evaluation have not been affected. Letter to J.W. Williams, FPL, from D.G. McDonald, NRC, February 26, 1985. A copy of this letter was transmitted to the Board and parties by letter of Staff counsel, dated February 28, 1985.

flooding, and airborne missiles is shown. Nor is any basis offered for reevaluating the effects of hurricanes and tornadoes because of these amendments to the operating licenses. Consequently, Contention 9 is rejected for lack of basis.

Contention 10 alleges that the increased storage capacity will not meet ANSI N16.1-1975, "Nuclear Criticality Safety in Operations with Fissionable Materials Outside Reactors," and will increase the probability for a criticality accident contrary to 10 C.F.R. Part 50, Appendix A, GDC 62 (Prevention of criticality in fuel storage and handling). As a basis for the contention, Petitioners state that added storage of failed fuel and fuel with increased enrichment will increase the probability that the fuel will go critical and cause a major criticality accident with releases in excess of 10 C.F.R. Part 100 criteria. With the exception of the reference to failed fuel causing criticality, the contention raises an issue within the scope of the proceeding, is adequately specific and is supported by a minimally sufficient basis. The Petitioners' concern that failed fuel will cause criticality must be rejected since there is no nexus or relationship between the license amendments in question, the storage of failed fuel and increased likelihood of criticality. Accordingly, the contention is admitted provided that the references to failed fuel causing criticality are deleted in both the contention and basis, and the contention is limited to whether added storage of fuel and more highly enriched fuel will cause a criticality accident.

Order

For all the foregoing reasons and upon consideration of the entire record in this matter, it is, this 16th day of September 1985,

ORDERED

1. That Contentions 3, 4, 5, 6, 7, 8 and 10 of Petitioners' Amended Petition dated March 7, 1985, are admitted; and

2. That Contentions 1, 2 and 9 of Petitioners' Amended Petition dated March 7, 1985, are rejected.

**THE ATOMIC SAFETY AND
LICENSING BOARD**

**Dr. Robert M. Lazo, Chairman
ADMINISTRATIVE JUDGE**

**Dr. Richard F. Cole
ADMINISTRATIVE JUDGE**

**Dr. Emmeth A. Luebke
ADMINISTRATIVE JUDGE**

Dated at Bethesda, Maryland,
this 16th day of September 1985.

[The Appendix has been omitted from this publication but may be found in the NRC Public Document Room, 1717 H Street, NW, Washington, DC 20555.]

**UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION**

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

**Peter B. Bloch, Chairman
Dr. Kenneth A. McCollom
Dr. Walter H. Jordan**

In the Matter of

**Docket Nos. 50-445-OL
50-446-OL
(ASLBP No. 79-430-06-OL)**

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

September 18, 1985

The Licensing Board states concerns about the adequacy of the record with respect to a Staff action exempting paint from Appendix B quality assurance requirements.

TECHNICAL ISSUES DISCUSSED

Paint quality
Core blockage by paint
Sump blockage by paint
Operator error.

MEMORANDUM

(Water Recirculation Problems Caused by Paint)

The purpose of this Memorandum is to state the concerns of the Atomic Safety and Licensing Board about the Staff's conclusion that the paint at Comanche Peak may be exempted from the quality assurance requirements of Appendix B. We consider this matter to be within the scope of the admitted contentions and to require determination in order for there to be an adequate record in this case.

NUREG-0797, Supplemental Safety Evaluation Report (SSER) No. 9 for Comanche Peak concludes that the paint coatings inside containment do not have to be safety grade and that it is appropriate to exempt paint from the quality assurance requirements of 10 C.F.R. Part 50, Appendix B. (SSER No. 9 at M-10.) This conclusion is based on Texas Utility Electric Company *et al.*'s (TUEC's or Applicants') representation that even if all of the coatings at Comanche Peak were to fail during a design basis event, such as a loss-of-coolant accident (LOCA), long-term cooling of the core by recirculation of water from the sump could be achieved.

In order for us to find that Comanche Peak can achieve adequate long-term cooling following a LOCA, it must be demonstrated that the sump screen will not be blocked by paint particles and that the slurry of water and fine paint particles that get through the screen will adequately cool the core. TUEC contends that only a small fraction of the paint particles will be transported to the screens and hence a small band (2 inches) at the top of the screen will remain open. They also believe that the fine paint particles (less than 1/8 inch) that get through the screen will not interfere with the cooling of the core, that the Residual Heat Removal (RHR) pumps will not be affected and that the fine paint particles will not block the core.

The Applicants' demonstration that the screens will not be clogged is based on a number of assumptions regarding the transport of paint particles in flowing water and it is not apparent that all of the assumptions are conservative. However, our chief concern is the possibility of core blockage by fine particles.

The Staff of the Nuclear Regulatory Commission (Staff) has expressed its concerns to the Applicants regarding the possibility of core blockage by fine paint particles. (SSER No. 9 at L-8.) However, they now agree that the particles would settle out in the plenum and would reach the core only if one of the reactor coolant pumps (RCP) were to be restarted following a small-break LOCA, thereby transporting the particles to the core.

The Applicants claim that operating procedures restrict restarting of the RCP except during an inadequate core cooling event (ICC) and that ICC is very unlikely. The Staff does not discuss the likelihood of RCP restart by operator error when there has not been an ICC. Without addressing that issue, they agree that ICC is a low-probability event and conclude that RCP restart is unlikely. (SSER 9 at L-10 and L-11.) Unlike the Applicants, the Staff has not attempted to quantify this probability of RCP restart during an ICC. No one has quantified the likelihood of restart when there is no ICC.

Whether flow blockage would be extensive if the RCP was restarted is discussed by the Staff (*id.* at L-12) but no firm conclusion was reached. However, the Staff makes the following findings:

The Staff's qualitative conclusion based on the facts presented above is that the flow blockage must be extensive in order to cause fuel rod damage. Restart of a RCP following ECCS recirculation is unlikely. For the reasons discussed above, a complete blockage at the lower fuel assembly grid is unlikely if an RCP is restarted. A flow blockage sufficient to cause fuel failure is also unlikely. If localized flow blockage were to occur, the Staff would expect the extent of fuel failure, if any, to be low.¹

We are concerned that an important component of the CPSES safety system is being exempted from Appendix B requirements. Such a determination for Comanche Peak may have implications with respect to Unresolved Safety Issue A-43, "Containment Emergency Sump," and should be brought to the attention of the Staff. We also have advised the Advisory Committee on Reactor Safeguards of the status of this issue.

We will have to be satisfied with the resolution of this issue. In our consideration of this problem, we would appreciate a full explanation of whether there are specific reasons for placing Comanche Peak in a special category with respect to an exemption from ordinary paint quality assurance requirements.

FOR THE ATOMIC SAFETY AND
LICENSING BOARD

Peter B. Bloch, Chairman
ADMINISTRATIVE JUDGE

Bethesda, Maryland

¹ SSER 9 at L-12.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

**John H Frye, III, Chairman
Dr. James H. Carpenter
Dr. Peter A. Morris**

In the Matter of

**Docket No. 40-2061-ML
(ASLBP No. 83-495-01-ML)**

**KERR-McGEE CHEMICAL
CORPORATION
(West Chicago Rare Earths Facility)**

and

In the Matter of

**Docket No. 40-2061-SC
(ASLBP No. 84-502-01-SC)**

**KERR-McGEE CHEMICAL
CORPORATION
(Kress Creek Decontamination)**

September 26, 1985

The Licensing Board rules on various discovery disputes including requests for discovery of nonwitness experts, and claims of attorney-client and work-product privilege.

**RULES OF PRACTICE: DISCOVERY; NONWITNESS
EXPERTS**

NRC Rules of Practice do not contain a provision similar to Rule 26(b)(4) of the Federal Rules of Civil Procedure, but NRC decisions

have applied Rule 26(b)(4). *Public Service Co. of New Hampshire* (Seabrook Station, Units 1 and 2), LBP-83-17, 17 NRC 490, 496-97 (1983); *Carolina Power and Light Co.* (Shearon Harris Nuclear Power Plant, Units 1 and 2), LBP-83-27A, 17 NRC 971, 976-80 (1983); *Boston Edison Co.* (Pilgrim Nuclear Generating Station, Unit 2), LBP-75-42, 2 NRC 159, 161 (1975); see also *Public Service Co. of Indiana* (Marble Hill Nuclear Generating Station, Units 1 and 2), ALAB-374, 15 NRC 417, 421 (1977) (additional views of Mr. Farrar, joined by the entire Board).

RULES OF PRACTICE: DISCOVERY; NONWITNESS EXPERTS

Rule 26(b)(4)(B) only applies to experts who have been retained or specially employed in anticipation of litigation, and does not allow shielding of experts who develop pertinent knowledge in other contexts.

RULES OF PRACTICE: DISCOVERY; EXPERTS

Whether a subpoenaed party is an expert specially retained in anticipation of litigation is necessarily a factual determination. *USM Corp. v. American Aerosols, Inc.*, 631 F.2d 420, 424-25 (6th Cir. 1980); *Ager v. Jane C. Stormont Hospital and Training School*, 622 F.2d 496, 501 (10th Cir. 1980); *Healy v. Counts*, 100 F.R.D. 493, 496 (D. Colo. 1984).

RULES OF PRACTICE: DISCOVERY; EXPERTS

An expert may wear two hats, i.e., initially he may be an actor who engages in the transactions at issue and subsequently becomes a litigation consultant. See *Seiffer v. Topsy Int'l, Inc.*, 69 F.R.D. 69, 72-73 & n.3 (D. Kan. 1975); *Inspiration Consol. Copper Co. v. Lumberman Mut. Cas. Co.*, 60 F.R.D. 205, 210 (S.D.N.Y. 1973).

RULES OF PRACTICE: DISCOVERY; EXPERTS

One means of determining whether an expert is retained for litigation is to review the contractual agreements between the expert and the employer. It is reasonable to infer that an expert was not retained in anticipation of litigation if the work specified in the employment contract is of a general nature, or when an expert is hired to help his employer fulfill statutory requirements.

RULES OF PRACTICE: DISCOVERY; NONWITNESS EXPERTS

When an expert is retained in anticipation of litigation but is not expected to testify, the identity and other collateral information related to the expert are not discoverable unless exceptional circumstances are shown, i.e., the party seeking discovery must demonstrate that it is impracticable to obtain facts or opinions on the same subject by other means. *Ager v. Jane C. Stormont Hospital and Training School*, 622 F.2d 496 (10th Cir. 1980). See also *Carolina Power and Light Co.* (Shearon Harris Nuclear Power Plant, Units 1 and 2), LBP-83-27A, 17 NRC 971, 976-80 (1983).

RULES OF PRACTICE: DISCOVERY; NONWITNESS EXPERTS

A disparity in resources between the parties is not sufficient to demonstrate exceptional circumstances under Rule 26(b)(4)(B).

RULES OF PRACTICE: DISCOVERY; PRIVILEGED MATTER

The attorney-client and work product privileges are not necessarily waived if the party holding those privileges reveals information on the subject matter of the privileged documents. Disclosure of the privileged content of communications may produce a waiver because the confidential nature of the privileged documents no longer exists. Partial disclosure of the privileged content of a single document can waive privilege as to the remainder of the document.

RULES OF PRACTICE: DISCOVERY; WAIVER OF PRIVILEGE

Waiver may occur when specific portions of a privileged communication are disclosed. The mere discussion of facts which are the subject of a privileged communication is insufficient to constitute waiver. 4 Moore's Federal Practice ¶ 26.60[2], 26-203, ¶ 26.64[4], 26-309 *et seq.*

RULES OF PRACTICE: DISCOVERY; WORK PRODUCT PRIVILEGE

To be privileged under Federal Rule of Civil Procedure 26(b)(3) and NRC Rule of Practice 10 C.F.R. § 2.740(b)(2), a document must be pre-

pared in anticipation of litigation by a party, his attorney or another representative of that party. Materials developed in ordinary course of business or pursuant to public requirements unrelated to litigation are not given immunity under 26(b)(3). See *Advisory Committee's Explanatory Statement Concerning Amendments of the Discovery Rules*, 48 F.R.D. 487, 501 (1970).

RULES OF PRACTICE: DISCOVERY; INTERROGATORIES

Inherent in the determination of whether a corporation must specifically designate who composed the answer to each interrogatory is the element of reasonableness.

RULES OF PRACTICE: DISCOVERY; INTERROGATORIES

Interrogatories may properly enquire about legal conclusions and theories that apply to the facts of the case, but may not enquire about legal conclusions which do not so relate. See 4A Moore's Federal Practice ¶ 33.17[2] (1984 ed.).

RULES OF PRACTICE: DISCOVERY; INTERROGATORIES

It may be permissible to answer an interrogatory by stating specific references to pages of other documents filed in the case, but a blanket statement that the answers are to be found somewhere in the record is not satisfactory.

RULES OF PRACTICE: DISCOVERY; EXECUTIVE PRIVILEGE

Executive privilege may be invoked in NRC proceedings. *Virginia Electric and Power Co.* (North Anna Power Station, Units 1 and 2), CLI-74-16, 7 AEC 313 (1974); *Consumers Power Co.* (Midland Plant, Units 1 and 2), ALAB-33, 4 AEC 701 (1971).

RULES OF PRACTICE: DISCOVERY; EXECUTIVE PRIVILEGE

Executive privilege is designed to prevent the "public disclosure [of] governmental documents reflecting advisory opinions, recommendations and deliberations comprising part of a process by which governmental

decisions and policies are formulated.” *Long Island Lighting Co.* (Shoreham Nuclear Power Station, Unit 1), ALAB-773, 19 NRC 1333, 1339 & n.15 (1984).

RULES OF PRACTICE: DISCOVERY; EXECUTIVE PRIVILEGE

A government agency must properly claim the privilege by having the agency head assert the privilege, providing a specific description of the documents for which the privilege is sought and providing the reasons necessitating the confidentiality of the documents.

RULES OF PRACTICE: DISCOVERY; EXECUTIVE PRIVILEGE

Executive privilege is a qualified privilege which may be overcome by a showing of need. To overcome the privilege, the Board must balance the party’s need for the documents against the government’s need for confidentiality.

RULES OF PRACTICE: DISCOVERY; EXECUTIVE PRIVILEGE

Waiver of executive privilege does not occur merely because a governmental entity has initiated the litigation.

**MEMORANDUM AND ORDER
(Ruling on Discovery Disputes)**

Several discovery disputes have arisen between Kerr-McGee and the People of the State of Illinois (People) in these proceedings. In *West Chicago*, Kerr-McGee has filed motions to quash subpoenas issued to Catalytic, Inc., and Dr. James L. Grant at the request of the People.¹ Additionally, Kerr-McGee and the People each filed motions to compel against each other in both proceedings.²

¹ The subpoenas were issued on May 20, 1985. Kerr-McGee moved to quash on June 6 and 7. The People answered to the motions on June 18. Kerr-McGee replied on June 27.

² In *West Chicago*, these were filed on June 21 and June 28, respectively. Kerr-McGee and the People answered on August 8 and replied to each other’s answer on August 15 and August 23, respectively.

These motions raise some questions which overlap. Hence we have elected to issue one Memorandum and Order covering both proceedings. For example, the applicability to NRC proceedings of Federal Rule of Civil Procedure 26(b)(4), governing expert discovery, is presented in both proceedings. Other issues common to both proceedings include questions concerning waiver of attorney-client and work product privileges, the protection afforded by Rule 26(b)(4), and the adequacy of the People's document production. We begin with the question of the applicability of Rule 26(b)(4).

APPLICABILITY OF RULE 26(b)(4)

The Rules of Practice provisions relating to discovery, although patterned after the Federal Rules of Civil Procedure, do not contain a parallel provision to Rule 26(b)(4). There are NRC decisions which have applied Rule 26(b)(4). *Public Service Co. of New Hampshire* (Seabrook Station, Units 1 and 2), LBP-83-17, 17 NRC 490, 496-97 (1983); *Carolina Power and Light Co.* (Shearon Harris Nuclear Power Plant, Units 1 and 2), LBP-83-27A, 17 NRC 971, 976-80 (1983); *Boston Edison Co.* (Pilgrim Nuclear Generating Station, Unit 2), LBP-75-42, 2 NRC 159, 161 (1975); *contra General Electric Co.* (Vallecitos Nuclear Center, General Electric Test Reactor), LBP-78-33, 8 NRC 461 (1978); *Detroit Edison Co.* (Enrico Fermi Atomic Power Plant, Unit 2), LBP-78-37, 8 NRC 575, 581 (1978). Kerr-McGee advocated that we apply 26(b)(4) and neither the People nor Staff object.

Although three of these decisions applied Rule 26(b)(4) to NRC proceedings, at least one decision strongly held otherwise. Each of the relevant decisions was rendered by a Licensing Board, and neither the Appeal Board nor the Commission has spoken to the issue.

The Appeal Board has on occasion applied Federal rules and practices in the absence of an analogous NRC rule. *See Public Service Co. of Indiana* (Marble Hill Nuclear Generating Station, Units 1 and 2), ALAB-374, 5 NRC 417, 421 (1977) (additional views of Mr. Farrar, joined by the entire Board). The argument against this position was advanced in the *Vallecitos* case, LBP-78-33, *supra*, 8 NRC at 465-66. The Board in *Vallecitos* determined that where the Commission had not expressly adopted a provision analogous to a Federal rule, the correct inference is that "the Commission did not intend for the unselected Federal rules to control its proceedings." *Id.* at 466. The *Seabrook*, *Shearon Harris*, and *Pilgrim* Boards reached a wholly different conclusion. The Board in the *Seabrook* case, for instance, reviewed the rationale behind the decision in *Vallecitos*, but determined that it was not prevented from applying

Rule 26(b)(4). *Accord Carolina Power and Light Co.* (Shearon Harris Nuclear Power Plant, Units 1 and 2), LBP-83-27A, 17 NRC 971, 978 (1983). The *Seabrook* Board explained its decision as follows:

While the Commission may have chosen to adopt only some of the federal rules of practice to apply to *all* cases, we need not infer that the Commission intended to preclude a licensing board from following the guidance of the federal rules and decisions in a *specific case* where there is no parallel NRC rule and where that guidance results in a fair determination of an issue.

LBP-83-17, *supra*, 17 NRC at 497 (emphasis in original). In short, we are in agreement with the reasoning employed in *Seabrook*, and because we find the situation before us to be analogous to the situation contemplated by rule 26(b)(4), *see Consumers Power Co.* (Midland Plant, Units 1 and 2), ALAB-379, 5 NRC 565, 568 n.13 (1977), where applicable that rule will guide us in determining the discovery disputes at hand.

DISCOVERY OF EXPERTS UNDER RULE 26(b)(4)

Having decided to apply Rule 26(b)(4), we turn to the disputes which involve it. The rule provides:

(4) *Trial Preparation: Experts.* Discovery of facts known and opinions held by experts, otherwise discoverable under the provisions of subdivision (b)(1) of this rule and acquired or developed in anticipation of litigation or for trial, may be obtained only as follows:

(A)(i) A party may through interrogatories require any other party to identify each person whom the other party expects to call as an expert witness at trial, to state the subject matter on which the expert is expected to testify, and to state the substance of the facts and opinions to which the expert is expected to testify and a summary of the grounds for each opinion. (ii) Upon motion, the court may order further discovery by other means, subject to such restrictions as to scope and such provisions, pursuant to subdivision (b)(4)(C) of this rule, concerning fees and expenses as the court may deem appropriate.

A party may discover facts known or opinions held by an expert who has been retained or specially employed by another party in anticipation of litigation or preparation for trial and who is not expected to be called as a witness at trial, only as provided in Rule 35(b) or upon a showing of exceptional circumstances under which it is impracticable for the party seeking discovery to obtain facts or opinions on the same subject by other means.

Fed. R. Civ. P. 26(b)(4)(B).

First we address Kerr-McGee's motions to quash, or, in the alternative to modify the subpoenas directed to Catalytic Corp. and Dr. Grant.

Stearns Catalytic Corp. and Dr. Grant joined Kerr-McGee in these motions.

On May 20, 1985, this Board, acting at the request of the People, issued subpoenas *duces tecum* to Dr. James L. Grant, and Catalytic, Inc. The subpoenas requested all documents in the recipients' possession relating in any way to the West Chicago site.

The motion to quash the Catalytic subpoena recites that in December 1980, Kerr-McGee and Catalytic entered into a contract under which the latter was to provide engineering services with respect to decommissioning of the West Chicago plant and disposal of the thorium mill tailings located there. In August 1984, Stearns Catalytic replaced Catalytic as a result of certain mergers and reorganizations and a new contract was entered into. The motion recites that "Stearns Catalytic does have a sister subsidiary named Catalytic, Inc., that provides maintenance services, but that subsidiary does not now have an office or a custodian of records in Oak Brook."³ The subpoena, addressed to the custodian of records, Catalytic, Inc., Oak Brook, Illinois, was in fact served on Stearns Catalytic in Oak Brook. Movants take the position that the subpoena as drafted is unenforceable and should be quashed for deficient service. In the event that the subpoena is not quashed, movants request that it be modified to apply only to documents produced in the ordinary course of business which are relevant.

While recognizing that it is "very likely that a representative from Stearns Catalytic may ultimately be designated as an expert in this proceeding . . ."⁴ movants assert that no final decision has yet been reached. Therefore, movants wish the subpoena modified to apply only to documents which are not related to this litigation. According to the motion, these are documents related to the dismantling of buildings and construction of the present incinerator.⁵ None of these activities are encompassed within this proceeding.

Movants also maintain that discovery of litigation-related documents is premature. They cite in support of this argument the People's allegedly inadequate response to their interrogatories on this point and argue that to the extent discovery from experts is permitted, it should be reciprocal. Kerr-McGee notes its willingness to arrive at a mutually agreeable schedule for such discovery once the work of the experts is sufficiently advanced.⁶

³ Motion at 2.

⁴ *Id.* at 3.

⁵ *Id.* at 7.

⁶ *Id.*

In their opposition, the People maintain that quashing the subpoena would exalt form over substance and would only result in a second subpoena properly addressed to Stearns Catalytic. This result, according to the People, would not serve anyone's interest, and consequently the subpoena should be modified to reflect the proper recipients.⁷

The People also take issue with movants' arguments that the subpoena should be modified to exclude litigation-related documents. They rely on the provisions of the contracts between Kerr-McGee and both Catalytic and Stearns Catalytic for the proposition that the work being performed is not litigation-related in that it would have to be performed in support of Kerr-McGee's license amendment application in any event. Thus they argue that Catalytic and Stearns Catalytic were retained in the ordinary course of business, not as a result of this proceeding.⁸

Under these circumstances, the People maintain that the protection afforded experts by Rule 26(b)(4) is unavailable to support this position. The People point to the language of the Rule, the notes of the Advisory Committee explaining the rule, and two cases. *Harazimowicz v. McCallister*, 78 F.R.D. 319 (E.D. Pa. 1978) and *In re Sinking of the Barge "Ranger I,"* 92 F.R.D. 486 (S.D. Tex. 1981).⁹

With respect to Kerr-McGee's argument that discovery of experts should be reciprocal, the People note that Kerr-McGee has not sought discovery beyond its interrogatories, that they have in fact identified their experts and turned over a substantial number of documents, and that, unlike Stearns Catalytic, their experts were retained for litigation and are thus entitled to protection of Rule 26(b)(4).

The motion and answer filed with respect to the subpoena directed to Dr. Grant raise similar issues, although there are some important factual differences. Movants note that Dr. Grant first provided advice to Kerr-McGee while employed by Law Engineering Testing Company. This advice concerned the design of the disposal cell which was incorporated in the amendments to the Stabilization Plan submitted to NRC. In September 1983, Dr. Grant left Law Engineering, and all of the documents relating to West Chicago in the possession of the firm were delivered to Kerr-McGee. After his departure from Law Engineering, Dr. Grant set up his own firm and that firm has been retained by Kerr-McGee to provide expert advice on a variety of issues raised by the State and others in connection with this proceeding and related litigation.¹⁰

⁷ Answer at 4-7.

⁸ *Id.* at 5-9. The People have attached the two contracts to their answer.

⁹ *Id.* at 9-12.

¹⁰ Motion at 1-2.

The plain wording of the rule leaves no doubt that it only applies to experts who have been retained or specially employed in anticipation of litigation. It does not allow the shielding of experts who develop pertinent knowledge in other contexts. That is, if facts and opinions are acquired while an individual is regularly employed or by virtue of being an actor in the controversy, the rule is not applicable. Thus, the first portion of our analysis must determine whether the subpoenas request discovery from experts who meet the requirement that they were retained in anticipation of litigation. Whether a subpoenaed party is an expert specially retained in anticipation of litigation is necessarily a factual determination, in this case based on the evidence of the expert's relationship with the licensee. *USM Corp. v. American Aerosols, Inc.*, 631 F.2d 420, 424-25 (6th Cir. 1980); *Ager v. Jane C. Stormont Hospital and Training School*, 622 F.2d 496, 501 (10th Cir. 1980); *Healy v. Counts*, 100 F.R.D. 493, 496 (D. Colo. 1984).

The advisory committee evidently was aware of the potential for difficulty in determining whether (26)(b)(4)(B) would be applied to all experts. The notes accompanying the 1970 amendment (which created 26(b)(4)(B) in its present form) are specific as to when the rule provides an expert with protection from discovery.

It should be noted that the subdivision does not address itself to the expert whose information was not acquired in preparation for trial but rather because he was an actor or viewer with respect to transactions or occurrences that are part of the subject matter of the lawsuit. Such an expert should be treated as an ordinary witness.

Advisory Committee's Explanatory Statement Concerning Amendments of the Discovery Rules, 48 F.R.D. 487, 503 (1970).

We recognize that an expert may "wear two hats," that of an actor at first, and then of a litigation consultant.¹¹ We are sensitive, however, to the difficulty in determining when an expert's activity progresses from that done in the ordinary course of business to work in anticipation of litigation. We find a rough analogy in the court's handling of similar cases when the discovery is sought from an insurance company investigator. The insurance industry by its very nature requires that an insurance company investigate a claim to determine whether an insured is entitled to collect on his policy. But, it has been held that such an investigation is not necessarily done with the prospect of litigation in mind. *Thomas Organ Co. v. Jadranska Slobodna Plovidba*, 54 F.R.D. 367 (N.D. Ill. 1972).

¹¹ *Seiffer v. Topsy's Int'l, Inc.*, 69 F.R.D. 69, 72-73 & n.3 (D. Kan. 1975); *Inspiration Consol. Copper Co. v. Lumberman Mut. Cas. Co.*, 60 F.R.D. 205, 210 (S.D.N.Y. 1973).

Because the courts have sustained a murky distinction between experts whose information was not acquired in preparation for trial and those specifically employed in anticipation of litigation, we find the test set out in *In Re Sinking of the Barge "Ranger I,"* 92 F.R.D. 486, 489 (S.D. Tex. 1981) to be helpful: "The test to be applied is whether, in light of the nature of the documents and factual situation in a particular case, the experts and their information can fairly be said to have been obtained or acquired because of the prospect of litigation." That Court espoused the test in the course of ruling on a motion to compel discovery of post-casualty investigation reports written by in-house experts of the plaintiff corporation, APMC. The key determination was whether 26(b)(4)(B) was intended to afford protection to experts of this kind. In applying the test it set out, the Court was "persuaded that the names, and reports, notes, and data compilations of outside experts engaged by APMC in its post-casualty investigation and regular APMC employees who participated in this endeavor are freely discoverable . . ." (*id.*).

The motion to quash stated that Stearns Catalytic was "retained by Kerr-McGee as a consultant to assist it in preparing for this and related proceedings before the Commission and the Courts."¹² The People insist that the contractual agreements it has submitted as exhibits substantiate their position that Stearns Catalytic's work was in the ordinary course of Kerr-McGee's business activities as a licensee, and not in anticipation of any litigation. The People hinge their argument on the fact that Kerr-McGee employed Stearns Catalytic to help it fulfill its obligations as a licensee under the Uranium Mill Tailings Radiation Control Act, Pub. L. 95-604 (UMTRCA).

The language of the UMTRCA requires a licensee, *inter alia*, to prepare a method for the cleanup and disposal of the hazardous waste product material and to persuade the NRC of its suitability. Before Kerr-McGee's license for the West Chicago Rare Earths facility may be terminated, disposal of its wastes must be accomplished. 42 U.S.C. § 2113. Because the Act requires a licensee to perform work similar to that for which Stearns Catalytic was employed, we found it necessary to look further, to the contract, to determine if there is any indication that Stearns was not simply enhancing Kerr-McGee's ability to fulfill its responsibilities as a licensee, but was hired to provide Kerr-McGee with litigation support.

Kerr-McGee argues that Stearns Catalytic was hired in anticipation of litigation, as the corporation's services were engaged after the State ini-

¹² Motion to Quash, or in the alternative, to Modify Subpoena, dated June 6, 1985, at 3.

tiated litigation against Kerr-McGee in Illinois State Court.¹³ The People counter Kerr-McGee's statement by asserting that Catalytic was hired more than 2 years before the State filed its petition leading to this litigation.

The People drew our attention to the contract between Kerr-McGee and Stearns Catalytic.¹⁴ A fair reading of the document leads to the conclusion that Stearns Catalytic was not initially "specially" retained for litigation purposes. We draw this conclusion based on the general nature of the work specified.

Furthermore, the preparation of an acceptable decommissioning plan does not qualify as the kind of litigation contemplated under 26(b)(4)(B). It appears from the language of the contract that Stearns Catalytic's work encompasses many, if not most, of the facets of decommissioning and waste disposal which are the province of the licensee under ordinary circumstances attendant to terminating its license. Work performed by an expert for a licensee in the normal course of its relations with the NRC should not be shielded from discovery in subsequent litigation. At the prehearing conference, it was brought out that Stearns Catalytic was employed after the filing of the stabilization plan but before the last amendment to it and before the filing of Kerr-McGee's memorandum on compliance with UMTRCA. Work done by Stearns Catalytic on these matters falls in the category of that required in the normal course of Kerr-McGee's relationship with the NRC and should not be shielded from discovery. However, other work performed after the notice of opportunity for hearing, directed toward this litigation, should be shielded. It appears that most, if not all the work performed by Stearns Catalytic after the notice of opportunity for hearing falls in that category.

For the articulated reasons, we grant in part and deny in part Kerr-McGee's Motion to Quash. To the extent that we deny the motion, we will modify the subpoena to allow production at the Oak Brook Office of Stearns Catalytic, rather than the Attorney General's office.

The second subpoena at issue is directed to Dr. James L. Grant. As the submitted pleadings illustrate, in September 1983, following Dr. Grant's departure from Law Engineering Testing Company,¹⁵ Dr. Grant (retained through his firm James L. Grant & Associates), was an expert retained in anticipation of litigation. Thus documents generated prior to

¹³ Reply to the State's Consolidated Answer to Motions to Quash, dated June 27, 1985, at 1.

¹⁴ Exhibit A, attached to the State's Consolidated Answer to the Motions to Quash.

¹⁵ Motion to Quash, or in the Alternative, to Modify Subpoena of James L. Grant, dated June 7, 1985, at 2.

September 1983 are discoverable, while those generated afterwards are not. The files and working papers created by Dr. Grant while at Law Engineering have been turned over to Kerr-McGee. Thus, the only documents responsive to the People's request are those generated after September 1983. Consequently the motion to quash is granted.

Another controversy between Kerr-McGee and the People over Rule 26(b)(4) involves the People's Interrogatory 62 (*West Chicago*). The interrogatory and Kerr-McGee's responses are as follows:

Interrogatory: Has Kerr-McGee or any other person or entity conducted any studies or inquiries of any kind, whether formal or informal, concerning property values in the vicinity of the site? If so, describe the nature of such studies or inquiries, when they took place and the person(s) who were involved in them, and any findings or conclusions arising from such studies or inquiries.

Answer: Yes. Kerr-McGee objects to the remainder of Interrogatory No. 62 in that it calls for the production of information regarding the work of experts without complying with the rules on expert discovery. *Cf.* Rule 26 F.R. Civ. P. Kerr-McGee also objects to Interrogatory No. 62 to the extent it calls for information protected by the attorney-client or work product privileges.

Supplemental Answer: In addition to its previously stated objection to this interrogatory, Kerr-McGee notes that it is not required to provide information concerning the ongoing work of its experts in the absence of a proper request in compliance with the rules on expert discovery.

Through this request the State seeks four items of information: the nature of the studies, when they were conducted, who performed them, and the conclusions drawn therefrom.

Although Kerr-McGee's objections raise the work product and attorney-client privileges, the parties have focused on the amount of information which must be provided under Rule 26(b)(4). We note at the outset our disagreement with the State's blanket assertion that "the identities of the persons who performed [the work] are not [privileged] and should therefore be disclosed as the interrogatory requests." While this proposition could be correct if the material were privileged under the attorney-client or work product doctrine where the party asserting the privilege must justify its use, the case is not so clear under 26(b)(4). We strongly agree with the line of cases which holds that if the individuals are experts retained in anticipation of litigation but not expected to testify, then the identity and other collateral information concerning such an expert are not discoverable unless a showing is made of exceptional circumstances under which it is impracticable for the party seeking discovery to obtain facts or opinions on the same subject by other means. *Ager, supra*. See also *Shearon Harris, LBP-83-27A, supra*, 17

NRC at 976-80.¹⁶ Furthermore, if the State wanted to propound a 26(b)(4)(A)(i) interrogatory, it should have done so directly, not by couching its request within an interrogatory not clearly designed to elicit the names of the experts who will be witnesses.

If the Board were to require Kerr-McGee to describe the basis for asserting 26(b)(4)(B) protection for the individuals described in their answer to Interrogatory 62, the shield of confidentiality provided by the rule might be compromised. *Shearon Harris*, LBP-83-27A, *supra*, 17 NRC at 979. We must draw a balance between these two competing needs; we conclude that the more prudent path is nondisclosure at this time.

The People argue that if the Board adopts Kerr-McGee's position, good cause¹⁷ to compel an answer exists. We remind the People that 26(b)(4)(B) uses the phrase "exceptional circumstances" as the standard to be met to require an answer. The "good cause" asserted by the People is the great disparity in resources between the parties. We find this falls short of providing good cause, and far short of demonstrating exceptional circumstances.

For the reasons delineated above, the Board denies the State's motion to compel Kerr-McGee to answer more completely Interrogatory 62.

WAIVER OF ATTORNEY-CLIENT AND WORK PRODUCT PRIVILEGES

The People's Interrogatory 17¹⁸ (*West Chicago*) has produced disagreement concerning waiver of attorney-client and work product privileges. Interrogatory 17 requests that Kerr-McGee

Identify all persons who participated in Kerr-McGee's analysis of costs associated with disposal of the Kerr-McGee wastes, describe the work done by each such person, and describe each such person's educational background and field of expertise, if any.

Kerr-McGee provided the State with an Answer and a Supplemental Answer,¹⁹ responding to Interrogatory 17 as follows:

¹⁶ Those cases contrary to *Ager* follow the reasoning contained in *Baki v. B.F. Diamond Construction Co.*, 71 F.R.D. 179, 182 (D. Md. 1976) where the court permitted discovery of the identity of experts retained in anticipation of litigation who were not expected to testify although no exceptional circumstances were shown. The *Baki* court did provide, however, that such information could not be irrelevant, privileged or otherwise nondisclosable.

¹⁷ People's Motion to Compel Certain Discovery Responses, dated June 28, 1985, at 16.

¹⁸ See the People's Third Set of Interrogatories and Request for Documents, November 27, 1984.

¹⁹ Answer and Supplemental Answer dated March 29 and May 28, 1985, respectively.

Answer: The following persons have, at various times, participated in the estimation of costs associated with disposal: Ralph Vreeland, George Hennigan, W.J. Shelley, I. Denny, Brad Snow, and Frank Lyons. More recent work on costs estimation was performed by Mr. Snow in 1983 at the request of Kerr-McGee counsel. Kerr-McGee objects to the production of Mr. Snow's memorandum and work papers reflecting such cost estimations on the grounds that they are subject to work product and attorney-client privileges. A description of the education and experience of the listed individuals is included in Appendix A.

Supplemental Answer: * * *Mr. Snow conducted a similar evaluation [i.e., of decommissioning costs] in 1983. This work was prepared under the supervision of counsel as part of Kerr-McGee's evaluation of its litigation risks and is clearly protected by the attorney-client and work product privileges. His work product was distributed primarily to Kerr-McGee's in-house and outside counsel. It was reviewed by Mr. Lyons, who is one of his supervisors . . . Copies have also been made available to Mr. Shelley and Mr. Denny [Mr. Shelley was until his retirement in 1984 employed by Kerr-McGee, and Mr. Denny is still employed by Kerr-McGee]. The document principally contains opinions as to facts; the facts cannot be readily segregated out for purposes of discovery. Kerr-McGee does not know at this time whether Mr. Snow will testify, or whether he will rely on this document if he does testify.

Finally, some work on costs has been performed by Kerr-McGee's consultants. The results of this ongoing work are protected from production at this time by the rules of discovery from experts. *Cf.* Rule 26(b)(4), F.R.Civ.P.

Despite Kerr-McGee's claim of the attorney-client and work product privileges for the memorandum and working papers produced by Mr. Brad Snow, the People argue they are entitled to discover these materials. The essence of the People's argument, as we understand it, is that Kerr-McGee has waived its right to assert the attorney-client and work product privileges because it has provided for open, public dissemination²⁰ of other information relevant to the costs of the decommissioning. The People assert that Kerr-McGee seeks a favorable disposition of its application from the NRC, and has released documents which support its position. "Having revealed that much on the matter of costs, Kerr-McGee may not now selectively withhold other — possibly inconsistent or impeaching — information on the same matter."²¹ The People's legal argument is that "a litigant may not selectively disclose some information and then withhold other information on the same subject matter [as it] is inconsistent with the general construction given the attorney-client privilege."²²

²⁰ The People argue Kerr-McGee took a public stance on the propriety of its proposal and publicly disseminated the information by publishing it in the Environmental Report required by the NRC. People's Motion to Compel Certain Discovery Responses, June 28, 1985, at 2-3.

²¹ People's Motion to Compel Certain Discovery Responses, dated June 28, 1985, at 3.

²² People's Motion at 4 (citation omitted).

We find the People's position difficult to justify. Their assertions are not supported by case law which precisely stands for the premise they advance, and we found no supporting cases in our research.

In the situation before us, a corporate employee performed analytical studies or evaluations of decommissioning costs at the request of the corporate employer's counsel as part of the counsel's evaluation of litigation risks. The resultant reports were distributed to the corporation's counsel (inhouse and outside), a supervisor and two other employees. These facts fit into the construction of the attorney-client and work product privileges. Moreover, the People do not contend that the privileges did not apply, but that they were waived by the publication of the related, favorable information in the Environmental Report.

Our discussion of the People's mistaken use of the waiver argument need only be brief. While it is correct that the attorney-client and work product privileges may be waived by disclosure of the content of privileged communications,²³ the information disclosed by Kerr-McGee in the Environmental Report has never been claimed to be privileged. It includes the company's statement of facts and computations of those costs it expects it will incur in various decommissioning plans. The People do not claim partial disclosure of a single document, which would waive the privilege as to the remainder of that document. Instead, the People argue that any disclosure on a particular subject waives the privilege as to all communications on that subject. However, for a waiver to occur, "the specific content of the privileged communication must be disclosed; the mere discussion of facts which were the subject of the communication is insufficient to constitute waiver." 4 Moore's Federal Practice ¶ 26.60[2], 26-203, ¶ 26.64[4], 26-390 *et seq.* (1984). The rationale underpinning the courts' recognition of waiver rests with the element of confidentiality. Once originally confidential information has been released, the privilege cannot be sustained. But here, the data released by Kerr-McGee were not of a confidential nature initially, and therefore the privilege was not reached.

The People argue that information on decommissioning costs is peculiarly within Kerr-McGee's knowledge,²⁴ and that therefore the Snow memorandum should be produced or inspected *in camera* to segregate factual information. Kerr-McGee asserts that the State could obtain with little difficulty the information it sought by analyzing the State's own construction project figures and land planning efforts. Further, Kerr-McGee points out that the People have made no showing that the factual

²³ See *In re Sealed Case*, 676 F.2d 793, 818 (D.C. Cir. 1982).

²⁴ State's Motion to Compel Certain Discovery Responses, dated June 28, 1985, at 5-6.

information they seek is not available through normal discovery. We agree. The People have made no showing of substantial need for the Snow memorandum. Their motion is denied.

The People also present their waiver argument in connection with Interrogatory 1 (*Kress Creek*). This disagreement initially arose over the production of a memorandum (and its attachments) written by Kerr-McGee employee Edwin Still, in April 1982. The company's supplemental answer indicated that a further review of its files led to two other documents responsive to Interrogatory 1. These were also written by Mr. Still. The People argue they are entitled to all three documents.

Kerr-McGee asserts that the documents are privileged by the work product privilege as set forth in 10 C.F.R. § 2.740(b)(2).²⁵ Kerr-McGee explains that each document was prepared by Mr. Still while working with the company's counsel to prepare for meetings with the Staff after initiation of the Show Cause proceeding. Kerr-McGee claims the Still documents "were prepared during an NRC investigation, and in anticipation of further litigation, and each concerns the development of possible proposals to the NRC during the course of these proceedings."²⁶

As an initial matter, the People assert that Interrogatory 1 concerns costs (environmental and economic) of cleaning Kress Creek and the Dupage River's west branch, matters which Kerr-McGee has raised as defenses. The People argue that because the Board found that these defenses lack a statutory basis, Kerr-McGee may not now refuse to disclose information in its possession bearing on these defenses.²⁷ The essence of the People's argument seems to be that because Kerr-McGee has raised what amounts to an affirmative defense, it has opened the door to related subject matter. Presumably the People have in mind the argument used to delve into a point on cross-examination which was brought out on direct, and fairness dictates that it be open to cross-examination. The lack of a statutory basis for a defense or the allocation of the burden of proof are not relevant to whether a privilege attaches to a specific document. If the People seek to introduce information contrary to Kerr-McGee's contentions about costs, they may do so. If Kerr-McGee does not submit sufficient proof to convince the Board of its position on the record, then its defense will fail. But the People's undeveloped argument that there is a connection between lack of statutory basis or the burden of proof and the assertion of a privilege strains our patience.

The People assert the same waiver argument with respect to the Still memoranda that they articulated with respect to the memorandum and

²⁵ People's Motion to Compel Certain Discovery Responses, dated July 3, 1985, at 4.

²⁶ KM Supplemental Answer.

²⁷ People's Motion to Compel Certain Discovery Responses, dated July 3, 1985, at 5.

working papers produced by Mr. Snow. *See supra* pp. 617-20. There we found no basis on which to rule for the People. Although the present issue is in the context of the work product privilege only, we are not persuaded to rule differently.

To be privileged under 26(b)(3) and 10 C.F.R. § 2.740(b)(2), the Still memoranda must have been prepared in anticipation of litigation by a party, his attorney, or another representative of that party. Furthermore, materials developed “in the ordinary course of business or pursuant to public requirements unrelated to litigation” are not given immunity under 26(b)(3).²⁸ The purpose of the Rule is to shield each attorney’s thought processes and preparatory efforts from those of his adversary so as not to disclose trial strategy or legal conclusions.

Kerr-McGee takes the position that the documents fall within these standards and the People do not argue otherwise. The People argue that there has been disclosure of related subject matter sufficient to constitute a waiver because Kerr-McGee produced a discussion outline written by Mr. Still for a meeting between company representatives and the Staff. According to the People

the discussion outline contains a wide range of conclusions about the hazards of the Kress Creek decontamination and the hazards and economic costs of cleaning it up, all of which conclusions Kerr-McGee apparently presented to NRC at the March 1982 meeting²⁹

The People claim that the case law is clear “that by disclosing the Still outline as well as the reports of the three outside consultants [NUS Corp., ALARA, Inc., and Woodward-Clyde, Inc.] Kerr-McGee has waived any and all privileges it may have had with respect to other documents in its possession addressing the same matter.”³⁰ In response we reiterate our conclusion that waiver occurs for a single document when a portion of it has been released to an adversary, thereby destroying its confidentiality. This is not true of documents otherwise privileged which may concern similar subject matter. 8 Wright and Miller, *Federal Practice and Procedure* § 2024, at 209 (1970).

The People also request that Kerr-McGee segregate and produce the facts ensconced within the documents for which the work product privilege is claimed. Kerr-McGee argues that this intrudes on the thought processes of its attorneys in organizing the factual data in such a way as to buttress its position. We agree that the facts contained within the

²⁸ *Advisory Committee Notes, supra*, 48 F.R.D. at 501.

²⁹ People’s Motion to Compel Certain Discovery Responses, dated July 3, 1985, at 7.

³⁰ *Id.*

memo may reflect in their organization interaction between Mr. Still and the company's attorney, and as such remain within the bounds of the privilege.

Kerr-McGee also has identified other studies and cost estimates encompassed by Interrogatory 1, but which it claims are protected under Rule 26(b)(4)(B). The People object because the company does not offer any information on which to evaluate its claim of 26(b)(4)(B) protection. As we said earlier, *see supra* pp. 616-17, under the *Ager* case, a party is not required to disclose the identity of an expert who is not expected to be called as a witness.

The People argue that even if we agree that Kerr-McGee has correctly invoked the protection afforded by 26(b)(4)(B), good cause exists to justify our requiring production of the documents. None of the People's arguments meet the "exceptional circumstances" standard of the Rule, and we admonish the People not to clutter their pleadings with inappropriate "disparate resources" arguments. *See supra* p. 617.

For the foregoing reasons we deny the People's motion to compel production of documents in response to Interrogatory 1.

IDENTIFICATION OF PERSONS ANSWERING INTERROGATORIES

The People's Interrogatory 75 (*West Chicago*) and Interrogatory 36 (*Kress Creek*) requested that Kerr-McGee identify the individuals who provided answers to each of the interrogatories and designate for each interrogatory the specific individual(s) responsible for the answer. Kerr-McGee responded that the interrogatory answers were created through the consultation of several people. Those involved were listed in an appendix to the submitted interrogatory answers. In its supplemental answer Kerr-McGee stated that to the extent the State requested it provide anything more, the interrogatory was "unduly burdensome and essentially meaningless."

Regardless of whether the request is in fact burdensome for Kerr-McGee, we are unaware of a discovery practice *requiring* a corporate party to identify the persons who have assisted in the preparation of answers to interrogatories. 8 Wright & Miller, *Federal Practice and Procedure* § 2172, at 538-39 (1970). Although a District Court in Texas has held that a corporation may have to divulge the source from which it obtained the information on which it based its answer to a particular interrogatory, other courts have held to the contrary. *B&S Drilling Co. v. Haliburton Oil Well Cementing Co.*, 24 F.R.D. 1, 4 (1959); *contra Evans v. Local Union 2127, Int'l Brotherhood of Electrical Workers, AFL-CIO*, 313

F. Supp. 1354, 1360 (1969). In a 1973 case decided in the Southern District of New York, the court was faced with a relevancy objection to an interrogatory which requested the defendants to "identify any and all persons who helped prepare the answers to these interrogatories or were consulted in connection therewith." *Maritime Cinema Service Corp. v. Movies En Route, Inc.*, 60 F.R.D. 587, 591 (1973). The Court acknowledged the relevancy of the request since there were probably people with knowledge of the relevant facts among those consulted. However, the Court described the request as "certainly overbroad," *id.*, and resolved the dispute by ordering the defendants "to respond simply by naming those persons consulted in the preparation of their answers who have knowledge of the relevant facts." *Id.*

We garner from the case law that built into the determination of whether a corporation must specifically designate who composed the answer to each interrogatory is the element of reasonableness. For instance, if a party delegates responsibility for answering certain discrete interrogatories to various individuals, it would not be difficult later to ascertain the primary person involved in answering a given interrogatory. This seems to be the manner in which the People developed their answers to interrogatories propounded by Kerr-McGee. Alternatively, it is plausible for interrogatories to be answered by aggregating the knowledge of several people who work closely with one another to arrive at the answer ultimately submitted. Kerr-McGee ostensibly followed this course. With a small group such as that consisting of two or three people, we would agree with the claimed assertion that it is difficult to extract one's thoughts from those of the collegial body. However, here where the group consisted of as many as nine people, we find it difficult to accept the proposition that all nine were primarily involved in answering all of the interrogatories. We require Kerr-McGee to determine the individuals or groups of individuals responsible for answering each interrogatory, to the extent that it is able to make this determination. We find this particularly appropriate as it is consistent with the Order of the State Court in a parallel proceeding in which substantially these same witnesses are involved.

DOCUMENT REQUESTS

In both *West Chicago* and *Kress Creek*, Kerr-McGee has raised questions of the adequacy of the People's responses to its document requests. In *Kress Creek*, Kerr-McGee has also argued that all State agencies and officers should respond to its document requests, rather than only the

Attorney General and the Illinois Department of Nuclear Safety (IDNS).³¹

The People, while maintaining that they are not required to do so, have searched the files of other State agencies for documents responsive to Kerr-McGee's requests. The People maintain that all responsive non-privileged documents have been produced.

The question remains of precisely which files of which agencies were searched for each document request and when they were searched. We wish to know in detail the steps taken by the People in response to the document requests. In a letter of September 20, counsel for the People cited us to pages 3 and 4 of their July 29 response filed in *Kress Creek*. We find the information contained there insufficient. The People are to provide this information in the detail specified no later than 10 days following service of this Memorandum and Order. With the information in hand, we will address the question of adequacy of document production, including the question of which agencies must respond.

The remaining discovery disputes involve primarily discreet factual issues and hence are dealt with separately under each proceeding.

KERR-MCGEE'S MOTION TO COMPEL IN THE *WEST CHICAGO* PROCEEDING

Kerr-McGee alleges that the People have offered neither objection nor answer to the following Interrogatories: 7(b), 7(c), 7(e), 7(f), 8(b), 8(c), 8(e), 8(f), 9(a), 9(b), 9(c), 9(d), 9(e), 9(f), 20(c), 20(e), 20(f), 20(g), 20(h), 24(e), 29(d), 35(b), 37(b), 38, 39(b), 103(b), 103(c), 103(d), 103(e), 104(b), 104(c), 109(b), 109(c), 109(d), 113(a), 113(b), 113(c), 113(d), 114(a), 114(b), and 114(c). Following the People's response, Kerr-McGee withdrew its motion with respect to 24(e), 29(d), 35(b), 37(b), 38, and 39(b). The People maintain that their answers to the opening inquiry of these interrogatories were adequate and that further answers to the specific subparts were not necessary.

Kerr-McGee's motion is granted with respect to all these interrogatories except 9(c) and (d), 104(b) and (c), and those as to which it withdrew its motion.

³¹ The Attorney General filed the petition to intervene on behalf of the People of the State of Illinois and at the request of IDNS. Kerr-McGee raised the same argument in *West Chicago*; we held that only parties need respond to discovery requests and pointed out that subpoenas are available with respect to nonparties. LBP-85-1, 21 NRC 11, 21-22 (1985).

Kerr-McGee moves to compel answers to those parts of Interrogatories 4, 12, 20, 27, 28, 50, 52, 54, 56, 64, 65, 105, 106, 107, and 114 to which the People have objected as calling for a legal conclusion. In response, the People point out that interrogatories may properly enquire about legal conclusions and theories that apply to the facts of the case, but may not enquire about legal conclusions which do not so relate. We agree with this proposition. *See* 4A Moore's Federal Practice § 33.17[2] (1984 ed.). We find that all of the above interrogatories are proper under this standard. Further, we reject the People's arguments that some of the interrogatories are too vague or that answers to them are contained in other documents filed in this case. While it may be permissible to make specific references to pages of such documents in answering interrogatories, a blanket statement that the answers are to be found somewhere in the record is not satisfactory. Kerr-McGee's motion as to these interrogatories is granted.

Kerr-McGee moves to compel answers to six interrogatories which seek information concerning communications between officials of the State and others. Interrogatories 13 and 14 seek information regarding communications with Kerr-McGee and the U.S. Government, respectively, on the alternate sites issue. Interrogatories 54 and 55 seek information concerning communications with the NRC Staff on Kerr-McGee's disposal plan, while Interrogatory 63 seeks information on communications with officials of the City of West Chicago on the stabilization plan and the FES. Interrogatory 117 seeks information concerning communications between officials of the Illinois Department of Nuclear Safety and other State officials on matters at issue in this proceeding.

The People object that Interrogatory 13 seeks information which is already within the knowledge of Kerr-McGee. This is not a valid objection. *See* 4A Moore's Federal Practice § 33.13 (1984 ed.).

The People also raise objections that these interrogatories are vague and overbroad. We disagree; Kerr-McGee's motion is granted.

Kerr-McGee seeks answers to Interrogatories 15 through 18. These concern meetings on alternate sites which State officials have attended or declined to attend, the State's policy concerning cooperating in the search for alternative sites, and assistance which the State may provide in the future in this regard. The People object to Interrogatory 15 on the same grounds advanced for 13 and 14. They also advance vagueness and relevancy objections as to all four. We disagree; Kerr-McGee's motion is granted.

The People have objected to portions of Interrogatories 64 and 65 which probe the Lash and Estep affidavits which were earlier submitted by the People. We have already disposed of their objections to 64(c),

64(o)-(q), 65(e), and 65(l)-(m) which asserted that these subparts sought legal conclusions. The People object to 64(e)-(l) and 65(g)-(i) on the grounds that they call for answers protected by executive privilege. We find that 64(e)-(f), (h)-(l) and 65(h)-(i) clearly call for factual information and are proper. However, 64(q) and 65(q) require closer scrutiny.

Both subparts question the process engaged in by Illinois State agencies to develop the policies to which the People claim Kerr-McGee must adhere in the mill tailings disposal. The People argue that any documents explaining such a process are protected by executive privilege.³²

The executive privilege may be invoked in NRC proceedings. *Virginia Electric and Power Co.* (North Anna Power Station, Units 1 and 2), CLI-74-16, 7 AEC 313 (1974); *Consumers Power Co.* (Midland Plant, Units 1 and 2), ALAB-33, 4 AEC 701 (1971). The privilege is designed to prevent the "public disclosure [of] governmental documents reflecting advisory opinions, recommendations and deliberations comprising part of a process by which governmental decisions and policies are formulated." *Long Island Lighting Co.* (Shoreham Nuclear Power Station, Unit 1), ALAB-773, 19 NRC 1333, 1339 & n.15 (1984). While the privilege is qualified, and may be overcome by an appropriate showing of need, the Court, and in this case the Board, must perform a balancing test pitting the party's need for the documents against the government's interest in confidentiality. Once the privilege is properly claimed by the government agency, the burden of demonstrating that there is sufficient need for the withheld information must be borne by the party seeking that information.

Kerr-McGee argues that the People have not complied with the requisite showing to demonstrate the privilege is proper as to the documents covered by the two interrogatory subparts. Kerr-McGee's claim that the People have not fully substantiated the executive privilege claim is well taken. The Licensing Board in *Long Island Lighting Co.* (Shoreham Nuclear Power Station, Unit 1), LBP-83-72, 18 NRC 1221 (1983); *rev'd on other grounds*, ALAB-773, 19 NRC 1333 (1984), discussed precisely this issue in relation to a discovery request by Suffolk County to the Federal Emergency Management Agency (FEMA) for certain documents created by the Agency. There the Licensing Board required FEMA to have the claim asserted by the head of the agency, to specifically describe the documents for which the privilege is sought and to state the reasons for retaining the confidentiality of the documents. *Shoreham, supra*, 18 NRC at 1223. FEMA submitted an affidavit by the

³² People's Answer to Motion to Compel, dated August 8, 1985, at 15-16.

Agency Director which described the seven documents to be withheld and a short explanation of his reasons for preventing their disclosure.

The reasons asserted by the FEMA director, that the disclosure of the documents would have a “‘chilling effect’ on the ability of FEMA to receive written comments and opinions in the future,” *id.* at 1227, are neither expansive nor lengthy. Yet the Licensing Board found, and the Appeal Board agreed, at 19 NRC 1341, that sufficient descriptions were given and the reason for preserving the confidentiality of the documents was articulated in compliance with the prerequisites for the claim of executive privilege. The Appeal Board, however, disagreed with the Licensing Board’s conclusion that a sufficient showing of need had been made to justify overcoming the privilege.

Here the claim is not asserted by the heads of the agencies in question. However, in their answer to the Motion to Compel, the People articulate reasons similar to those used by the Director of FEMA which were found acceptable in *Shoreham*, although the privilege was not asserted by the heads of the Illinois agencies involved.

Otherwise, the situation before us falls squarely within the parameters of the executive privilege. We agree with the People that “how and why agency regulatory policy has developed . . . are improper [interrogatories] as inquiring into executive deliberative processes.”³³ Furthermore, we find no evidence here of a waiver by the mere initiation of litigation by the governmental entity, as suggested by several of the citations submitted by Kerr-McGee.³⁴

In short, unless the People file proper affidavits asserting the privilege executed by the heads of the agencies involved within 10 days of the service of this Memorandum and Order, we will grant Kerr-McGee’s motion.

Kerr-McGee challenges the People’s objection to Interrogatory 44 as overbroad. This interrogatory inquires after studies of the toxicity or mobility of materials of the same type or chemically similar to the type to be disposed of at the site. The interrogatory is indeed broad, but less so than the People’s Interrogatory 35 on the same subject. What’s sauce for the goose is delectable diet for the gander; motion granted.

The People have agreed to supplement their answers in response to Kerr-McGee’s motion and Interrogatory 35. Hence, no ruling is necessary.

We agree with the People’s objection to Interrogatory 85 which asks whether the State agrees that aboveground disposal of wastes sometimes

³³ People’s Motion to Compel, dated August 8, 1985, at 16.

³⁴ Motion by Kerr-McGee Chemical Corporation to Compel Production of Documents and Answers to Interrogatories by the State of Illinois, dated July 3, 1985, at 9.

may be appropriate. This proceeding concerns Kerr-McGee's proposal for aboveground disposal with which the People disagree. Whether they might agree with some other unspecified aboveground disposal plan is not likely to lead to the discovery of relevant evidence.

The People object that Kerr-McGee's Interrogatories 93 through 96 and 98 through 102 are overly broad. These interrogatories seek information with respect to whether the People take issue with specific portions of the FES. While the portions of the FES identified do contain numerous assertions, we view the interrogatories as reasonable. To the extent that Kerr-McGee has identified portions of the FES which the People view as outside the scope of their contentions, a response to that effect is sufficient. However, to the extent that the portions identified are within the scope of the contentions, a specific answer must be given. The motion is granted.

Kerr-McGee asserts that the People's answers to Interrogatories 21 and 22 are evasive. These interrogatories ask whether it is the People's position that abandoned surface and coal mines and limestone/dolomite quarries might be "rendered suitable" for disposal of the West Chicago materials. In each case the People answered negatively and clarified their position. The question presented by this dispute appears to be one of semantics. While the People may have answered the specific questions posed, their answers appear to be evasive. Kerr-McGee's motion is granted.

THE PEOPLE'S MOTION TO COMPEL IN THE *WEST CHICAGO* PROCEEDING

The People move to compel a responsive answer to their Interrogatory 21 which asks for a description of all measures necessary and appropriate to maintain the site after closure. Kerr-McGee has answered in terms of the measures it intends to take, thus raising the question whether other measures will be necessary after transfer of the site. However, Kerr-McGee's counsel made clear at the prehearing conference that the measures referred to in Kerr-McGee's answer (establishment and maintenance of the vegetative cover) are all the measures of which it is presently aware. Counsel agreed to so supplement the answer.

The People complain that Kerr-McGee's answer to Interrogatory 22 is evasive. This interrogatory asks what measures will be necessary to exclude humans from the site. Kerr-McGee's answer is none, once the vegetative cover is established. The People believe this answer is inconsistent with other answers to the effect that human use of the site could damage that cover. We disagree; the motion is denied.

The People move to compel responsive answers to Interrogatories 23 and 24 which ask for cost estimates for post-closure monitoring of the site. In its answer, Kerr-McGee objects that it does not know what monitoring measures will ultimately be required, and implies that it may have some cost data for the monitoring it has proposed. To the extent such data exist, they should be provided; the motion is granted.

Interrogatories 28 and 29 ask what uses might be made of the site after closure. The People quarrel with Kerr-McGee's answer that any use which is consistent with perpetual government ownership and surveillance, and which does not damage the vegetative cover, would be permissible. This is an adequate answer; the motion is denied.

KERR-MCGEE'S MOTION TO COMPEL IN THE KRESS CREEK PROCEEDING

Kerr-McGee has sought information from the People concerning the factual underpinning for their contentions and has asked for an identification of documents in this connection. In response, the People have in part referred to documents produced by Kerr-McGee and have refused to further identify these documents on the grounds that Kerr-McGee knows what it has produced and that to do so would result in a "dress rehearsal" of the People's case. We find these justifications inadequate. It is not sufficient to refuse to answer an interrogatory because the information sought is known to the interrogatory party. *See* 4A Moore's Federal Practice § 33.13 (1984 ed.). While a party may not compel its opponent to put on a "dress rehearsal" of its case, interrogatories which seek the factual underpinning of that case are proper. Kerr-McGee's interrogatories are in the latter category. Kerr-McGee's motion to compel answers to Interrogatories 1(c), 3(b), 4(c), 5(d), and 15(d) is granted.

Kerr-McGee seeks an order compelling answers to Interrogatories 19, 20, and 24. These seek information regarding the State's Kress Creek sampling program. The People have responded simply that all nonprivileged documents have been produced. This is not sufficient, and these interrogatories must be answered. We do not agree with the People that answers to these interrogatories would require them to shoulder Kerr-McGee's burden of preparing its case. The interrogatories seek factual information and do not require any expenditure of effort beyond reporting that factual information. It is not sufficient under the Commission's rules to attempt to avoid this obligation by referring to documents which contain only scattered references to the information sought. If documents are to be used in providing the answer, the People must state spe-

cifically where the documents provide the answers. The interrogatories are proper and the motion is granted.

Interrogatory 11 asks whether the People “contend that the mill tailings allegedly found at Kress Creek on the West Branch of the DuPage River pose significant risks. . . .” The People object that Kerr-McGee has not defined the term “significant.” However, the People surely know whether they regard the risks as significant and hence make that contention. The motion is granted.

Interrogatory 18 seeks information on all private and public meetings in which State officials participated at which the Kress Creek matter was discussed. The People object to the breadth of this inquiry. Kerr-McGee relies on *In re Shopping Carts Antitrust Litigation*, 95 F.R.D. 299, 306-08 (S.D.N.Y. 1982) in which similar interrogatories were permitted.

We do not believe *Shopping Carts* justifies such a broad inquiry in this proceeding. In antitrust litigation, such interrogatories can well lead to important information concerning anticompetitive practices. Here we are concerned with the possibility that it may be necessary to clean up a contaminated stream. It seems unlikely that this interrogatory would produce much information of value, while at the same time the burden in answering it is obviously great. The motion is denied.

THE PEOPLE’S MOTION TO COMPEL IN THE KRESS CREEK PROCEEDING

The People have asked Kerr-McGee whether the gamma radiation standard employed in the cleanup of “hot spots” in West Chicago would be appropriate for Kress Creek. Kerr-McGee responded that, in its view, no cleanup of Kress Creek was required, but should one be required, Kerr-McGee would require an opportunity to further study the matter before reaching a conclusion. At the prehearing conference, the People agreed that that is a satisfactory response.

In Interrogatory 12, the People ask what level of risk Kerr-McGee regards as “significant” as that term is used in Averment 10 of Kerr-McGee’s amended answer. Kerr-McGee’s answer refers to materials filed in this proceeding and states that the significance of a risk must be determined in relation to other risks. The People object that this does not answer the question. We agree that it does not answer the specific question. However, we believe it to be an adequate answer. It is clear that Kerr-McGee does not regard the Kress Creek risks as significant, and we see nothing to be gained by requiring Kerr-McGee to speculate on what level of risk would be significant beyond the answer it has already given.

Interrogatory 20 asks for the identities of persons with knowledge of the costs and risks of remedial action at Kress Creek. Kerr-McGee has answered this; the motion is denied.

CONTENTION AG-2(g) IN *WEST CHICAGO*

We raised the question with the parties whether Contention AG-2(g) should be discussed in light of the ruling in *Brown v. Kerr-McGee*, 767 F.2d 1234 (7th Cir. 1985). After hearing the views of the parties we have determined to continue to hold this contention in abeyance. We see no harm in this course, because the contention will not be the subject of litigation while in this status. Should the Seventh Circuit agree with the People that *Brown* was wrongly decided, this contention might be appropriate for litigation.

SCHEDULE FOR FURTHER PROCEEDINGS

Kerr-McGee and the People differ with respect to the schedule which should be adopted in *West Chicago*. The former wishes to proceed with all deliberate speed while the latter wish to defer further proceedings pending completion of related litigation in the Illinois courts scheduled for trial in February 1986. The situation is further complicated by Staff's schedule for the issuance of its draft and final supplements to the environmental impact statement, slated for June 1986 and March 1987, respectively.

While we appreciate that counsel's time to devote to this proceeding may be affected by the State court litigation, we also note that the People are represented by the Illinois Attorney General and that the resources of that office are probably substantial. Further, we perceive no reason why this proceeding should abide the resolution of the State court litigation. Indeed, because both the People and Kerr-McGee have raised arguments concerning the possible preemption of State regulation, early resolution of this proceeding could be beneficial in determining to what extent an actual conflict exists between State and Federal regulation.

Consequently we are directing that all further discovery responses required by this Memorandum and Order, and any requests for admission pursuant to 10 C.F.R. § 2.742, be served within 30 days of service.

Further, any motions for summary disposition which the parties wish to file are to be served within 60 days of service of this Memorandum

and Order. In particular, if any party wishes to argue that the Staff's alternate site evaluation methodology reflected in its August 16, 1985, letter to the Board is insufficient as a matter of law, this argument is to be made by a motion for summary disposition filed on this schedule.

At the prehearing conference, we raised the question whether we should seek Commission permission to proceed to hearing in *West Chicago* on Staff's draft supplement to the environmental impact statement to avoid the delay incident to waiting for the final supplements. We will address further scheduling matters on receiving the parties' views on this question.

In *Kress Creek*, Staff has filed a motion to hold the proceeding in abeyance. We will address any scheduling concerns in our Memorandum and Order ruling on that motion. However, we see no reason to further delay discovery responses required by this Memorandum and Order, and any requests for admissions under 10 C.F.R. § 2.742 are to be filed within 30 days of the date of service.

Order (*West Chicago*)

1. Kerr-McGee's and Dr. James L. Grant's motion to quash the subpoena directed to the latter is granted.

2. Kerr-McGee's and Stearns Catalytic's motion to quash the subpoena directed to the latter is granted in part and denied in part. *See* p. 615, *supra*.

3. Kerr-McGee's motion to compel is granted as to interrogatories:

(a) Failure to respond: 7(b), (c), (e), and (f); 8(b), (c), (e), (f); 9(a), (b), (e), and (f); 20 (c), (e), (f), (g), and (h); 24(e); 29(o); 35(b); 37(b); 38; 39(b); 103(b), (c), (d), and (e); 109(b), (c), and (d); 113(a), (b), (c), and (d); 114(a), (b), and (c).

(b) Inappropriate objections:

(i) Interrogatories concerning the People's contentions: 4, 12, 20, 27, 28, 50, 52, 54, 56, 64, 65, 105, 106, 107 and 114.

(ii) Interrogatories about communications: 13, 14, 54, 55, 63, and 117.

(iii) Interrogatories about State participation in the evaluation of alternatives: 15, 16, 17, and 18.

(iv) Interrogatories on the Lash and Estep affidavits: 64 and 65 (with possible exceptions of 64(q) and 65(q)).

- (v) Miscellaneous interrogatories: 4, 93 through 96, 98 through 102, 21, and 22.

The People are to supplement their response to Interrogatory 35 and to furnish further documentation of their claims at privilege. In addition, the People are to indicate specifically which files were searched with respect to each document request as when they were searched.

To the extent not covered above, Kerr-McGee's motion is denied.

4. The People's motion to compel is granted as to Interrogatories 23, 24, and 75. Kerr-McGee is to supplement its answer to Interrogatory 21. In all other respects the motion is denied.

5. Further discovery responses and any requests for admissions pursuant to 10 C.F.R. § 2.742 are to be filed within 30 days of service of this Memorandum and Order.

6. Motions for summary disposition, if any, are to be filed within 60 days of service of this Memorandum and Order.

Order *(Kress Creek)*

- 1 (a) Kerr-McGee's motion to compel is granted as to Interrogatories 1(c), 3(b), 4(c), 5(d), 11, 15(d), 19, 20, and 24.
 - (b) Kerr-McGee's motion as to Interrogatory 18 is denied.
 - (c) A ruling on Interrogatory 17 is withheld pending the People's compliance with subparagraph (d), below.
 - (d) The People are to indicate specifically which files were searched with respect to each document request and when they were searched.
- 2(a) The People's motion to compel is granted as to Interrogatory 36.
 - (b) The People's motion to compel is denied as to Interrogatories 1, 4, 12, and 20.

3. Further discovery responses and any requests for admissions are to be filed within 30 days of service of this Memorandum and Order.

**THE ATOMIC SAFETY AND
LICENSING BOARD**

**Dr. James H. Carpenter
ADMINISTRATIVE JUDGE**

**Dr. Peter A. Morris
ADMINISTRATIVE JUDGE**

**John H Frye, III, Chairman
ADMINISTRATIVE JUDGE**

**Bethesda, Maryland
September 26, 1985**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

OFFICE OF NUCLEAR REACTOR REGULATION

Harold R. Denton, Director

In the Matter of

Docket Nos. 50-440
50-441
(10 C.F.R. § 2.206)

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

September 13, 1985

The Director of Nuclear Reactor Regulation denies a petition under 10 C.F.R. § 2.206 filed by the Ohio Citizens for Responsible Energy which requested that a number of actions be taken in view of the alleged precarious financial condition of the Licensees of the Perry plant.

ATOMIC ENERGY ACT: FINANCIAL QUALIFICATIONS

Although the Commission has retained reviews of financial qualifications in some licensing proceedings, institution of enforcement proceedings is not required merely because a licensee may be experiencing financial difficulties. Whether enforcement action should be taken turns on whether financial constraints have had an adverse impact on safety or are substantially likely to affect safety adversely.

DIRECTOR'S DECISION UNDER 10 C.F.R. § 2.206

I.

By petition dated March 8, 1985, Ms. Susan Hiatt, on behalf of the Ohio Citizens for Responsible Energy (OCRE), requested that a number of actions be taken in view of the alleged precarious financial condition of the Licensees of the Perry Nuclear Power Plant.¹ OCRE suggests that the Licensees' financial condition may lead to unsafe construction or sabotage of the Perry plant and its nuclear fuel. OCRE requested specifically that the Commission immediately suspend the construction permits for Perry Units 1 and 2 pending an adjudicatory finding of financial capability; halt nuclear fuel shipments to the site; investigate and institute a proceeding to determine whether the Licensees are qualified financially to design and construct the Perry plant; suspend the operating license proceeding pending an adjudicatory finding of financial capability; and investigate the readiness of Perry Unit 1 for fuel loading.

OCRE's petition has been considered in accordance with the provisions of 10 C.F.R. § 2.206 by the Office of Nuclear Reactor Regulation (NRR). Notice that the petition under consideration was published in the *Federal Register* on April 30, 1985 (50 Fed. Reg. 18,332). OCRE was informed by letter dated April 24, 1985, from the Director of NRR that its request for immediate suspension was unwarranted because continued construction did not in itself pose an imminent threat to public health and safety and design and construction of the plant had been generally acceptable. Moreover, immediate suspension of fuel deliveries to the site was not warranted because the Licensees had in effect an acceptable safeguards program for protection of nuclear fuel at the Perry site which could thwart attempts to sabotage the fuel.

The Licensees responded to OCRE's petition in a letter from their counsel dated May 24, 1985. The Licensees' response to the petition included affidavits from two officers of CEI, pertaining to construction and financing of the project, and various financial documents of the Licensees.

¹ The Licensees under the construction permits for the Perry plant, and the Applicants for an operating license for Perry Unit 1 are: the Cleveland Electric Illuminating Company (CEI), the Duquesne Light Company (DL), the Ohio Edison Company (OE), the Pennsylvania Power Company (PP), and the Toledo Edison Company (TE). These five utilities comprise the Central Area Power Coordination Group or CAPCO. CEI is the agent for CAPCO that is primarily responsible for construction of the plants.

Upon consideration of the petition, the Licensees' response, and other relevant information, I have determined that the petition should be denied. Even assuming that the Licensees are under some financial pressures, available information does not demonstrate that construction of the plant has been poor or is likely to be completed inadequately. The Licensees also appear to have an adequate plan to finance completion of construction of Perry Unit 1. In view of the essentially suspended construction and uncertain future of Perry Unit 2, and the fact that the plant's current status does not itself pose any threat to public health and safety, initiation of proceedings with respect to Perry Unit 2 is not necessary. Thus, for the reasons stated in this Decision, the relief requested by the Petitioner is not warranted.

II.

OCRE requested primarily that the NRC Staff institute proceedings to require the Perry Licensees to re-demonstrate their qualifications to finance construction of the Perry project. As the Petitioner notes, the Licensees were found, as required by Commission regulations, financially qualified to construct the plant when the construction permits for the Perry plant were originally issued. See *Duquesne Light Co. (Perry Nuclear Power Plant, Units 1 and 2)*, LBP-77-29, 5 NRC 1121, 1133 (1977). Since the Perry construction permits were issued, the Commission's financial qualification rules have undergone revision. In its most recent rulemaking on the subject, the Commission eliminated review of financial qualifications of most electric utilities at the operating license stage while reinstating a requirement for review and findings of financial qualification for electric utilities that apply for construction permits. See *Elimination of Review of Financial Qualifications of Electric Utilities in Operating License Review and Hearings for Nuclear Power Plants*, 49 Fed. Reg. 35,747 (Sept. 12, 1984). Although the Commission has retained financial qualification reviews in some licensing proceedings, neither the Commission's regulations nor the Atomic Energy Act mandate the institution of enforcement proceedings merely because a licensee may be experiencing financial difficulties. A showing of financial difficulties does not in itself require that the Commission halt construction or operation of a plant. Mere speculation that financial pressures will undermine the safety of licensed activities is not enough. In determining whether financial constraints should lead to enforcement action, the critical question is, as always, whether such constraints have had an adverse impact on safety or are substantially likely to affect safety adversely. *Maine Yankee Atomic Power Co. (Maine Yankee Atomic Power Station)*, CLI-83-21,

18 NRC 157, 160 (1983), *aff'g* DD-83-3, 17 NRC 327 (1983); *Public Service Co. of New Hampshire* (Seabrook Station, Units 1 and 2), DD-82-8, 16 NRC 394, 395 (1982). Whether particular actions are necessary to abate the adverse impact on safety of financial difficulties rests within the sound discretion of the Commission. *See Maine Yankee, supra*, 18 NRC at 160 n.5; *Petition for Emergency and Remedial Action*, CLI-78-6, 7 NRC 400, 405-06 (1978).

OCRE does not make a substantial showing that any financial pressures which the Licensees are experiencing have led to or are causing currently unsafe construction of the Perry project. As the petition and the Licensees' response both note, most of the Licensees' current efforts are directed toward completion of Perry Unit 1. The only significant work being performed on Unit 2 is that necessary to support operation of Unit 1. Available information does not suggest that construction of the Perry project has been inadequate. In the Staff's interim response to the petition, OCRE was provided a copy of NRC Region III's recent assessment of the quality of design and construction of the Perry plant, which had been prepared at the request of the Advisory Committee on Reactor Safeguards (ACRS).² In its assessment, Region III concluded that the Licensees' construction and quality assurance program were comprehensive and had been effectively implemented, that construction quality was acceptable, and that the Licensees are responsive to the needs of facility construction and the necessity for continuous management attention to ensure adequate performance. More recent inspections have not revealed circumstances which would alter these conclusions or reveal an adverse impact on safe construction of the plant as a result of the Licensees' financial burdens.

OCRE suggests that workers may sabotage construction work and, specifically, that employees of Metalweld (the painting and coating contractor) have threatened to incorrectly mix coatings. The NRC regional inspection staff has contacted the Petitioner and is separately investigating this allegation. To date, the Petitioner has not provided any information to substantiate the allegation. Neither has the Staff been made aware of any information or facts which would change the evaluation findings pertaining to protective coatings documented in § 6 of the Perry Safety Evaluation Report (NUREG-0887, May 1982), which concludes that protective coatings meet applicable regulatory requirements. In any event, the allegation does not appear to have any direct bearing on the financial

² Enclosure to Memorandum from T.M. Novak (NRR) to D.L. Ward (ACRS) dated February 4, 1985. The ACRS had requested the assessment in a letter to Chairman Palladino dated July 13, 1982. The letter is contained in Appendix F to NUREG-0887, Suppl. No. 1, "Safety Evaluation Report Related to the Operation of Perry Nuclear Power Plant, Units 1 and 2," August 1982.

qualifications of the Perry plant owners and, thus, in and of itself would not warrant initiation of the proceedings requested by the Petitioner.

OCRE also speculates that storage of nuclear fuel at the site at this time could result in sabotage by disgruntled workers. Deliveries of fuel began on March 18, 1985, and no evidence of sabotage has occurred since that time. The Commission's issuance of a license under 10 C.F.R. Part 70 to the Licensees to procure and store nuclear fuel was premised in large measure on the acceptability of the Licensees' plans for physical protection of the fuel while in transit and while in storage at the site. These measures should provide adequate protection of the fuel from possible acts of sabotage suggested by OCRE which are, at best, speculative.

In sum, OCRE has not demonstrated that financial pressures which the Licensees may be under have had an adverse effect on the safety of the Perry plant. The Staff is not aware of any adverse effects that would warrant initiation of the proceedings that OCRE has suggested.

III.

The Staff has also examined the financial information provided by the Licensees to determine whether they have a reasonable financing plan for completion of construction of Perry Unit 1. See *Public Service Co. of New Hampshire* (Seabrook Station, Units 1 and 2), DD-79-20, 10 NRC 703, 706-07 (1979). In their response to OCRE's petition, the Licensees report that as of March 31, 1985, Perry Unit 1 (including common facilities) was 98.2% complete. As of that date they had invested \$3.347 billion in Perry Unit 1 and common Unit 2 facilities. This amount includes \$2.399 billion raised in cash and \$948 million in allowance for funds used during construction (AFUDC) accrued to the project. The Licensees estimate that the cost to complete construction of Perry Unit 1 (including common Unit 2 facilities) is approximately \$598 million. This includes \$235 million in AFUDC to be accrued to the cost of the project. These additional costs to complete Perry Unit 1 will be shared by the five utilities in proportion to their ownership shares (shown below) in the same manner as they have shared costs to date:

Ownership of Perry Unit 1 (including common facilities)

CEI	31.11%
OE	30.00%
PP	5.24%
DL	13.74%
TE	19.91%
	<hr/>
	100.00%

Each utility plans to finance its share of the remaining cost primarily through the issuance of securities, including debt, preferred and common stock in combinations appropriate to its capital structure. The table below shows estimated 1985 Perry Unit 1 expenditures for each utility as compared to estimated total cash construction requirements for 1985, and actual 1984 cash raised through securities issued by each utility:

**1985 Construction Funding Requirements
(dollars in millions)**

	CEI	OE	PP	DL	TE	TOTAL
Perry Unit 1	\$137	\$133	\$23	\$ 61	\$ 88	\$ 442
Total cash construction requirements	\$355- \$390	\$412	\$43	\$ 229	\$229	\$1268- \$1303
<hr/>						
1984 Cash raised through sales of securities	\$500	\$700	\$50	\$200	\$300	\$1750

As the table indicates, each Licensees' recent (1984) external cash-raising ability is substantially in excess of its estimated 1985 Perry Unit 1 requirements. Also, total 1985 cash construction requirements (\$1.3 billion) are well below the \$1.75 billion raised by the five utilities in 1984.

In addition to normal external sources of capital, each Licensee has already arranged, or is in the process of arranging, backup credit agreements. These sources would be used to provide the cash necessary to complete Perry Unit 1 (and Beaver Valley Unit 2) if for any reason the

total amount required were not raised through securities issues. Affidavits provided by the Licensees in their May 24, 1985 reply identify the following backup credit arrangements: CEI — \$100 million in existing credit and tentative agreement reached for an additional \$150 million credit; OE — \$520 million in existing credit arrangements; PP — \$30 million in existing credit arrangements; DL — \$225 million in existing credit arrangements; and TE — \$25 million in existing credit arrangements and expects to agree on an additional \$200 million in credit. It is noteworthy that these backup arrangements for sources of construction cash expenditures are substantially in excess of Perry Unit 1 requirements and are in addition to the Licensees' demonstrated ability to raise construction cash through the issuance of securities. The backup arrangements provide an additional level of assurance that the Licensees will be able to raise the total cash required for Perry Unit 1. The provision of such backup funding sources to construct a facility is extraordinary in the Staff's experience in reviewing utilities' financial qualifications. This level of assurance goes beyond most utility financial plans, which state that funds would be raised through usual utility sources, such as sale of securities. For the reasons described above, the Licensees have demonstrated reasonable assurance that they can obtain the funds necessary to cover estimated construction completion costs of Perry Unit 1 and common facilities.³ In accordance with the provisions of 10 C.F.R. § 50.33(f), the Staff concludes that the Licensees are financially qualified to complete the activities for which the Perry Unit 1 Construction Permit was issued.

IV.

The Staff has limited its review to the Licensees' plan for financing completion of Perry Unit 1 in the context of their overall construction program. As the Licensees indicate in their response to OCRE's petition, the future of Perry Unit 2 is under study, and the Licensees may decide either to cancel the project or to resume full construction. Under these circumstances, there is no compelling reason to institute enforcement proceedings. As was observed in an earlier § 2.206 decision on a petition filed by OCRE against the Licensees, a licensee's decision to slow or halt construction of a facility does not in itself mandate initiation of proceedings or cause a hazard to public health and safety. *Cleveland Electric*

³ The Staff is aware that CEI and TE are considering a merger. That fact does not alter the analysis set forth in this Decision of the Perry Licensees' financial qualifications. One stated purpose of the possible merger is to strengthen the combined financial position of CEI and TE.

Illuminating Co. (Perry Nuclear Power Plant, Unit 2), DD-84-23, 20 NRC 1549, 1553 (1984); see also *Washington Public Power Supply System* (WNP Nos. 4 & 5), DD-82-6, 15 NRC 1761 (1982). While further resumption of construction of Unit 2 might warrant some examination of the Licensees' capability to complete the plant, commitment of agency resources to formal proceedings on that issue would be unnecessary and wasteful at this time in view of the indeterminate status of Unit 2.

V.

For the reasons stated in this Decision, the Staff believes that any financial constraints which the Licensees may be under have not affected adversely the safe construction of the Perry plant. Moreover, the Staff has examined, as OCRE requested, financial information pertaining to the Licensees' ability to finance the completion of Perry Unit 1 and has found that the Licensees have reasonable assurance of obtaining the funds necessary to cover estimated construction completion costs of Perry Unit 1 and the Unit 2 common facilities. No compelling reasons exist for initiating proceedings to determine the Licensees' financial qualifications to complete Perry Unit 2. Accordingly, OCRE's request for suspension of construction and fuel deliveries to the site and for initiation of show-cause proceedings has been denied.⁴ This Decision will be filed with the Secretary for the Commission's review in accordance with 10 C.F.R. § 2.206(c).

Harold R. Denton, Director
Office of Nuclear Reactor
Regulation

Dated at Bethesda, Maryland,
this 13th day of September 1985.

⁴ OCRE also requested that the Licensees' readiness for fuel load be "investigated" and that the Director suspend the operating license hearing. Whether the Licensees are ready for fuel load is really a question bearing on the Staff's determination of the Licensees' readiness to undertake activities under any operating license that may be granted. As such, it is not an issue appropriate for consideration in separate enforcement proceedings. With respect to OCRE's other request, I do not have the authority under 10 C.F.R. § 2.206 to direct the presiding Licensing Board to suspend the operating license proceeding. See *Texas Utilities Generating Co.* (Comanche Peak Steam Electric Station, Units 1 and 2), DD-83-11, 18 NRC 293, 295 (1983). In any event, for reasons that are apparent in this Decision, I see no reason to recommend such action to suspend the operating license proceeding.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

OFFICE OF NUCLEAR REACTOR REGULATION

Harold R. Denton, Director

In the Matter of

Docket Nos. 50-528
50-529
(10 C.F.R. § 2.206)

ARIZONA PUBLIC SERVICE
COMPANY, *et al.*
(Palo Verde Nuclear Generating
Station, Units 1 and 2)

September 16, 1985

The Director of the Office of Nuclear Reactor Regulation denies a petition filed by the Coalition for Responsible Energy requesting suspension of the Unit 1 operating license and further licensing activities at Unit 2 until the issue of microbiologically influenced corrosion in the spray pond piping system is resolved.

DIRECTOR'S DECISION UNDER 10 C.F.R. § 2.206

INTRODUCTION

By Petition dated May 6, 1985, as further supplemented by letter dated May 16, 1985, Myron L. Scott, on behalf of the Coalition for Responsible Energy Education (CREE), alleged that the spray pond piping corrosion at the Palo Verde Nuclear Generating Station (Palo Verde), Units 1 and 2, which is attributed to microbiologically influenced corrosion (MIC), constitutes an unreviewed safety question since:

- (1) the corrosion will reduce the margin of safety for the spray pond system to below acceptable levels,

- (2) it will result in essential cooling water system (ECWS) temperatures in excess of design criteria, and
- (3) the MIC may have adversely affected other safety-related systems.

The Petitioner requested that (1) an order to show cause be issued to the Arizona Public Service Company (APS) as to why the operating license for Palo Verde Unit 1 and the construction permit for Palo Verde Unit 2 should not be suspended and (2) future licensing activities for Palo Verde Units 1 and 2 be deferred, pending completion of certain actions requested by the Petitioner. The requested actions included replacement of the corroded spray pond piping, reinspection of other plant systems, and development of a revised corrective action program.

In the May 16, 1985 letter, the Petitioner stated that the relief requested in the Petition included suspension of the Palo Verde Unit 1 license prior to Unit 1 achieving initial criticality. The Petitioner also stated that it appeared possible to address the concerns adequately following initial criticality so long as it was done before full-power licensing.

The Petition has been considered by the Staff for appropriate action in accordance with 10 C.F.R. § 2.206. Prior to initial criticality on Palo Verde Unit 1, the Staff informed the Petitioner by a telephone call on May 23, 1985, that the Staff's initial assessment of the corrosion in the spray pond system and its potential effects on the interfacing systems (i.e., ECWS and diesel generator cooling system) did not suggest any adverse impact on public health and safety during initial criticality and low-power testing for Palo Verde Unit 1. Hence, the relief requested prior to initial criticality was not required. Prior to issuance of the full-power license, the Staff briefed the Commission on the MIC problem and had determined that the Licensees had taken adequate steps to monitor and control any potential adverse impacts due to this corrosion.

The Staff has now completed its evaluation of the Petition. While the Staff took appropriate action, as the Petitioner requested, to ensure that the MIC problem was evaluated and corrective actions were established prior to further licensing of Palo Verde Units 1 and 2, the Staff does not believe that issuance of an order to show cause to APS is necessary. Accordingly, the Petition is hereby denied.

DISCUSSION

Background

The issue of spray pond piping corrosion at Palo Verde was initially identified on March 1, 1985, when a leaking pipe weld was found in the

Palo Verde Unit 2. As a result, APS performed visual and radiographic examinations of both the Unit 1 and Unit 2 spray pond piping. In addition, a portion of the Unit 2 piping was removed for microbiological, metallographic and chemical analyses. The results of these evaluations were provided to the NRC by APS in a letter dated April 3, 1985.

The visual inspections revealed a number of welds with leaks (i.e., 42 of 353 welds in the Unit 2 north pond, 4 of 272 welds in the Unit 2 south pond, and 2 of 299 welds in the Unit 1 south pond). The size of the openings through which leakage occurred was 1/16 inch or smaller with most of the holes being 1/32 inch or smaller.

The radiographic examinations revealed that most of the welds radiographed (18 of 20 in Unit 2, and 47 of 57 in Unit 1) had indications of pitting. The 47 welds with indications in Unit 1 had 1142 indications of pitting. The other analyses (1) revealed the presence of *Gallionella*, an iron bacteria which is known to cause MIC, and (2) confirmed that the piping materials met chemical requirements conforming to 316L stainless steel piping and 308L weld filler material.

Based on the results of the above examinations and analyses, APS concluded that the probable cause of the spray pond piping corrosion was MIC due to the presence of *Gallionella*. The presence of *Gallionella*, in turn, occurred due to stagnation of untreated water following the initial flushing of the spray pond piping.

To prevent the initiation of future pitting of the spray pond piping, APS is now (1) performing, on a more rigorous basis, its chemistry control program including regular use of biocides to eliminate *Gallionella*, and (2) operating the spray ponds on a daily basis to avoid stagnation.

Evaluation of Petitioner's Concerns

Petitioner alleges that the spray pond piping corrosion will reduce the margin of safety for the spray pond system to below acceptable levels, and requests that the corroded piping be replaced. Petitioner also alleges that the reduction in spray pond performance will result in ECWS temperatures in excess of design criteria, and that the MIC may have adversely affected other safety-related systems. As a result, Petitioner requests that a reinspection of other plant systems be performed and that a revised corrective action program be developed.

The effect of having leaking pipes in the spray ponds is that the water that leaks will go directly into the spray pond and bypass the spray nozzles, thus reducing the heat transfer efficiency for removing decay heat. This in turn would increase the temperature of the water in the spray pond system and in the ECWS. However, as explained below, with the

amount of leakage found during the examination of the spray ponds, this effect would be minimal.

Petitioner states, and APS agrees, that the pitting already caused by MIC will eventually result in leakage, even though biocides are being used. APS evaluated the consequences of this increased leakage by performing analyses and tests of the spray pond system. The evaluations were provided in the April 3, 1985 submittal, at a meeting with the Staff on May 10, 1985, and in a May 24, 1985 submittal which addressed the Petitioner's concerns. Based on these evaluations of the system, APS provided the following information:

- (1) APS states that the corrosive action, which was initiated by the MIC, will continue until each pitted area corrodes through the wall to cause a leakage path. When this occurs, the pit will then be flushed with water terminating the corrosion process and further growth of the hole will cease. APS expects that the size of the resulting holes will be about 1/16 inch or less (which is consistent with the size of the holes found to date). The pits are in various stages of development and the rate of pitting is expected to be less than 0.1 inch per year.
- (2) The design for the spray pond system specifies a flow rate of 16,300 gallons per minute (gpm) through the spray nozzles at a discharge pressure of 7.0 psig. For the ECWS, the design specifies that the temperature of the system be maintained below 125°F during postulated accident conditions. APS had previously performed an analysis which shows that the peak ECWS temperature for the above design would be 122.4°F.
- (3) The as-built configuration of the Palo Verde Unit 1 spray pond system can actually deliver a flow of 18,200 gpm at a discharge pressure of 8.1 psig. Hence, the as-built spray pond system can tolerate a bypass flow of 1900 gpm and still meet the design specification flow rate. The number of leaks which would result in a bypass flow of 1900 gpm is about 8800 leaks for a hole size of 1/16 inch and about 2200 leaks for a hole size of 1/8 inch. (The as-built spray pond system for Palo Verde Unit 2 also exceeds the design flow rate of 16,300 gpm although to a lesser degree.)
- (4) APS performed a reanalysis of the as-built spray pond system and determined that, at a flow rate of 15,200 gpm through the spray nozzles (1100 gpm below the design value and 3000 gpm below the as-built capability), the temperature of the ECWS under postulated accident conditions would be below 125°F.

(An independent analysis was performed by the Staff which confirmed that the APS analysis was conservative.)

- (5) APS performed a test of the spray pond system to establish a correlation between nozzle discharge pressure and flow rate (and hence, establish a procedure for determining a bypass flow via pressure measurements). Bypass flow was simulated by removing a number of spray nozzles. With 25 of 320 nozzles removed, APS determined that the flow rate through the remaining nozzles was 15,200 gpm (and, therefore, the bypass flow was 3000 gpm) with a discharge pressure of 5.5 psig.

As a result of the above evaluations, APS concluded that if all the pit indications were to develop into leaks, the heat rejection capability of the spray pond system would be maintained and the temperature of the ECWS under postulated accident conditions would be below 125°F.

To assure the operability of the spray pond system, APS has established a program to monitor the performance of the system on a weekly basis. (Initially, in the April 3, 1985 submittal, APS proposed to monitor performance on a quarterly basis. In response to the Staff questions, APS' May 24, 1985 submittal revised the frequency to a weekly basis.) This program will be performed by taking pressure measurements while the spray ponds are running and by using the results of the test discussed in item (5) above to determine the bypass flow that develops over a period of time. Should the discharge pressure reach 5.5 psig (i.e., a bypass flow of about 3000 gpm) APS will declare the spray pond inoperable until an evaluation is performed that prescribes the actions to be taken to establish operability. The program is identified in § 6.8.4 of the Palo Verde Unit 1 Technical Specifications.

In addition, APS is now operating the spray ponds on a daily basis to avoid stagnation, and is applying its chemistry control program and the regular use of biocides to eliminate *Gallionella*. Corrosion racks containing sample coupons of typical spray pond piping material will be monitored on a regular basis to provide further input into the evaluation of the spray pond performance. Furthermore, one of the spray ponds for each of Palo Verde Units 1 and 2 will be drained at the first refueling for further visual and radiographic examination.

The Staff has reviewed the above evaluation of spray pond performance, the corrective actions taken by APS, and the monitoring programs being performed by the spray pond system. Based on that review, the Staff finds that:

- (1) the current level of leakage in the spray pond piping has a minimal effect on the performance of the spray pond system and ECWS;

- (2) if corrosion continues and leakage increases, a flow rate reduction to 15,200 gpm could be tolerated without reducing the margin of safety for the spray pond system to below acceptable levels or resulting in ECWS temperatures in excess of 125°F during postulated accident conditions;
- (3) the chemistry control program, including regular use of biocides, and the daily operation of the spray ponds will be effective in eliminating *Gallionella*;
- (4) although the Staff cannot verify whether MIC is the mechanism that caused the piping corrosion, periodic examination of the sample coupons in the corrosion racks will determine whether other forms of corrosion are occurring and if other corrective action is warranted; and
- (5) the weekly monitoring of the spray pond system will be effective in assuring that the system will continue to be capable of performing its function, and an acceptable action plan has been established if performance of the system degrades to the action level.

Therefore, based on the above findings, the Staff concludes that: (1) replacement of the corroded spray pond piping is not required; (2) APS has developed an acceptable corrective action program, which includes improved chemistry control with regular use of biocides; and (3) APS has established an acceptable monitoring program for spray pond and material performance.

As stated previously, Petitioner also alleged that the MIC may have adversely affected other safety-related systems and requested that other plant systems be reinspected. In its April 3 and May 24, 1985 submittals, APS performed an evaluation of whether MIC can affect or has affected other safety-related systems. As a result of that evaluation, APS concluded that MIC does not now affect other safety-related systems based on the following information:

- (1) Temperatures above 212°F, pH ranges above 10.5 and boric acid all kill bacteria.
- (2) Safety-related systems at Palo Verde either exceed 212°F, have a pH in excess of 10.5, are borated, or have a combination of these features.
- (3) Previous examinations of safety-related components, e.g., heat exchangers, safety injection system piping welds, charging and pool cooling systems welds, and the auxiliary feedwater pumps, did not reveal any indication of MIC. The one exception was some minor pitting observed in the Palo Verde Unit 2 auxiliary feedwater pumps which was due to the undetected

retention of untreated flushing water in the pump casings. The flushing water has been removed and the pumps have been cleaned of corrosion. Further occurrences are not anticipated since the auxiliary feedwater system uses demineralized water.

- (4) Additional examinations of the Palo Verde Unit 1 safety injection and auxiliary feedwater systems, which were performed during March 1985, did not identify any MIC.

The Staff has reviewed the above evaluation. As a result of Staff questions during its review, by letter dated May 30, 1985, APS committed to perform additional inspections of the systems interfacing with the spray pond system (i.e., the ECWS and diesel generator heat exchangers, and the assessable piping). For Palo Verde Unit 1, the inspections will be performed during the first refueling, and for Unit 2 were performed following completion of the hot functional testing. The results of the Unit 2 inspections showed no indications of MIC in the interfacing systems.

Based on its review of the information provided, the Staff concludes that MIC has not adversely affected other safety-related systems. Therefore, further reinspection of other plant systems prior to licensing was not required.

CONCLUSION

As described in the Decision, the MIC problem has been evaluated and appropriate corrective actions have been initiated. No further action, such as issuance of an order to show cause as suggested by the Petitioner, is necessary. Accordingly, the Petition has been denied. A copy of this Decision will be filed with the Secretary for the Commission's review in accordance with 10 C.F.R. § 2.206(c) of the Commission's regulations.

Harold R. Denton, Director
Office of Nuclear Reactor
Regulation

Dated at Bethesda, Maryland,
this 16th day of September 1985.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

Alan S. Rosenthal, Chairman
Gary J. Edles
Howard A. Wilber

In the Matter of

Docket No. 50-322-OL-3
(Emergency Planning)

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

October 18, 1985

The Appeal Board affirms the Licensing Board finding in the emergency planning phase of this operating license proceeding that the applicant lacks the legal authority to implement material features of its proposed emergency response plan, and therefore, that such a plan cannot be carried out in conformity with Commission regulations.

**EMERGENCY PLANS: CONTENT (ONSITE AND OFFSITE
PREPAREDNESS)**

Under Commission regulations, no operating license for a nuclear power reactor can issue unless the NRC finds that there is reasonable assurance that adequate protective measures both on and off the facility site can and will be taken in the event of a radiological emergency. As a general rule, offsite emergency plans must be developed for a 10-mile zone surrounding the plant (the plume exposure pathway emergency

planning zone) and a second zone of approximately 50 miles (the ingestion pathway emergency planning zone). See 10 C.F.R. § 50.47 and Part 50, Appendix E.

EMERGENCY PLANS: STATE AND LOCAL GOVERNMENT PLANS (UTILITY PLAN AS SUBSTITUTE)

The NRC is obligated to consider a utility-prepared offsite emergency plan submitted in the absence of state and local government-approved plans, and has the ultimate authority to determine whether such a submission is sufficient to meet the prerequisites for the issuance of an operating license. CLI-83-13, 17 NRC 741 (1983).

STATE STATUTES: FEDERAL PREEMPTION

State law can be preempted in either of two general ways. If Congress evidences an intent to occupy a given field, any state law falling within that field is preempted. If Congress has not entirely displaced state regulation over the matter in question, state law is still preempted to the extent it actually conflicts with federal law, that is, when it is impossible to comply with both state and federal law or where the state law stands as an obstacle to the accomplishment of the full purposes and objectives of Congress. *Silkwood v. Kerr-McGee Corp.*, 464 U.S. 238, 248 (1984).

STATE STATUTES: FEDERAL PREEMPTION

The Atomic Energy Act does not displace traditional enforcement of state tort law, including the state's right to authorize punitive damages for radiation injuries. *Silkwood*, 464 U.S. 238.

STATE STATUTES: FEDERAL PREEMPTION

The Atomic Energy Act does not preclude a state from enacting a moratorium on nuclear power plant construction based on economic rather than radiological health and safety considerations. *Pacific Gas & Electric Co. v. State Energy Resources Conservation & Development Comm'n*, 461 U.S. 190 (1983).

ATOMIC ENERGY ACT: REGULATORY STRUCTURE

The Atomic Energy Act establishes a dual regulatory structure for nuclear-powered electric generation. The federal government maintains

complete control of the safety and “nuclear” aspects of energy generation; the states exercise their traditional authority over the need for additional generating capacity, the type of generating facilities to be licensed, land use, ratemaking, and the like. *Pacific Gas & Electric*, 461 U.S. at 211-12; *Brown v. Kerr-McGee Chemical Corp.*, 767 F.2d 1234, 1241 n.4 (7th Cir. 1985). There is no bright line dividing the areas of federal and state responsibility and they may at times overlap.

NUCLEAR REGULATORY COMMISSION: HEALTH AND SAFETY RESPONSIBILITIES

The Commission is involved in emergency planning pursuant to its health and safety jurisdiction.

NUCLEAR REGULATORY COMMISSION: HEALTH AND SAFETY RESPONSIBILITIES (SCOPE)

The management of vehicular traffic on public roads, governmental response to public emergencies (including the implementation of any necessary evacuation), and control over the actions of corporations operating within the state, have nothing to do with radiological health and safety and fall well within the category of activities routinely subject to state supervision.

NUCLEAR REGULATORY COMMISSION: HEALTH AND SAFETY RESPONSIBILITIES (SCOPE)

Although the Commission has recognized its own role in emergency planning oversight, it has nonetheless observed that the state and local governments have the primary responsibility under their constitutional police powers to protect the public. 44 Fed. Reg. 75,167, 75,169 (1979).

STATE STATUTES: FEDERAL PREEMPTION

State laws that indicate the manner in which a utility may or may not conduct certain nonradiological activities within the state do not invade the federal domain simply because they have a significant effect on nuclear power issues or even foreclose the nuclear option entirely. Such laws are entitled to respect, absent an affirmative showing that Congress intended to supplant them. *Silkwood*, 464 U.S. at 255.

STATE STATUTES: FEDERAL PREEMPTION

In deciding if state laws affecting nuclear power or emergency planning for nuclear power plants are preempted by federal law, all that need be determined is whether there exists a nonsafety rationale for the enactment or enforcement of the state laws. *See Pacific Gas & Electric*, 461 U.S. at 213, 216.

STATE STATUTES: FEDERAL PREEMPTION

The reservation of exclusive jurisdiction by the federal government over radiological health and safety matters does not necessarily prevent a state from asserting its authority over matters within its own jurisdiction merely because its action coincidentally affects the area subject to federal control. *Silkwood*, 464 U.S. 238; *Pacific Gas & Electric*, 461 U.S. 190. *See generally Huron Portland Cement Co. v. City of Detroit*, 362 U.S. 440, 447 (1960).

ATOMIC ENERGY ACT: PREEMPTION

The Atomic Energy Act does not expressly require the states to construct or authorize nuclear power plants or prohibit the state from deciding, as an absolute or conditional matter, not to permit the construction of any further reactors. *Pacific Gas and Electric*, 461 U.S. at 205.

ATOMIC ENERGY ACT: PREEMPTION

The Atomic Energy Act does not preempt state laws solely because they coincidentally prevent operation of a completed reactor.

STATE STATUTES: FEDERAL PREEMPTION

State law is not preempted in all circumstances where it interferes with the potential exercise of federally licensed activities. *See Radio Station WOW, Inc. v. Johnson*, 325 U.S. 120, 129-33 (1945).

EMERGENCY PLANS: STATE AND LOCAL GOVERNMENT PLANS (UTILITY PLAN AS SUBSTITUTE)

The lack of an emergency plan officially sponsored by a state or local government does not stand as an absolute barrier to the grant of a license. The Commission may consider a utility plan in the absence of a state or local government-sponsored plan.

EMERGENCY PLANS: STATE AND LOCAL GOVERNMENT PLANS (UTILITY PLAN AS SUBSTITUTE)

The mere existence of a utility plan is not a sufficient basis for issuance of a license. The Commission must be able to conclude that the utility plan provides reasonable assurance that the public health and safety will be protected.

EMERGENCY PLANS: STATE AND LOCAL GOVERNMENT PLANS (UTILITY PLAN AS SUBSTITUTE)

Federal law does not override enforcement of certain state statutes that impede or foreclose a utility from presenting a viable emergency plan to the Commission for review.

STATUTORY INTERPRETATION: LEGISLATIVE INTENT

When choosing between alternative constructions of a statute, displacement of state laws exercising historic police powers should be avoided unless that was the clear and manifest purpose of Congress. *Rice v. Santa Fe Elevator Corp.*, 331 U.S. 218, 230 (1947), cited with approval in *Florida Lime and Avocado Growers, Inc. v. Paul*, 373 U.S. 132, 146 (1963).

STATUTORY INTERPRETATION: LEGISLATIVE INTENT

The remarks of individual legislators are often an unreliable gauge of overall legislative intent. *In re Surface Mining Regulation Litigation*, 627 F.2d 1346, 1362 (D.C. Cir. 1980).

EMERGENCY PLANS: STATE AND LOCAL GOVERNMENT PLANS (UTILITY PLAN AS SUBSTITUTE)

The 1980 NRC Authorization Act, Pub. L. No. 96-295, 94 Stat. 780 (1980), accords a utility at least the opportunity to supplement an otherwise deficient governmental emergency plan. It also appears to foreclose the Commission from mandating a state or local government-sponsored plan as a regulatory requirement for licensing.

EMERGENCY PLANS: REQUIREMENT FOR PLANT OPERATION

Pursuant to 10 C.F.R. § 50.47(c), an applicant is permitted to show that deficiencies in emergency plans are not significant for the plant in question, that adequate interim compensating actions have been or will be taken promptly, or that there are other compelling reasons to permit plant operation.

EMERGENCY PLANS: REQUIREMENT FOR OPERATING LICENSE

Section 50.47(a)(1) of 10 C.F.R. requires that there be reasonable assurance that protective measures can and will be taken in the event of a radiological emergency.

EMERGENCY PLANS: EMERGENCY PLANNING ZONES

Section 50.47(b)(10) of 10 C.F.R. requires that a range of protective actions be developed for the plume exposure pathway emergency planning zone for emergency workers and the public and that guidelines for the choice of protective actions during an emergency, consistent with federal guidance, are developed and in place.

EMERGENCY PLANS: CONTENT (EVACUATION)

Discrete aspects of an evacuation plan may be subjected to adversarial evaluation to determine the efficiency with which an evacuation can be accomplished. *See, e.g., Cincinnati Gas & Electric Co. (Wm. H. Zimmer Nuclear Power Station, Unit 1), ALAB-727, 17 NRC 760, 770-71 (1983).*

EMERGENCY PLANS: CONTENT (EVACUATION)

Commission regulations require the formulation of satisfactory evacuation plans as a part of the overall emergency preparedness effort. *Id.* at 774 n.19.

APPEARANCES

James M. Christman, Richmond, Virginia (with whom W. Taylor Reveley, III, Donald P. Irwin, and Kathy E.B. McCleskey,

Richmond, Virginia, were on the brief), for the applicant Long Island Lighting Company.

David A. Brownlee, Pittsburgh, Pennsylvania, and **Karla J. Letsche**, Washington, D.C. (with whom **Michael J. Lynch** and **Kenneth M. Argentieri**, Pittsburgh, Pennsylvania, were on the brief), and **Eugene R. Kelley**, Hauppauge, New York, for the intervenor Suffolk County, New York.

Fabian G. Palomino, Albany, New York, for the intervenor State of New York.

Stephen B. Latham, Riverhead, New York, for the intervenor Town of Southampton.

Sherwin E. Turk for the Nuclear Regulatory Commission staff.

DECISION

Before us is the appeal of the applicant Long Island Lighting Company (LILCO) from portions of the Licensing Board's April 17, 1985, partial initial decision in the emergency planning phase of this operating license proceeding involving the Shoreham nuclear facility.¹ The Licensing Board resolved many of the outstanding offsite emergency planning issues in LILCO's favor. Significantly, however, it concluded that LILCO lacks the legal authority to implement material features of its proposed emergency response plan. That being so, the Board determined that an emergency plan in conformity with Commission regulations cannot be carried out. As explained in detail below, we affirm the Board's result in this regard.²

¹ LBP-85-12, 21 NRC 644.

² Appeals from other portions of the partial initial decision were taken by intervenors Suffolk County and the State of New York. In response to a motion from the intervenors seeking additional time in which to file briefs in support of their own appeal, and a separate request from LILCO that we refer the legal authority issues directly to the Commission or, in the alternative, sever its appeal for expedited review, we established two briefing and oral argument schedules. Order of May 15, 1985 (unpublished). We treat solely LILCO's appeal in this opinion. The county and state appeals are now being briefed. In addition, one contested emergency planning issue (dealing with the adequacy of a proposed relocation center) was recently resolved in a separate partial initial decision. LBP-85-31, 22 NRC 410 (1985). Appeals from that decision have been filed and are also at the briefing stage.

I. BACKGROUND

Under Commission regulations, no operating license for a nuclear power reactor can issue unless the NRC finds that there is reasonable assurance that adequate protective measures both on and off the facility site can and will be taken in the event of a radiological emergency. As a general rule, offsite emergency plans must be developed for a 10-mile zone surrounding the plant (the plume exposure pathway emergency planning zone) and a second zone of approximately 50 miles (the ingestion pathway emergency planning zone).³ In the usual case, state or local governments participate in the development and implementation of emergency plans. The Shoreham facility is situated in Suffolk County, New York, and the 10-mile emergency planning zone is either within the county or on the waters of Long Island Sound.⁴ The controversy before us centers around the ramifications of the state and county governments' refusal to participate in the development and implementation of offsite emergency plans for Shoreham.

For a number of years both governments generally supported the construction of the Shoreham facility and assisted in the development of emergency response plans. Things changed in early 1982 when the County began to reappraise its view of the efficacy of an emergency response plan for Shoreham.⁵ In due course, the County adopted resolutions concluding that no local response plan could adequately protect the health, welfare and safety of Suffolk County residents, and directing that no emergency plan be adopted or implemented. The State has supported the County's position.

On the strength of the determination embodied in its resolutions, the County filed a motion with the Licensing Board to terminate this proceeding. The gist of the County's argument was that the Commission's regulations require the submission of an emergency response plan sponsored by the local government as a prerequisite to issuance of an operating license. The Board denied the motion.⁶ It concluded that, under Commission regulations and applicable federal statutes, the existence of an emergency plan approved by the local government was not a precondition to issuance of an operating license. Rather, an applicant is to be

³ See 10 C.F.R. 50.47 and Part 50, Appendix E.

⁴ LBP-85-12, 21 NRC at 648.

⁵ A partial history of the proceeding, on which we draw, is set out in an appendix to LBP-83-22, 17 NRC 608, 647-54, *aff'd on other grounds*, CLI-83-13, 17 NRC 741 (1983).

⁶ *Id.* at 615.

accorded an opportunity to demonstrate that there is reasonable assurance that adequate protective measures can and will be taken in the event of an emergency despite the local government's refusal to prepare or implement an emergency plan.⁷ The Board found, in this connection, that it was not bound by the County's determination regarding the feasibility of developing adequate emergency planning for Shoreham.⁸

The Licensing Board referred its ruling to us for review,⁹ and we, in turn, referred it to the Commission.¹⁰ On review, the Commission approved the Board's analysis of the regulations and applicable statutes and determined that this agency was obligated to consider any plan the applicant might submit.¹¹ However, it expressly declined to examine at that juncture what it described as "serious issues of federal preemption involved in the current offsite emergency planning controversy."¹²

On May 26, 1983, LILCO filed its so-called "transition plan" in which offsite emergency response procedures would be implemented by LILCO personnel, federal agencies, or private contractors. The plan does not rely on county or state personnel.¹³ Almost 100 contentions directed to the plan were thereupon tendered by the intervenors. Contentions 1-10, i.e., those addressed to the applicant's legal authority to implement certain elements of its plan, alleged that LILCO is prohibited by state or local law from performing key emergency functions (such as directing traffic, activating the emergency sirens, or broadcasting emergency messages) and that, as a consequence, the plan cannot and will not be implemented as required by Commission regulations.¹⁴

LILCO filed a motion for summary disposition of these contentions.¹⁵ All parties agreed that it could be decided without evidentiary hearings.¹⁶

⁷ *Id.* at 612.

⁸ *Id.* at 637.

⁹ LBP-83-21, 17 NRC 593 (1983).

¹⁰ Order of April 26, 1983 (unpublished).

¹¹ CLI-83-13, 17 NRC 741.

¹² *Id.* at 743.

¹³ See LBP-85-12, 21 NRC at 650, 895.

¹⁴ Contentions 1-10 set out the alleged prohibited actions as follows: (1) guiding traffic; (2) blocking roadways, erecting barriers in roadways, and channelling traffic; (3) posting traffic signs on roadways; (4) removing obstructions from public roadways, including towing private vehicles; (5) activating sirens and directing the broadcasting of emergency broadcast system messages; (6) making decisions and recommendations to the public concerning protective actions; (7) making decisions and recommendations to the public concerning protective actions for the ingestion exposure pathway; (8) making decisions and recommendations to the public concerning recovery and reentry; (9) dispensing fuel from tank trucks to automobiles along roadsides; and (10) performing access control at the Emergency Operations Center, the relocation centers, and the plume emergency planning zone perimeters. See *id.* at 895.

¹⁵ Motion for Summary Disposition of Contentions 1-10 (The "Legal Authority" Issues) (August 6, 1984) (hereafter cited as LILCO Motion).

¹⁶ See Tr. 13,383 (LILCO), 13,831 (the State and the County), and 13,834 (the staff).

The Board nonetheless deferred its consideration of the motion,¹⁷ having earlier urged the parties to resolve the issue in court.¹⁸ The County, the State, and the Town of Southampton sought a declaratory ruling from a state court that LILCO was prohibited under state law from undertaking the various emergency functions ordinarily performed by state or local officials. In due course, that court issued a decision in which it agreed that private companies such as LILCO cannot under New York law perform certain key emergency functions contemplated by its plan. Such functions may be performed only by governmental entities.¹⁹

LILCO returned to the Licensing Board and renewed its motion for summary disposition of Contentions 1-10. For purposes of the motion, LILCO accepted the state court's decision as a binding interpretation of state law. It argued basically that the state laws prohibiting it from implementing its emergency plan are preempted by the Atomic Energy Act. In addition, it claimed that, in any event, state or local officials would respond in case of a genuine emergency. Finally, it asserted that most of the functions that it purportedly cannot perform by reason of New York law are not required by NRC regulations.

The Licensing Board rejected all of LILCO's arguments and denied the motion.²⁰ This appeal followed. LILCO renews its arguments before us. With some exceptions discussed below, intervenors Suffolk County and the State of New York, the Town of Southampton, and the NRC staff support the Board's result.²¹

¹⁷ Memorandum and Order of October 22, 1984 (unpublished).

¹⁸ See, e.g., Tr. 3675: "The Board believes that these legal contentions are properly matters to be disposed of by the New York State courts."

¹⁹ *Cuomo v. Long Island Lighting Co.*, Consol. Index No. 84-4615 (N.Y. Sup. Ct. February 20, 1985), appeal docketed (N.Y. App. Div. April 26, 1985). In addition, Citizens for an Orderly Energy Policy, a private organization supporting operation of the Shoreham plant, brought suit in federal court to obtain a declaratory ruling that the county resolutions are preempted by federal law. The court concluded, however, that the resolutions were not in conflict with federal law and thus were not preempted. *Citizens for an Orderly Energy Policy v. County of Suffolk*, 604 F. Supp. 1084 (E.D.N.Y. 1985), appeal docketed, Nos. 85-7321, etc. (2d Cir. April 11, 1985). This organization also sought to intervene in this proceeding but its request was denied as untimely. LBP-83-42, 18 NRC 112, *aff'd*, ALAB-743, 18 NRC 387 (1983).

²⁰ LBP-85-12, 21 NRC at 895-919.

²¹ Throughout most of the litigation, the County was represented principally by the law firm of Kirkpatrick and Lockhart. The State and County filed a joint brief supporting the Licensing Board's decision. Recently, however, the County Executive terminated the law firm's services and assigned the County Attorney to represent the County. On July 11, the County Attorney submitted a letter basically restating its support for the Board's determination of the preemption issue. However, the letter indicated that the County Executive now supports LILCO's claim that the County will respond in the event of a genuine emergency. The County Attorney takes no position on the Board's disposition of the so-called "immateriality" issue. See Section IV, *infra*. At the time of oral argument, the issue of the County Executive's authority to terminate the law firm's services was unresolved, so we permitted both the law firm and the Chief Deputy County Attorney to present argument. The state courts have now sustained the County Executive's authority. *Prospect v. Cohalan*, No. 5001A (N.Y. App. Div. August 13, 1985). The county

(Continued)

II. FEDERAL PREEMPTION

A central issue on appeal is whether the Atomic Energy Act preempts the enforcement of the laws of the State of New York, insofar as they prohibit LILCO from performing crucial emergency functions. The general principles regarding federal preemption are relatively straightforward and were recently reasserted and applied in the context of nuclear regulation by the Supreme Court in *Silkwood v. Kerr-McGee Corp.*, 464 U.S. 238 (1984), and *Pacific Gas & Electric Co. v. State Energy Resources Conservation & Development Comm'n*, 461 U.S. 190 (1983). In *Silkwood*, the Court observed:

[S]tate law can be pre-empted in either of two general ways. If Congress evidences an intent to occupy a given field, any state law falling within that field is pre-empted. . . . If Congress has not entirely displaced state regulation over the matter in question, state law is still pre-empted to the extent it actually conflicts with federal law, that is, when it is impossible to comply with both state and federal law . . . or where the state law stands as an obstacle to the accomplishment of the full purposes and objectives of Congress.²²

Applying that standard, the Court determined that the Atomic Energy Act does not displace traditional enforcement of state tort law, including the state's right to authorize punitive damages for radiation injuries. In *Pacific Gas & Electric*, the Court decided that the Atomic Energy Act does not preclude a state from enacting a moratorium on nuclear power plant construction based on economic rather than radiological health and safety considerations.

LILCO does not challenge the state court's determination that it lacks authority under New York law to perform certain of the emergency functions required by its plan.²³ It maintains, instead, that both of the preemption tests identified in *Silkwood* preclude the application of state law to block the implementation of its emergency plan. Specifically, LILCO contends, first, that the federal government has occupied the entire field of radiological health and safety, except for limited areas expressly reserved to the states,²⁴ and that regulation of emergency plan-

resolutions remain in effect, however, and continue to reflect the official county position that no emergency plan can adequately protect county residents and Shoreham should not receive a license to operate at full power. App. Tr. 77-78, 86.

The Town of Southampton participated in the proceedings before the Licensing Board but before us filed only a letter outlining its position. With our permission, the Town was nonetheless accorded an opportunity to participate in oral argument.

²² 464 U.S. at 248.

²³ LILCO's Brief Supporting Its Position on Appeal from the "Partial Initial Decision on Emergency Planning" of April 17, 1985 (June 3, 1985) (hereafter cited as LILCO Brief) at 5.

²⁴ *Id.* at 14.

ning falls squarely within the preempted field.²⁵ In this regard, LILCO asserts that the history of atomic energy legislation demonstrates a congressional intent to maintain exclusive federal control over the operation of nuclear plants. In LILCO's view, Congress speaks clearly and unambiguously when it intends to allow the states to "infringe" on the field of radiological health and safety.²⁶

Second, LILCO claims that a conflict exists between federal and state law because it is impossible to comply with both,²⁷ and the state law stands as an obstacle to the accomplishment and execution of congressional objectives.²⁸ According to LILCO, the state laws are preempted because they effectively accord the states a "veto" over operating licenses for nuclear power plants.²⁹

The Licensing Board concluded, to the contrary, that the federal government does not exclusively occupy the field of nuclear safety insofar as it relates to offsite emergency planning,³⁰ and that no actual conflict exists between federal and state law despite the practical impediment that state law presents to LILCO's ability to implement its plan.³¹ The Board believed that preemption of a state's traditional police powers "must be premised on a finding that it was the 'clear and manifest purpose of Congress' to supersede State law"³² and that LILCO failed to demonstrate that Congress intended to preempt state and local laws that prohibit LILCO's proposed activities.³³ We agree with the Board's conclusions.³⁴

A. Federal Exclusivity

We find that LILCO's thesis that the state laws are preempted because they affect an area exclusively reserved to the federal government cuts too wide a swath. As the Supreme Court observed in the *Pacific Gas &*

²⁵ *Id.* at 16.

²⁶ *Id.* at 12.

²⁷ *Id.* at 36.

²⁸ *Id.* at 38.

²⁹ *Id.* at 10-11.

³⁰ LBP-85-12, 21 NRC at 902-07.

³¹ *Id.* at 908.

³² *Id.* at 901, citing *Rice v. Santa Fe Elevator Corp.*, 331 U.S. 218, 230 (1947).

³³ *Id.* at 902, 907.

³⁴ LILCO's preemption argument before us is directed only to state law. LILCO does not assert that the county resolutions are preempted by the Atomic Energy Act and we do not reach that issue. We note only that the Licensing Board suggested that the resolutions are preempted, LBP-83-22, 17 NRC at 640-41, but the federal district court concluded to the contrary, *Citizens for an Orderly Energy Policy*, 604 F. Supp. 1084.

Electric case, the Atomic Energy Act establishes a dual regulatory structure for nuclear-powered electric generation.³⁵ When the statute was originally enacted in 1954, the Atomic Energy Commission (and the NRC as its successor for regulatory functions) “was given exclusive jurisdiction to license the transfer, delivery, receipt, acquisition, possession and use of nuclear materials . . . Upon these subjects, no role was left for the States.”³⁶ Even when the statute was amended in 1959 to give the states some regulatory jurisdiction over radiological materials, the Commission retained its authority with respect to the regulation of the construction and operation of nuclear power plants.³⁷ The federal government retained plenary authority in those areas in which the Commission’s expertise was considered important.³⁸ The states, in contrast, maintained their “traditional responsibility” for determining need, reliability, cost and other related state concerns because these are “areas that have been characteristically governed by the States.”³⁹ The Court summarized this division of responsibility as follows:

[T]he Federal Government maintains complete control of the safety and “nuclear” aspects of energy generation; the States exercise their traditional authority over the need for additional generating capacity, the type of generating facilities to be licensed, land use, ratemaking, and the like.⁴⁰

While there is no bright line dividing the areas of federal and state responsibility, and they may at times overlap, we find that the application of the state laws at issue in this case is within the areas traditionally reserved to the states.

³⁵ 461 U.S. at 211-12. Section 274(c) of the Act provides that “the Commission shall retain authority and responsibility with respect to regulation of — (1) the construction and operation of any production and utilization facility.” 42 U.S.C. § 2021(c)(1) (1982). But section 274(k) provides that “[n]othing in this section shall be construed to affect the authority of any State or local agency to regulate activities for purposes other than protection against radiation hazards.” 42 U.S.C. § 2021(k) (1982). Although section 274(k) applies in terms only to the preemptive effect of section 274, the courts have construed it as a reflection of congressional intent to distinguish generally between matters reserved to the federal government and those left to the states. See *Brown v. Kerr-McGee Chemical Corp.*, 767 F.2d 1234, 1241 n.4 (7th Cir. 1985), citing *Pacific Gas & Electric*, 461 U.S. at 210. In addition, section 271 provides that

[n]othing in this chapter shall be construed to affect the authority or regulations of any federal, State or local agency with respect to the generation, sale or transmission of electric power produced through the use of nuclear facilities licensed by the Commission: *Provided*, that this section shall not be deemed to confer upon any Federal, State or local agency any authority to regulate, control, or restrict any activities of the Commission.

42 U.S.C. § 2018 (1982).

³⁶ *Pacific Gas & Electric*, 461 U.S. at 207.

³⁷ *Id.* at 208-10.

³⁸ See *Silkwood*, 464 U.S. at 250.

³⁹ *Pacific Gas & Electric*, 461 U.S. at 205.

⁴⁰ *Id.* at 212.

We have no quarrel with the general assertion that the federal government has exclusive jurisdiction over radiological health and safety matters and that the Commission is involved in emergency planning pursuant to its health and safety jurisdiction. However, the management of vehicular traffic on public roads, governmental response to public emergencies (including the implementation of any necessary evacuation), and control over the actions of corporations operating within the state, have nothing to do with radiological health and safety and fall well within the category of activities routinely subject to state supervision. Although the Commission has recognized its own role in emergency planning oversight, it has nonetheless observed that "the State and local governments have the primary responsibility under their constitutional police powers to protect the public."⁴¹

LILCO acknowledges that the New York statutes at issue were passed long ago and for purposes wholly unrelated to nuclear power or emergency planning for nuclear power plants.⁴² These laws do not dictate the manner in which the Shoreham plant must be operated. Rather, they indicate the manner in which the utility may or may not conduct certain nonradiological activities within the state.⁴³

To be sure, the conduct of such nonradiological activities heavily influences whether, or to what extent, viable emergency plans can be developed without governmental participation. But, as demonstrated by the *Silkwood* and *Pacific Gas & Electric* cases, such laws do not invade the federal domain simply because they have a significant effect on nuclear power issues or even foreclose the nuclear option entirely. As we read the Court's decision in *Silkwood*, and as the Licensing Board found, state laws of this stripe are entitled to respect, absent an affirmative showing that Congress intended to supplant them.⁴⁴ Apart from its reliance on the NRC Authorization Acts as a reflection of specific legislative intent (we discuss this matter in Section II.B of the opinion), LILCO does not contend that Congress affirmatively announced an intention to supplant the type of state laws at issue here.⁴⁵

⁴¹ 44 Fed. Reg. 75,167, 75,169 (1979).

⁴² LILCO Brief at 19.

⁴³ The state laws at issue here are thus not, as LILCO suggests, analogous to a state law forbidding emergency core cooling systems. *See id.* at 22-23.

⁴⁴ *Silkwood*, 464 U.S. at 255.

⁴⁵ We reject LILCO's suggestion that the rationale of the *Pacific Gas & Electric* and *Silkwood* opinions is somehow applicable only to cases involving need for power or tort law. App. Tr. 30-31. In our view, the Court reaffirmed the basic dichotomy between the regulation of radiation hazards, on the one hand, and "state regulation in traditional areas," on the other. *Pacific Gas & Electric*, 461 U.S. at 222 (emphasis added).

Our view that application of these state laws does not bring them within the zone reserved exclusively to the federal government is unaffected by LILCO's claim that the state and county governments are simply using these laws to further their own radiological health and safety objectives.⁴⁶ When confronted with a similar assertion in the *Pacific Gas & Electric* case, the Court declined to undertake a probing inquiry into the state's "true motive" but, instead, accepted its "avowed economic purpose" when determining that the state action fell outside the occupied field of nuclear safety regulation.⁴⁷ We too need determine only whether there is "a nonsafety rationale"⁴⁸ for the enactment or enforcement of the state laws. Plainly there is. That being so, we may not look behind the state's avowed purpose in enforcing these laws merely because enforcement in this instance arguably results from an ulterior motive.⁴⁹

B. Conflict Between Federal and State Law

Our conclusion that the federal enclave established by the Atomic Energy Act does not embrace the state laws at issue in this case does not end the inquiry. Enforcement of those laws may still be foreclosed if it actually conflicts with the Atomic Energy Act or stands as an obstacle to the achievement of congressional purposes or objectives. We turn, now, to a consideration of this issue.

LILCO asserts that New York's laws are preempted because it is impossible to comply with both state law and NRC regulations, and because state law frustrates the establishment of uniform national emergency planning standards and the improvement of emergency planning.⁵⁰ The Licensing Board, reviewing this argument, reached the opposite conclusion. It determined that there is neither a conflict between the federal

⁴⁶ LILCO argues that "[a]ny analysis that finds the State's 'purpose' in this case to be anything other than radiological health and safety is completely at odds with the facts." LILCO Brief at 19.

⁴⁷ 461 U.S. at 216. In the *Silkwood* case, the majority made no inquiry into the state's legislative purpose but seemed simply to accept the premise that tort law was a matter ordinarily left to the states. The four dissenting justices, in contrast, would have found the state's action preempted because the purpose behind punitive damage awards is to regulate the safety procedures of nuclear licensees. See *Silkwood*, 464 U.S. at 260-62 (Justice Blackmun, with whom Justice Marshall joined, dissenting), and *id.* at 274-78 (Justice Powell, with whom Chief Justice Burger and Justice Blackmun joined, dissenting).

⁴⁸ *Pacific Gas & Electric*, 461 U.S. at 213.

⁴⁹ Our rejection of LILCO's assertion that the state laws fall within the zone reserved exclusively to the federal government disposes as well of its claim that the states are foreclosed from taking any action affecting emergency planning in the absence of an express and precise delegation of authority from Congress. See LILCO Brief at 12-16. As LILCO recognizes, the requirement of an express and precise delegation from Congress arises only in those circumstances where exclusive authority over the subject matter would otherwise rest with the federal government. See *id.* at 23.

⁵⁰ *Id.* at 36-42.

and state law nor an obstacle to the accomplishment of federal objectives simply because state law stands as a practical impediment to LILCO obtaining a federal license.⁵¹

We agree with the Board's conclusion. As we see it, the operative question is not whether state law stands in the way of LILCO getting its license (plainly it does), but whether Congress was prepared to tolerate a situation in which state action could coincidentally block operation of a nuclear plant. If the answer to that latter question is yes, there is no impermissible conflict with federal law or any frustration of congressional objectives.

As the *Silkwood* and *Pacific Gas & Electric* cases show, the reservation of exclusive jurisdiction by the federal government over radiological health and safety matters does not necessarily prevent a state from asserting its authority over matters within its own jurisdiction merely because its action coincidentally affects the area subject to federal control.⁵² The state laws do not conflict with the Atomic Energy Act or frustrate congressional objectives simply because they make it difficult, or even impossible, for LILCO to satisfy the conditions for a license. In *Pacific Gas & Electric*, the Supreme Court concluded that there was no conflict with the Atomic Energy Act and no frustration of congressional purpose where state law prohibited the construction of nuclear power plants entirely. The Court observed that "[t]he elaborate licensing and safety provisions and the continued preservation of state regulation in traditional areas belie" the notion that nuclear power is to be accomplished at all costs.⁵³ In the Court's view, the Atomic Energy Act "does not at any point expressly require the States to construct or authorize nuclear power plants or prohibit the States from deciding, as an absolute or conditional matter, not to permit the construction of any further reactors."⁵⁴ The Court rejected the argument that a ban on construction is preempted because it "regulates construction of nuclear plants;"⁵⁵ no persuasive reason is offered why the Court's rationale should not permit the states to enforce their laws in areas traditionally under their control even if such action bars the *operation* of a completed reactor as well.

⁵¹ LBP-85-12, 21 NRC at 908-09.

⁵² See generally *Huron Portland Cement Co. v. City of Detroit*, 362 U.S. 440, 447 (1960) (local air pollution regulation that could require structural changes of ship boilers previously inspected and approved by the federal government is not in conflict with federal law despite extensive and comprehensive set of federal controls over ships and shipping; "[t]he mere possession of a federal license . . . does not immunize a ship from the operation of the normal incidents of local police power, not constituting a direct regulation of commerce").

⁵³ 461 U.S. at 222.

⁵⁴ *Id.* at 205.

⁵⁵ *Id.* at 204.

That being so, we cannot find in the terms of the Atomic Energy Act or its history as interpreted by the Supreme Court any preemption of state laws solely because they coincidentally prevent reactor operation.⁵⁶

LILCO contends, however, that the congressional intent in the Atomic Energy Act to prevent the states from precluding nuclear power plant operations on emergency planning grounds is revealed by Congress' express treatment of emergency planning matters in the 1980 NRC Authorization Act⁵⁷ and subsequent authorization acts. By those enactments Congress permitted utilities to submit their own emergency plans when state or local governments refused to do so. LILCO claims that Congress has thereby evinced a specific intent not to allow states to use emergency planning as a means of preventing nuclear plant operation.⁵⁸ LILCO asserts that the Licensing Board's decision essentially reads the "utility plan" option out of the law.⁵⁹ It also contends that the Board's decision is in conflict with earlier Commission decisions authorizing LILCO to submit its plan for consideration.⁶⁰ We disagree with LILCO's arguments.

Section 109(a) of the 1980 Authorization Act, which deals with emergency plans, requires that "there exists a State or local emergency preparedness plan which . . . provides for responding to accidents at the facility concerned" but nevertheless permits issuance of an operating license in the absence of an approved state or local plan if "there exists a State, local, or utility plan which provides reasonable assurance that public health and safety is not endangered by operation of the facility concerned."⁶¹

⁵⁶ LILCO points to the Supreme Court's decisions in *Douglas v. Seacoast Products, Inc.*, 431 U.S. 265 (1977), and *Sperry v. Florida*, 373 U.S. 379 (1963), as illustrations of a conflict between state and federal law where the practical alternative to compliance with state law is to forgo a right to engage in federally licensed activities. LILCO Brief at 37, 42-43. But state law is not preempted in all circumstances where it interferes with the potential exercise of federally licensed activities. See, for example, *Radio Station WOW, Inc. v. Johnson*, 326 U.S. 120, 129-33 (1945) (state not precluded by principles of preemption from ordering the rescission of a contract transferring radio station property on grounds of fraud even though the transfer had been approved by the Federal Communications Commission and the rescission could result in cancellation of a license awarded by the Commission). Whether state law is preempted by an alleged conflict with federal law must be resolved by reference to the particular statutes at issue in each case. Thus, *Silkwood* and *Pacific Gas & Electric*, expressly construing the Atomic Energy Act and analyzing the respective roles of the federal government and the states in the realm of nuclear power regulation, are more pertinent to our inquiry.

⁵⁷ Pub. L. No. 96-295, § 109, 94 Stat. 780 (1980).

⁵⁸ LILCO Brief at 23.

⁵⁹ *Id.* at 4-7.

⁶⁰ *Id.* at 6-9.

⁶¹ Language similar to that contained in the 1980 Act was included in the 1982-83 NRC Authorization Act, Pub. L. No. 97-415, § 5, 96 Stat. 2067, 2069 (1983), and the 1984-85 NRC Authorization Act, Pub. L. No. 98-553, § 108, 98 Stat. 2825, 2827 (1984). Section 109 of the 1980 Authorization Act is set out in full as an appendix to this opinion.

Two things are clear from these provisions. First, the lack of an emergency plan officially sponsored by a state or local government does not stand as an absolute barrier to the grant of a license. The Commission may consider a utility plan in the absence of a state or local government-sponsored plan. Second, the mere existence of a utility plan is not a sufficient basis for issuance of a license. The Commission must be able to conclude that the utility plan provides reasonable assurance that the public health and safety will be protected.

But that is about all that is clear from the language of the Act. Despite congressional awareness that some state or local governments might be unwilling or unable to participate effectively in emergency planning, Congress chose not to speak explicitly to the question of whether state actions that are an impediment to implementation of a utility plan should be deemed preempted by federal law.

LILCO urges us to conclude that Congress must have intended to override state laws in such circumstances, lest a utility's ability to mount its own plan be foreclosed at the threshold, rendering the utility plan option a nullity.⁶² While we do not find LILCO's construction of the statute implausible, an alternative reading is more reasonable — namely, that Congress intended only to make clear that a plan sponsored by a state or local government was not to be a condition for grant of a license if the utility could otherwise demonstrate that it had the wherewithal (including any necessary authority under the law of its home state) to develop a plan that would adequately protect the public health and safety. When choosing between alternative constructions of a statute, we must not work a displacement of state laws exercising historic police powers “unless that was the clear and manifest purpose of Congress.”⁶³ No such clear and manifest purpose is demonstrated by the text of the 1980 Authorization Act.

Nor does anything in the legislative history of the 1980 Act call this construction of the statute into question. Heightened interest in emergency planning arose in the wake of the accident at the Three Mile Island nuclear plant in 1979. Because federal law did not at that time require review of any state or local emergency plans for responding to an accident at a nuclear power plant, the President's Commission on the Accident at Three Mile Island and the General Accounting Office

⁶² LILCO Brief at 4-7.

⁶³ *Rice v. Santa Fe Elevator Corp.*, 331 U.S. at 230, cited with approval in *Florida Lime and Avocado Growers, Inc. v. Paul*, 373 U.S. 132, 146 (1963).

(GAO) independently recommended that an approved state or local emergency plan be a condition of licensing.⁶⁴

Bills passed by both the House and the Senate directed the Commission to establish standards for state plans and to review the adequacy of each state's plan. But these bills differed as to the effect to be given to the state plans. The Senate bill required Commission approval of state and local plans as a condition for licensing. In adopting this approach, the Senate expressly rejected an alternate proposal which would have affirmatively preempted state law by giving the Commission authority to prepare an interim emergency plan where a state plan was deficient. The House bill, in contrast, did not direct the Commission to take any action with respect to new or existing licenses if a state plan failed to comply with Commission regulations or was otherwise inadequate. Rather, the Commission was instructed to identify those states without adequate plans and to recommend to Congress any additional statutory authority which the Commission deemed necessary to ensure that each state had an adequate plan.

A conference committee declined to adopt either the House or Senate formula. Although it was not prepared to adopt the House view and allow the operation of nuclear plants in the absence of some emergency plan that ensured adequate protection of the public, it did not require Commission approval of state and local plans as a condition of licensing as the Senate proposed. The conference committee (and, eventually, the Congress) adopted the compromise section 109. The conference committee explained its approach as follows:

The compromise provides that the NRC is to issue an operating license for a new utilization facility only if the State or local plan, as it applies to such facility, complies with the NRC's current guidelines for such plans or the new rules when promulgated, except that if a state or local plan does not exist that complies with the guidelines or rules, the compromise provides that NRC still may issue an operating license if it determines that a State, local or utility plan provides reasonable assurance that

⁶⁴ See *Report of the President's Commission on the Accident at Three Mile Island* (October 1979) at 76 and "Areas Around Nuclear Facilities Should Be Better Prepared for Radiological Emergencies," *Report to the Congress by the Comptroller General of the United States* (March 30, 1979) at 35-36. Commission regulations in effect prior to the Three Mile Island accident nonetheless required the development of some plans by the applicant for coping with emergencies, including establishment of an exclusion area and a so-called low population zone (roughly one to two miles) immediately surrounding a nuclear plant. The exclusion area had to be totally under the applicant's control. There had to be a sufficiently small number of people in the low population zone to assure that steps for their protection (such as evacuation) could easily be taken in the event of an emergency. Also, the plant had to be designed so that radiation dosages at the respective zone perimeters in the event of an accident would not exceed certain levels. See generally *Metropolitan Edison Co. (Three Mile Island Nuclear Station, Unit No. 2)*, ALAB-486, 8 NRC 9, 14, review denied, CLI-78-19, 8 NRC 295 (1978); *Public Service Co. of New Hampshire (Seabrook Station, Units 1 and 2)*, ALAB-422, 6 NRC 33, 42-44 (1977), *aff'd*, CLI-78-1, 7 NRC 1 (1978), *aff'd sub nom. New England Coalition on Nuclear Pollution v. NRC*, 582 F.2d 87 (1st Cir. 1978).

public health and safety is not endangered by operation of the facility. The Commission's regulations now require the determination prior to the issuance of an operating license that there is reasonable assurance that public health and safety is not endangered by operation of the facility.

The conferees sought to avoid penalizing an applicant for an operating license if a State or locality does not submit an emergency response plan to the NRC for review or if the submitted plan does not satisfy all the guidelines or rules. In the absence of a State or local plan that complies with the guidelines or rules, the compromise permits NRC to issue an operating license if it determines that a State, local or utility plan, such as the emergency preparedness plan submitted by the applicant, provides reasonable assurance that the public health and safety is not endangered by operation of the facility.⁶⁵

LILCO argues that "the only rational conclusion is that Congress intended federal law to preempt."⁶⁶ In our judgment, the more reasonable conclusion is that Congress declined to embroil itself in the preemption thicket at all. Only the Senate had attempted to resolve the preemption question explicitly and, as noted above, it affirmatively rejected the option of federal intercession where the states are unwilling or unable to plan. Indeed, by requiring the approval of state and local emergency plans as a condition for licensing, it had accorded the states an absolute veto over licensing. We refuse to conclude that the compromise should now be read as representing a 180 degree reversal of the Senate's earlier position.

The House had not opted for either solution proposed in the Senate. Rather, it had instructed the Commission simply to report back on the need for further legislation in the event an impasse emerged. This House provision was included in the compromise ultimately adopted. That being so, we cannot assume that the House intended that the compromise serve as a definitive resolution of the preemption issue. In the circumstances, we believe that Congress intended to leave unaffected the law of preemption as it existed under the Atomic Energy Act.⁶⁷

This view of congressional intent is fully consistent with the Commission's contemporaneous pronouncements on the subject. In July 1979, taking note of the GAO recommendation, the Commission invited

⁶⁵ H.R. Rep. No. 1070, 96th Cong., 2d Sess. 27, reprinted in 1980 U.S. Code Cong. & Ad. News 2260, 2270-71.

⁶⁶ LILCO Brief at 32.

⁶⁷ LILCO directs our attention to the remarks of individual legislators (Representatives Lujan, Pashayan, Coughlin and Corcoran, and Senator Simpson) reflecting their view that preemption was intended. See *id.* at 27, 29-31. The remarks of individual legislators are often an unreliable gauge of overall legislative intent, *In re Surface Mining Regulation Litigation*, 627 F.2d 1346, 1362 (D.C. Cir. 1980), and, given the compromise nature of the bill as it eventually emerged, we are unprepared to conclude from the remarks of individual legislators that preemption was intended.

public comment regarding a proposed new regulatory requirement that NRC approval of state and local emergency plans be a condition for issuance of an operating license or continued operation of a nuclear facility.⁶⁸ In light of the comments received, the Commission issued a Notice of Proposed Rulemaking to require NRC concurrence in state and local response plans as a condition for licensing unless an applicant could demonstrate that deficiencies in the plans were not significant, that alternative compensating actions have been or will be taken promptly, or that there are other compelling reasons for issuing the license.⁶⁹

In August 1980, the Commission issued new emergency planning regulations which it characterized as consistent with the recently passed 1980 Authorization Act.⁷⁰ The regulations rejected any requirement that emergency plans sponsored by the state or local government be a condition of licensing. The Commission did not assert, however, that its regulations were intended to have preemptive effect. On the contrary, it recognized that state and local governments were expected to be important participants in emergency planning and acknowledged that a problem would arise if states declined to participate in emergency planning. It observed:

The Commission recognizes there is a possibility that the operation of some reactors may be affected by this rule through inaction of State and local governments or an inability to comply with these rules. The Commission believes that the potential restriction of plant operation by State and local officials is not significantly different in kind or effect from the means already available under existing law to prohibit reactor operation, such as zoning and land-use laws, certification of public convenience and necessity, State financial and rate considerations . . . and Federal environmental laws. The Commission notes, however, that such considerations generally relate to a one-time decision on siting, whereas this rule requires a periodic renewal of State and local commitments to emergency preparedness The Commission believes, based on the record created by the public workshops, that State and local officials as partners in this undertaking will endeavor to provide fully for public protection.⁷¹

More recently, interpreting its new regulations, the Commission reaffirmed that inaction by a state or local government "could effect a potential restriction on plant operations."⁷² In our judgment, the only sensible conclusion to be drawn from the Commission's pronouncements is that it expected the state and local governments to cooperate in emergency

⁶⁸ 44 Fed. Reg. 41,483 (1979).

⁶⁹ 44 Fed. Reg. 75,167 (1979).

⁷⁰ See 45 Fed. Reg. 55,402 (1980).

⁷¹ *Id.* at 55,404.

⁷² *Consolidated Edison Co. of New York* (Indian Point, Unit No. 2), CLI-83-16, 17 NRC 1006, 1010 (1983).

planning but recognized that they could use their new emergency planning responsibilities in a manner akin to their traditional power to prohibit reactor operation on nonradiological health and safety grounds.

We disagree with LILCO's assertion that such construction of the statute renders utility plans a nullity,⁷³ although it may well diminish their usefulness as a means of complying with the emergency planning requirements. The legislative compromise, after all, makes clear that utilities are not foreclosed at the threshold from obtaining a license merely because the state or local government declines to participate in emergency planning. In other words, the legislation accords a utility at least the opportunity to supplement an otherwise deficient governmental plan. It also appears to foreclose the Commission from mandating a state or local government-sponsored plan as a regulatory requirement for licensing. Although LILCO in this instance may have come up against an insurmountable obstacle despite the legislation (the bill, however, was not intended as a guarantee that all utilities would receive licenses), the statute may well have kept open avenues that might otherwise have been closed.⁷⁴

LILCO also claims that the Board's decision rejecting its plan conflicts with Commission decisions encouraging the filing and consideration of the plan. In LILCO's view, the Commission would not have authorized it to present a plan to the Board for consideration if it was clear at the outset that an operable plan could not be implemented.

We find no conflict with the Commission's decisions. The decisions principally relied on by LILCO were rendered in 1983 and 1984 — before the state court's decision and at a time when LILCO's authority under state law to perform its emergency functions was genuinely in doubt.⁷⁵ At that time the Commission quite properly concluded that the planning issues were not "categorically unresolvable."⁷⁶ The Commission's June 1985 decision denying a request for an environmental evaluation of low power operation, although rendered after the state court had ruled on the state law issues, simply assumed that state and county cooperation would be forthcoming if the Commission ultimately determined that an adequate emergency plan is achievable with state and

⁷³ See LILCO Brief at 4-7.

⁷⁴ For example, in the *Indian Point* case, CLI-83-16, 17 NRC 1006, the utility's ability to act in concert with the state government prevented the shutdown of a plant despite a local county's lack of participation in the emergency plan.

⁷⁵ See CLI-84-9, 19 NRC 1323 (1984), and CLI-83-17, 17 NRC 1032 (1983), cited in LILCO's Brief at 7-9.

⁷⁶ CLI-83-17, 17 NRC at 1034.

county participation.⁷⁷ As we discuss in Part III of this opinion, such assumption was not the predicate for the plan under review by the Licensing Board, and the Commission expressly declined to address any of the issues before us in this case.⁷⁸

In sum, we conclude that the most reasonable construction of the Atomic Energy Act, the NRC Authorization Acts, and the Commission's prior determinations is that LILCO is entitled to submit an emergency plan in the absence of a state or local plan in an effort to demonstrate that the public can be adequately protected. But federal law does not override enforcement of the statutes of the State of New York that impede or foreclose LILCO from presenting a viable emergency plan to the Commission for review. If the current state of the law frustrates LILCO by giving the state an eleventh hour veto over operation of the Shoreham reactor, the remedy lies in the legislative arena.

III. REALISM

As noted earlier, LILCO did not rest its case below solely on its preemption argument. It contended as well that it is entitled to a decision in its favor on Contentions 1-10, even if state law bars it from carrying out the actions specified in those contentions.⁷⁹ This is so, according to LILCO, because the state and local governments would respond and take the necessary protective measures in the event of a real emergency that threatened the health and safety of the populace surrounding the plant.⁸⁰

The Licensing Board rejected the claim, finding it flawed in two critical respects. First, according to the Board, LILCO "cannot be delegated the authority to perform the functions enumerated in Contentions 1-10" and therefore could not fully implement the plan by itself.⁸¹ Second, and more to the point, any response by the State and County in a real emergency would be on "an uncooperative, uncoordinated, *ad hoc* basis."⁸²

LILCO continues to press its "realism" argument before us. According to LILCO, the Licensing Board erred in basing its decision on the premise that in the event of a radiological emergency "the state would

⁷⁷ See CLI-85-12, 21 NRC 1587, cited in LILCO's Reply Brief on the Legal Authority, Conflict of Interest, and State Plan Issues (July 24, 1985) (hereafter cited as LILCO Reply Brief) at 2, 4.

⁷⁸ See CLI-85-12, 21 NRC at 1589.

⁷⁹ LILCO Motion at 43.

⁸⁰ *Ibid.*

⁸¹ LBP-85-12, 21 NRC at 911.

⁸² *Id.* at 912.

simply deputize LILCO employees to carry out an emergency plan but do nothing itself.”⁸³ LILCO claims that its argument is “simply that the State and County would in fact respond if a real emergency were to occur.”⁸⁴

It is not altogether clear that the Board predicated its decision on the premise suggested by LILCO. Although some portions of the Board’s decision support LILCO’s position,⁸⁵ there is also language suggesting that the Board had in mind a response involving the direct participation by state and county officials in the implementation of the plan. The Board observed:

Applicant anticipates the State and County will provide for a planned response, but only after Shoreham begins to operate. LILCO Brief on Contentions 1-10, at 44. We must base our determination on what the proposed plan actually provides and whether it currently complies with the regulatory requirements so that a determination can be made whether there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency. The State and County affirmatively oppose participating in LILCO’s Plan. We cannot base a judgment on the adequacy of the Plan on conjecture, as LILCO would have us do. *Although Intervenors may well respond in a planned manner insofar as they do respond, there is no reasonable assurance of record that the response will be in cooperation and coordination with Applicant, which is what is contemplated for an adequate plan. (See Board Findings on Contention 92 in § XIII.C.).*⁸⁶

We need not decide whether the Licensing Board misconstrued LILCO’s argument, as claimed. Even if it did, the Board’s decision must be upheld. In the first place, assuming, as LILCO would have us do, that the State and County will in good faith respond in the event of a genuine emergency, no state or county response plan has been submitted for review on this record. The best that is currently available is the assurance of the County Executive that the County will fulfill its responsibility to protect the public in the event of an emergency and the assumption that the State would do the same.

In this regard, we have not overlooked the County Executive’s recent announcement that the County is prepared to take any necessary action

⁸³ LILCO Brief at 46.

⁸⁴ *Id.* at 45.

⁸⁵ The Board at one point stated that LILCO assumed that if the State and County were to participate in an emergency response at Shoreham, they would authorize the utility to perform the functions it proposes to carry out in an emergency as enumerated in the subject contentions. The realism argument is wholly predicated on the State and County authorizing LILCO to act as planned. Without such authorization the realism argument vanishes.

LBP-85-12, 21 NRC at 911.

⁸⁶ *Id.* at 912 (emphasis supplied).

to protect the public in the event of a genuine emergency and that a test of the LILCO emergency plan, presumably with the oversight of the County Executive, can be conducted.⁸⁷ It may well be that a new effort by LILCO and the County will in due course result in an adequately coordinated emergency plan. If and when some arrangement between LILCO and the County comes to fruition, it may be submitted for consideration.

Moreover, the Board found that any response by the State and County in the absence of prior planning and rehearsal would be necessarily ad hoc. It is this type of ad hoc response that was found unsatisfactory during the accident at Three Mile Island and that led to the adoption of the Commission's current emergency planning regulations.⁸⁸

On this score, LILCO claims that the "issue of 'coordination' is a factual issue not properly raised by the motion for summary disposition of Contentions 1-10."⁸⁹ We disagree. In the usual licensing proceeding, the question of whether, and to what extent, an emergency plan can and will be successfully implemented does present factual issues for litigation. In the instant case, however, the State and County have thus far refused to participate at all in any preparation or testing of emergency procedures. Even if we assume that the State and County will respond to a genuine emergency, we cannot assume that such response will be coordinated in advance and rehearsed.

In this regard, LILCO has failed to make any demonstration that its plan is amenable to ad hoc adoption by the appropriate governmental units at the time of an emergency. The inch-thick volume of the transition plan itself, plus two volumes of implementing procedures, each at least two inches thick, and another, three and one-half inch volume, labeled "Appendix A — Evacuation Plan," do not lend themselves to quick review and implementation if the State or County is called upon to act.⁹⁰ The plan establishes more than 50 different position titles and as many separate functions.⁹¹ It is designed to evacuate up to 160,000 residents from a 160-square mile area that is encompassed within an approximately 10-mile radius from the plant.⁹² Among the facilities to be evacuated are three hospitals, eight major nursing and adult homes, and two correctional facilities.⁹³ At other plants, extensive coordination and

⁸⁷ See Letter to Appeal Board from Chief Deputy County Attorney Eugene R. Kelly (July 11, 1985).

⁸⁸ See generally *Duke Power Co. v. NRC*, 770 F.2d 386, 388 (4th Cir. 1985).

⁸⁹ LILCO Brief at 47.

⁹⁰ Tr. 832-35, 1204.

⁹¹ See Applicant Ex. EP-1, Emergency Response Plan Implementing Procedures, at 2.1.1.

⁹² See *id.*, Local Offsite Radiological Emergency Response Plan, Appendix A — Evacuation Plan, at 1-4.

⁹³ *Id.* at II-28 to II-30.

rehearsal have been required for such a substantial undertaking. In short, there is simply no reasonable basis for assuming that the State or County could realistically step in at the last moment and execute the LILCO plan.⁹⁴

IV. IMMATERIALITY

LILCO contends, finally, that certain of the actions specified in Contentions 1-10 — namely those associated with traffic management⁹⁵ — are not required by Commission regulations and thus are “immaterial” to a determination that adequate protection can and will be provided in the event of an accident. In LILCO’s view, an evacuation can be conducted even without traffic control; such evacuation would take only about an hour and a half more than under controlled conditions and no longer than at other plants; and adequate protection in case of an emergency can be assured as long as accurate time estimates for an evacuation can be developed and found reliable.⁹⁶ In LILCO’s view, the refusal of the State or County to allow traffic control simply increases the time estimate for an evacuation which must be taken into account when protective actions are considered (just as a major snowstorm might affect protective action recommendations).⁹⁷

The Licensing Board acknowledged that no standard time is established in the regulations for an evacuation⁹⁸ and that, in any event, the utility is not obligated to ensure the best possible evacuation.⁹⁹ Nonetheless, the Board noted that 10 C.F.R. 50.47(a)(1) requires that there is “reasonable assurance that protective measures can and will be taken in the event of a radiological emergency.” It also indicated that section 50.47(b)(10) requires that a “range of protective actions [has been] developed for the plume exposure pathway EPZ for emergency workers

⁹⁴ We reject LILCO’s alternate arguments that its transition plan should be considered an “interim compensating action” under 10 C.F.R. 50.47(c)(1), or that other factors warrant issuance of an operating license despite the lack of governmental participation in emergency planning. LILCO Brief at 50-52. Section 50.47(c)(1) permits an applicant to show that deficiencies in emergency plans “are not significant for the plant in question, that adequate interim compensating actions have been or will be taken promptly, or that there are other compelling reasons to permit plant operation.” In the instant case, material features of the LILCO transition plan cannot be carried out and the public’s safety cannot be adequately assured. LILCO has also failed to demonstrate that compensating actions can or will be taken or that compelling reasons exist to permit plant operation.

⁹⁵ Contentions 1-4, 9, and 10. See note 14, *supra*.

⁹⁶ LILCO Brief at 48-50.

⁹⁷ *Id.* at 50.

⁹⁸ LBP-85-12, 21 NRC at 917.

⁹⁹ *Id.* at 918.

and the public” and that “[g]uidelines for the choice of protective actions during an emergency, consistent with Federal guidance, are developed and in place.”¹⁰⁰ It concluded that an unplanned evacuation restricts the range of available options and cannot meet these regulatory requirements.¹⁰¹

We believe that the Board properly rejected LILCO’s “immateriality” argument. We recognize that the Commission’s regulations do not spell out the precise manner in which an evacuation is to be conducted if necessary. Nonetheless, the Commission has construed its emergency planning regulations to require “provisions for evacuating the public in times of radiological emergencies.”¹⁰² We have likewise observed that the Commission’s emergency planning scheme contemplates that emergency evacuation *procedures* be developed for the 10-mile area surrounding a nuclear plant.¹⁰³ As we stated in our *Zimmer* opinion,

Commission regulations plainly require the formulation of satisfactory evacuation plans as a part of the overall emergency preparedness effort. Moreover, at least if adequately developed, those plans should aid materially the making of an informed judgment respecting which available protective measures are most suitable in the totality of the circumstances attending the specific emergency at hand.¹⁰⁴

LILCO included traffic control as part of its proposed evacuation procedures in light of such requirements. We believe that such inclusion was proper. In the context of this case, at least, something more is needed than an aspiration that the public will be able to fend for itself in the event an evacuation is required.¹⁰⁵

V. OTHER ISSUES

LILCO’s appeal challenges certain other of the Licensing Board’s subsidiary determinations.¹⁰⁶ Such challenges principally attack the Board’s

¹⁰⁰ *Id.* at 916.

¹⁰¹ *Id.* at 917.

¹⁰² 46 Fed. Reg. 11,288, 11,289 (1981) (emphasis added).

¹⁰³ See *The Detroit Edison Co.* (Enrico Fermi Atomic Power Plant, Unit 2), ALAB-730, 17 NRC 1057, 1069 n.12 (1983). Discrete aspects of an evacuation plan may be subjected to adversarial evaluation to determine the efficiency with which an evacuation can be accomplished. See, e.g., *Cincinnati Gas & Electric Co.* (Wm. H. Zimmer Nuclear Power Station, Unit 1), ALAB-727, 17 NRC 760, 770-71 (1983).

¹⁰⁴ *Id.* at 774 n.19.

¹⁰⁵ We offer no views as to whether every item subject to Contentions 1-4, 9, and 10 must be considered material to a proper emergency plan. We note, for example, that LILCO indicated at oral argument that a newly revised emergency plan eliminates trailblazer signs which were the subject of Contention 3. See App. Tr. 37.

¹⁰⁶ LILCO claims, for example, that, in response to Contention 11, the Board erroneously concluded that LILCO employees would be insufficiently independent of management to permit them to recom-

(Continued)

application of the Commission's regulations to the special facts of this case, but involve as well some disagreement over the conclusions the Board drew from the evidence of record. Although LILCO was obliged to raise these matters as part of its appeal from the Board's decision, they appear to bear on the viability of the plan itself, rather than LILCO's authority to implement it, and are more amenable to disposition in connection with the matters likely to be raised by the State and County.¹⁰⁷ Moreover, given our conclusions with respect to LILCO's principal arguments, resolution of LILCO's remaining claims does not affect our ultimate disposition of the emergency planning phase of the case. Thus, in view of the outcome here and our desire to expedite resolution of this phase of the case, we will defer our consideration of LILCO's remaining arguments until disposition of the appeals filed by the County and the State.

The Licensing Board's conclusions in LBP-85-12 concerning LILCO's legal authority to implement material features of its emergency plan are *affirmed*.

It is so ORDERED.

FOR THE APPEAL BOARD

C. Jean Shoemaker
Secretary to the
Appeal Board

APPENDIX

1980 NRC Authorization Act

SEC. 109. (a) Funds authorized to be appropriated pursuant to this Act may be used by the Nuclear Regulatory Commission to conduct pro-

mend appropriate protective action. LILCO Brief at 53-65. LILCO also maintains that, in connection with Contention 92, the Board improperly found that the lack of participation by the State constitutes an irreparable deficiency. *Id.* at 66-70.

¹⁰⁷ For example, counsel for the County noted that it planned to challenge the Board's conclusion that four functions normally performed by the State are within LILCO's capability to perform. App. Tr. 72-73. Staff counsel indicated that the Board's ruling regarding the alleged conflict of interest was wrong both as a matter of construction of the Commission's regulations and as a matter of fact. App. Tr. 108-09. LILCO asserted that the question of coordination with the state raised by Contention 92 is dealt with as well under Contentions 81, 85 and 88. LILCO Reply Brief at 5 n.4.

ceedings, and take other actions, with respect to the issuance of an operating license for a utilization facility only if the Commission determines that —

(1) there exists a State or local emergency preparedness plan which —

(A) provides for responding to accidents at the facility concerned, and

(B) as it applies to the facility concerned only, complies with the Commission's guidelines for such plans, or

(2) in the absence of a plan which satisfies the requirements of paragraph (1), there exists a State, local, or utility plan which provides reasonable assurance that public health and safety is not endangered by operation of the facility concerned. . . .

(b) Of the amounts authorized to be appropriated under section 101(a), such sums as may be necessary shall be used by the Nuclear Regulatory Commission to —

(1) establish by rule —

(A) standards for State radiological emergency response plans, developed in consultation with the Director of the Federal Emergency Management Agency, and other appropriate agencies, which provide for the response to a radiological emergency involving any utilization facility,

(B) a requirement that —

(i) the Commission will issue operating licenses for utilization facilities only if the Commission determines that —

(I) there exists a State or local radiological emergency response plan which provides for responding to any radiological emergency at the facility concerned and which complies with the Commission's standards for such plans under subparagraph (A), or

(II) in the absence of a plan which satisfies the requirements of subclause (I), there exists a State, local, or utility plan which provides reasonable assurance that public health and safety is not endangered by operation of the facility concerned, and

(ii) any determination by the Commission under subclause (I) may be made only in consultation with the Director of the Federal Emergency Management Agency and other appropriate agencies, and

(C) a mechanism to encourage and assist States to comply as expeditiously as practicable with the standards promulgated under subparagraph (A) of this paragraph.

(2) review all plans and other preparations respecting such an emergency which have been made by each State in which there is located a utilization facility or in which construction of such a facility has been commenced and by each State which may be affected (as determined by the Commission) by any such emergency,

(3) assess the adequacy of the plans and other preparations reviewed under paragraph (2) and the ability of the States involved to carry out emergency evacuations during an emergency referred to in paragraph (1) and submit a report of such assessment to the appropriate committees of the Congress within 6 months of the date of the enactment of this Act,

(4) identify which, if any, of the States described in paragraph (2) do not have adequate plans and preparations for such an emergency and notify the Governor and other appropriate authorities in each such State of the respects in which such plans and preparations, if any, do not conform to the guidelines promulgated under paragraph (1), and

(5) submit a report to Congress containing (A) the results of its actions under the preceding paragraphs and (B) its recommendations respecting any additional Federal statutory authority which the Commission deems necessary to provide that adequate plans and preparations for such radiological emergencies are in effect for each State described in paragraph (2).

(c) In carrying out its review and assessment under subsection (b) (2) and (3) and in submitting its report under subsection (b) (5), the Commission shall include a review and assessment, with respect to each utilization facility and each site for which a construction permit has been issued for such a facility, of the emergency response capability of State and local authorities and of the owner or operator (or proposed owner or operator) of such facility. Such review and assessment shall include a determination by the Commission of the maximum zone in the vicinity of each such facility for which evacuation of individuals is feasible at various different times corresponding to the representative warning times for various different types of accidents.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

Christine N. Kohl, Chairman
Gary J. Edles
Dr. Reginald L. Gotchy

In the Matter of

Docket Nos. 50-352-OL
50-353-OL

PHILADELPHIA ELECTRIC COMPANY
(Limerick Generating Station,
Units 1 and 2)

October 22, 1985

The Appeal Board affirms the second partial initial decision rendered by the Licensing Board in this operating license proceeding, LBP-84-31, 20 NRC 446 (1984), with the exception of a matter relating to onsite emergency plan medical arrangements, which is remanded to the Licensing Board for further action.

RULES OF PRACTICE: CONTENTIONS (ADMISSIBILITY)

In passing upon the admissibility of a contention, the proper inquiry is not whether the contention will ultimately be proven on the merits, but whether the basis and specificity requirements of 10 C.F.R. § 2.714(b) have been met. *Houston Lighting and Power Co.* (Allens Creek Nuclear Generating Station, Unit 1), ALAB-590, 11 NRC 542, 546-49 & n.10 (1980).

RULES OF PRACTICE: COMMISSION POLICY STATEMENTS (EFFECT)

The Commission policy in effect at the time an adjudicatory decision is rendered governs that decision. *See Potomac Electric Power Co.* (Douglas Point Nuclear Generating Station, Units 1 and 2), ALAB-218, 8 AEC 79, 82-83 (1974).

NUCLEAR REGULATORY COMMISSION: AUTHORITY

The Commission can limit adjudicatory hearings to issues that it considers material to its licensing decision. *Union of Concerned Scientists v. NRC*, 735 F.2d 1437, 1444-51 (D.C. Cir. 1984), *cert. denied*, ___ U.S. ___, 105 S. Ct. 815 (1985); *Siegel v. AEC*, 400 F.2d 778, 783-85 (D.C. Cir. 1968).

NUCLEAR REGULATORY COMMISSION: POLICY STATEMENT ON SEVERE ACCIDENTS

Severe accident mitigation measures, beyond any already existing Commission requirements, are not to be "addressed in case-related safety hearings." 50 Fed. Reg. 32,138, 32,145 (1985).

NEPA: REQUIREMENTS

The National Environmental Policy Act of 1969 (NEPA), 42 U.S.C. § 4321, could not logically require more than the safety provisions of the Atomic Energy Act; further, these statutes, and the issues raised under each, are inherently interrelated. *See Public Service Electric and Gas Co.* (Hope Creek Generating Station, Units 1 and 2), ALAB-518, 9 NRC 14, 39 (1979); *Citizens for Safe Power, Inc. v. NRC*, 524 F.2d 1291, 1299-1300 (D.C. Cir. 1975).

NEPA: ENVIRONMENTAL IMPACT STATEMENT (SEVERE ACCIDENTS)

NEPA does not require the Commission to consider low probability, severe (beyond design-basis) accidents at nuclear facilities. *See San Luis Obispo Mothers for Peace v. NRC*, 751 F.2d 1287, 1301 (D.C. Cir. 1984), *vacated in part and reh'g en banc granted on other grounds*, 760 F.2d 1320 (1985).

NUCLEAR REGULATORY COMMISSION: POLICY STATEMENT ON SEVERE ACCIDENTS

The Commission's recently adopted Severe Accident Policy Statement requires the issue of sabotage to be analyzed "to the extent practicable" in the design and operating procedures for new nuclear plants. Existing plants, however, need only conform to the Commission's current regulatory requirements. 50 Fed. Reg. at 32,141, 32,144-45.

SECURITY PLANS: LICENSE REQUIREMENT

All nuclear plants are required to have a detailed security plan to protect against external and internal sabotage. See 10 C.F.R. Part 73. The adequacy of such plans are subject to litigation in licensing hearings. See, e.g., *Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-653, printed as an Attachment to CLI-82-19, 16 NRC 53 (1982).

APPEAL BOARDS: SCOPE OF REVIEW

Generally, an appeal board will not entertain an issue raised for the first time on appeal. *Tennessee Valley Authority* (Hartsville Nuclear Plant, Units 1A, 2A, 1B, and 2B), ALAB-463, 7 NRC 341, 348 (1978).

NUCLEAR REGULATORY COMMISSION: RESPONSIBILITIES UNDER NEPA

The Council on Environmental Quality regulation requiring a worst-case analysis (40 C.F.R. § 1502.22) is substantive, rather than procedural; hence, the Commission — as an independent regulatory agency — does not consider itself legally bound by it. 49 Fed. Reg. 9352, 9356-58 (1984). See *Baltimore Gas and Electric Co. v. Natural Resources Defense Council, Inc.*, 462 U.S. 87, 99 n.12 (1983).

APPEAL BOARDS: AUTHORITY (RELATION TO COMMISSION)

An appeal board cannot give binding effect to another agency's regulation explicitly eschewed by the Commission itself.

NEPA: ENVIRONMENTAL IMPACT STATEMENT

The Commission does not have any duty under NEPA to address “‘remote and highly speculative consequences’” in its environmental impact statements. *See San Luis Obispo Mothers for Peace*, 751 F.2d at 1300 and cases cited.

NEPA: ENVIRONMENTAL IMPACT STATEMENTS

Under NRC regulations and court precedent, a facility’s Final Environmental Statement can be amended by the adjudicatory hearing record and subsequent Licensing Board decision. *See* 10 C.F.R. § 51.52(b)(3) (1984); 10 C.F.R. § 51.102 (1985); *New England Coalition on Nuclear Pollution v. NRC*, 582 F.2d 87, 93-94 (1st Cir. 1978); *Citizens for Safe Power*, 524 F.2d at 1294 n.5.

RULES OF PRACTICE: CONTENTIONS

A party is bound by the literal terms of its own contention.

REGULATORY GUIDES: APPLICATION

Various NRC documents (such as the NUREGs that elaborate on the generalized regulatory requirements of 10 C.F.R. Part 50) simply serve as guidance for the staff’s review and do not prescribe regulatory requirements. *Metropolitan Edison Co.* (Three Mile Island Nuclear Station, Unit No. 1), ALAB-698, 16 NRC 1290, 1298-99 (1982), *rev’d in part on other grounds*, CLI-83-22, 18 NRC 299 (1983).

EMERGENCY PLANS: CONTENT (SUFFICIENCY)

The Commission relies on predictive findings of adequacy in the emergency planning field more so than in other areas. The emergency plan itself need not even be final, so long as it is sufficiently developed to permit a board to make the necessary “reasonable assurance” finding. *Louisiana Power and Light Co.* (Waterford Steam Electric Station, Unit 3), ALAB-732, 17 NRC 1076, 1103-04 (1983).

EMERGENCY PLANS: CONTENT (SUFFICIENCY)

Post-hearing appraisal of an applicant’s emergency facilities by the NRC staff is appropriate, if its emergency plan is developed enough to warrant a licensing board finding of adequacy.

EMERGENCY PLANS: CONTENT (ARRANGEMENTS FOR MEDICAL SERVICES)

Emergency plans must provide arrangements for medical services for “contaminated injured individuals.” See 10 C.F.R. § 50.47(b)(12), and Part 50, Appendix E, § IV.E.

EMERGENCY PLANS: CONTENT (ARRANGEMENTS FOR MEDICAL SERVICES)

The medical arrangements for contaminated injured individuals required by 10 C.F.R. § 50.47(b)(12) should include 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. NUREG-0654, Rev. 1, “Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants” (November 1980) at 69 (Planning Standard L.1). See *Southern California Edison Co.* (San Onofre Nuclear Generating Station, Units 2 and 3), CLI-83-10, 17 NRC 528, 535 n.9 (1983), *rev'd in part on other grounds*, *GUARD v. NRC*, 753 F.2d 1144 (D.C. Cir. 1985).

EMERGENCY PLANNING: BASIS FOR REQUIREMENT

The Commission’s emergency planning regulations are premised on the assumption that a serious accident might occur and that evacuation of the emergency planning zone might well be necessary. See *id.* at 533. As a corollary, a possible deficiency in an emergency plan cannot properly be disregarded because of the low probability that action pursuant to the plan will ever be necessary.

EMERGENCY PLANS: CONTENT (ARRANGEMENTS FOR MEDICAL SERVICES)

The requirement that emergency response plans include “[a]rrangements . . . for medical services for contaminated injured individuals” (10 C.F.R. § 50.47(b)(12)) is not satisfied by a simple list of existing treatment facilities. *GUARD*, 753 F.2d 1144.

EMERGENCY PLANS: CONTENT (SUFFICIENCY)

“Prudence” is the proper standard by which to measure emergency provisions. *See San Onofre*, CLI-83-10, 17 NRC at 533.

EMERGENCY PLANS: CONTENT (SUFFICIENCY)

The Commission’s emergency planning regulations do not require “extraordinary measures.” *GUARD*, 753 F.2d at 1150 n.7.

EMERGENCY PLANS: CONTENT (SUFFICIENCY)

Under 10 C.F.R. § 50.47(c)(1), failure to satisfy the emergency planning standards in section 50.47(b) “may result in the Commission[’s] declining to issue an operating license” unless it is demonstrated “that deficiencies in the plans are not significant for the plant in question, that adequate interim compensating actions have been or will be taken promptly, or that there are other compelling reasons to permit plant operation.”

EVIDENCE: EXPERT TESTIMONY

An expert witness may testify about analyses performed by other experts. *See Wisconsin Electric Power Co.* (Point Beach Nuclear Plant, Unit 2), ALAB-78, 5 AEC 319, 332 (1972).

EVIDENCE: HEARSAY

Hearsay evidence is generally admissible in administrative proceedings, providing its reliability can be determined — usually through questioning of the witness giving the hearsay. *Id.* at 332-33. *See Duke Power Co.* (William B. McGuire Nuclear Station, Units 1 and 2), ALAB-669, 15 NRC 453, 477 (1982).

APPEAL BOARDS: SCOPE OF REVIEW

It is well-settled that an appellate tribunal must judge appeals on the basis of the record developed at the hearing below. *Puerto Rico Electric Power Authority* (North Coast Nuclear Plant, Unit 1), ALAB-648, 14 NRC 34, 36 (1981).

EVIDENCE: EXPERT TESTIMONY

Expert testimony is typically a mixture of scientific principles (known to the expert through his or her training and experience), data derived from analyses or by perception, and the expert's opinions based on these principles and data. *See* Fed. R. Evid. 702; *McGuire*, 15 NRC at 475.

RULES OF PRACTICE: BURDEN OF PROOF

The standard of proof that an applicant must meet in a licensing proceeding is a preponderance of the evidence. *See Commonwealth Edison Co.* (Zion Station, Units 1 and 2), ALAB-616, 12 NRC 419, 421 (1980).

ADJUDICATORY BOARDS: DISQUALIFICATION (STANDARD)

Disqualifying bias is not shown by unfavorable rulings, or by a judge's occasional use of strong language toward a party or the expression of his or her views on pending matters. *Metropolitan Edison Co.* (Three Mile Island Nuclear Station, Unit 1), CLI-85-5, 21 NRC 566, 569 (1985), *aff'd sub nom. Three Mile Island Alert, Inc. v. NRC*, 771 F.2d 720 (3d Cir. 1985). Disqualifying bias must stem from an extrajudicial source — that is, it must be based on something other than what the adjudicator has learned from participating in the case. *Houston Lighting and Power Co.* (South Texas Project, Units 1 & 2), CLI-82-9, 15 NRC 1363, 1365 (1982).

NEPA: NRC RESPONSIBILITIES

NEPA requires the NRC to take a "hard look" at the environmental issues posed by a particular project. *See Natural Resources Defense Council, Inc. v. Morton*, 458 F.2d 827, 838 (D.C. Cir. 1972).

QUALITY ASSURANCE/QUALITY CONTROL: REQUIREMENTS

The NRC requires an applicant to have a quality assurance program to ensure that a plant and its parts are designed and constructed or fabricated in accordance with acceptable standards. The necessary elements of a quality assurance program are set forth in 18 criteria specified in 10 C.F.R. Part 50, Appendix B.

RULES OF PRACTICE: CONTENTIONS (ADMISSIBILITY)

In order for a contention to be admissible, the bases for it must be set forth with reasonable specificity. 10 C.F.R. § 2.714(b).

RULES OF PRACTICE: CONTENTIONS (ADMISSIBILITY)

Discrete welding deficiencies identified in a few NRC inspection reports do not provide enough of a bases to support a contention alleging a complete breakdown in an applicant's quality assurance program. See generally *Louisiana Power & Light Co.* (Waterford Steam Electric Station, Unit 3), ALAB-812, 22 NRC 5, 16-44 (1985).

RULES OF PRACTICE: CONTENTIONS (ADMISSIBILITY)

The conditional admission of any contention is unauthorized under the Commission's rules. *Duke Power Co.* (Catawba Nuclear Station, Units 1 and 2), ALAB-687, 16 NRC 460, 467 (1982).

RULES OF PRACTICE: NONTIMELY SUBMISSION OF CONTENTIONS

The admission of late-filed contentions is to be determined by balancing the five factors in 10 C.F.R. § 2.714(a)(1). *Duke Power Co.* (Catawba Nuclear Station, Units 1 and 2), CLI-83-19, 17 NRC 1041, 1045 (1983).

RULES OF PRACTICE: CONTENTIONS (ADMISSIBILITY)

Staff documents, if relevant and specific enough, can be relied on to support a contention. Cf. *Waterford*, ALAB-812, 22 NRC at 14, 17 & n.7.

ADJUDICATORY BOARDS: DISQUALIFICATION (STANDARD)

Inadvertent and possibly inaccurate statements do not establish bias on the part of an adjudicator.

LICENSING BOARDS: AUTHORITY TO REGULATE PROCEEDINGS

The Commission's Rules of Practice provide licensing boards with considerable flexibility to regulate the course of a hearing and designate

the order of procedure. 10 C.F.R. §§ 2.718(e), 2.731. See *Metropolitan Edison Co.* (Three Mile Island Nuclear Station, Unit 1), ALAB-772, 19 NRC 1193, 1245-46 (1984), *rev'd in part on other grounds*, CLI-85-2, 21 NRC 282 (1985). Although the rules set forth a general schedule for the filing of proposed findings, licensing boards are authorized to alter that schedule or to dispense with it entirely. See 10 C.F.R. § 2.754(a).

LICENSING BOARD: RESPONSIBILITIES

Under 10 C.F.R. § 2.760(c) of the Commission's Rules of Practice, a licensing board is required to put its initial decision and the reasons or bases for the supporting findings, conclusions, and rulings in writing. While the decision may include transcript references to oral rulings made from the bench in explanation of the decision, this method of decisionmaking in complicated NRC licensing hearings is counterproductive to meaningful appellate review and should be avoided.

ATOMIC ENERGY ACT: SAFETY FINDINGS

Neither the Atomic Energy Act of 1954, as amended, nor the Commission's implementing regulations mandate a demonstration of error-free construction. What they require is simply a finding of reasonable assurance that, as built, the facility can and will be operated without endangering the public health and safety. 42 U.S.C. §§ 2133(d), 2232(a); 10 C.F.R. § 50.57(a)(3)(i); *Union Electric Co.* (Callaway Plant, Unit 1), ALAB-740, 18 NRC 343, 346 (1983). The requisite reasonable assurance exists if all ascertained construction errors have been corrected, and there is no showing of a pervasive breakdown in quality assurance so as to raise serious doubt about the overall safety of the plant. *Ibid.*

RULES OF PRACTICE: RESPONSIBILITIES OF PARTIES

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. *Statement of Policy on Conduct of Licensing Proceedings*, CLI-81-8, 13 NRC 452, 454 (1981).

EVIDENCE: EXPERT TESTIMONY

A witness is qualified as an expert by knowledge, skill, experience, training, or education. Fed. R. Evid. 702. See *McGuire*, 15 NRC at 475.

EVIDENCE: EXPERT TESTIMONY

Technical testimony on matters such as pipeline location or accidents requires an expert witness who can be examined on the reliability of the factual assertions and soundness of the scientific opinions offered. *McGuire*, 15 NRC at 477.

EVIDENCE: EXPERT TESTIMONY

Where an asserted expert witness can supply no scientific basis for his statements (other than his belief) and disparages his own testimony, a licensing board would be remiss in giving such testimony any weight whatsoever.

TECHNICAL CALCULATIONS: CONSERVATISM

The use of conservatism and margin for error in making technical calculations is necessary and desirable, but must be footed to some extent in reasonable, scientific ground. Conservatism upon conservatism can distort technical data to the point where the mechanism at issue is no longer meaningfully described.

REGULATORY GUIDES: APPLICATION

Regulatory guides and the like do not prescribe regulatory requirements. In general, they are treated simply as evidence of legitimate means for complying with regulatory requirements, and the staff is required to demonstrate the validity of its guidance if it is called into question during the course of litigation. *TMI-1 Restart*, ALAB-698, 16 NRC at 1299.

LICENSING BOARDS: RESPONSIBILITIES

A licensing Board's function is to oversee the *parties'* development of the record on contested issues and to issue an initial decision containing the board's findings of fact and conclusions of law on the matters in controversy. See 10 C.F.R. §§ 2.718, 2.760, 2.760a. This does not mean that a board must stand mute during the hearing and ignore deficiencies in the testimony. It must satisfy itself that the conclusions expressed by expert witnesses on significant safety or environmental questions have a solid foundation. *South Carolina Electric and Gas Co.* (Virgil C. Summer Nuclear Station, Unit 1), ALAB-663, 14 NRC 1140, 1156 (1981), *review declined*, CLI-82-10, 15 NRC 1377 (1982).

OPERATING LICENSE HEARING: RESPONSIBILITY OF LICENSING BOARD

Reasonable assurance that the plant will be operated safely and that public health, safety, and environmental concerns will be adequately protected is the standard by which a licensing board is to measure an application; a risk-free environment is not required. *Carstens v. NRC*, 742 F.2d 1546, 1557 (D.C. Cir. 1984), *cert denied*, ___ U.S. ___, 86 L. Ed. 2d 694 (1985).

NEPA: SITE REVIEW

Alternative site issues can be raised only at the construction permit stage and not in connection with an operating license. See 10 C.F.R. §§ 51.106(c), (d).

TECHNICAL ISSUES DISCUSSED:

- Severe Accident Mitigation
- Probabilistic Risk Assessment (PRA)
- Sabotage/Security Plan
- Worst Case Risk Analysis
- Socioeconomic Impacts
- Onsite Emergency Plan
- Emergency Operation Facilities
- Technical Support Center
- Operations Support Center
- Aircraft Carburetor Icing
- Quality Assurance
- Pipeline Rupture
- Overpressure Calculations
- Structural Integrity.

APPEARANCES

Charles W. Elliott, Easton, Pennsylvania, for intervenor Limerick Ecology Action, Inc.

Frank R. Romano, Ambler, Pennsylvania, for intervenor Air and Water Pollution Patrol.

Robert L. Anthony, Moylan, Pennsylvania, intervenor pro se and for intervenor Friends of the Earth.

Mark J. Wetterhahn, Washington, D.C. (with whom Troy B. Conner, Jr., and Robert M. Rader, Washington, D.C., were on the brief), for applicant Philadelphia Electric Company.

Benjamin H. Vogler (with whom Ann P. Hodgdon was on the brief) for the Nuclear Regulatory Commission staff.

DECISION

Intervenors Limerick Ecology Action, Inc. (LEA), Air and Water Pollution Patrol (AWPP), and Robert L. Anthony/Friends of the Earth (Anthony/FOE) each appeal from the Licensing Board's 1984 second partial initial decision (LBP-84-31, 20 NRC 446) and related orders entered in this operating license proceeding. In those decisions and orders, the Board resolved numerous technical, environmental, and onsite emergency planning issues in favor of applicant Philadelphia Electric Company (PECo) and authorized the issuance of a low-power license for the Limerick facility.¹ The pending appeals challenge the Licensing Board's rulings in a total of nine different areas. PECo and the NRC staff oppose the appeals. For the reasons set forth below, we affirm LBP-84-31 and related orders in all respects except one. Insofar as the medical arrangements in PECo's onsite emergency plan are concerned, we reverse and remand for further action.²

I. LEA'S APPEAL

All but two of LEA's arguments concern the adequacy of the environmental review in connection with PECo's operating license application. LEA contends that the Licensing Board improperly excluded consideration of design alternatives to mitigate severe accidents, the risk of sabotage, and certain socioeconomic impacts. It also argues that the consideration of human health impacts was inadequate. In its remaining argu-

¹ We denied requests to stay this decision in ALAB-789, 20 NRC 1443 (1984).

² In an earlier phase of this case, we reviewed and ultimately affirmed the Licensing Board's decisions concerning the environmental impacts of the supplementary cooling water system for Limerick. See ALAB-785, 20 NRC 848 (1984); ALAB-804, 21 NRC 587 (1985).

ments, LEA contends that PECO's onsite emergency plan violates Commission regulations, the Atomic Energy Act, and the Administrative Procedure Act (APA) in certain respects. We address each point in turn.

A. Severe Accident Mitigation Design Alternatives

In its contention DES-5, LEA claimed that the National Environmental Policy Act of 1969 (NEPA), 42 U.S.C. § 4321, and pertinent Commission regulations require consideration of design alternatives for the mitigation of severe accidents at Limerick. Because the plant is located in an area of relatively high population density, LEA asserted that such an accident would thus pose greater risk to the public. LEA cited NRC staff-sponsored studies, in which the cost-effectiveness of possible mitigating design features is under examination, as the bases for its contention. *See* LEA Contentions on the Environmental Assessment of Severe Accidents (February 13, 1984) [hereafter, "LEA DES Contentions"] at 11-13.

The Licensing Board, however, refused to admit the contention because it did not satisfy the Commission's requirements of basis and specificity. *See* 10 C.F.R. § 2.714(b). In the Board's view, DES-5 was just too general: LEA failed to describe a particular, cost-effective design alternative for a particular accident sequence. The fact that the staff had under way certain "generic" studies of the matter, according to the Board, did not render the contention admissible. Tr. 8776-78, 9471-75; Licensing Board Order of April 20, 1984 (unpublished), at 1, 3.

On appeal, LEA stresses that the staff's own studies, done under contract, identify severe accident mitigation design alternatives specifically for the Limerick facility. In particular, R&D Associates (RDA) under Contract No. NRC-03-83-092 is analyzing the cost-effectiveness of features such as a filtered-vented containment system. LEA argues that NEPA, as well as Commission and Council on Environmental Quality (CEQ) regulations, require consideration of these alternatives, which might significantly mitigate the risk of a severe accident at Limerick. Brief in Support of Appeal of Limerick Ecology Action, Inc. (October 4, 1984) [hereafter, "LEA Brief"] at 2-10.³

We are inclined to agree with LEA that the NRC-sponsored studies on severe accident mitigation, which LEA identified or submitted to the Licensing Board, together provide enough basis and specificity for the

³ LEA also briefly argues that the "record of decision" for environmental purposes is deficient due to this failure to consider alternatives. LEA Brief at 47-48. *See* 10 C.F.R. § 51.103.

admission of contention DES-5. NUREG/CR-2666, "PWR Severe Accident Delineation and Assessment" (January 1983), contains a chapter devoted to mitigation features specifically for Limerick.⁴ It suggests that a filtered-vented containment system or containment spray system could lower the risk from a severe accident.⁵ But the discussion is largely qualitative (rather than quantitative), and no cost-benefit analysis for any design feature is performed. NUREG/CR-2666 at 7-1 to 7-15, 8-5.

The RDA study, however, is more enlightening. The September 15, 1983, status report on the project states:

For Mark II containment as exemplified by the Limerick Plant, mitigation requirements (functions) have been identified, including containment heat removal, core residue capture and retention without concrete attack, and (if ATWS [anticipated transients without scram] events are to be mitigated) some kind of venting system. Candidate components to fulfill these requirements have been selected for preliminary conceptual design and cost estimation. Separate cost figures will be generated for 1) Plants before construction begins, 2) Plants built but not yet in operation, and 3) Operational plants.

LEA's Reply to Applicant and Staff Response (October 10, 1983), Attachment (Letter to C.W. Elliott from J.M. Felton (October 3, 1983), Enclosure at 4). By March 15, 1984, the preliminary design and cost analysis for several particular mitigation systems were completed, and the methodology for a quantitative value/impact (i.e., cost-benefit) analysis was formulated. Letter to C.W. Elliott from J. Rutberg (March 22, 1984), Enclosure (Monthly Project Status Report (March 15, 1984) at 3-4).⁶ Although the RDA project was not due to be completed until late September 1985, the interim material available to the Licensing Board at the time of its ruling on contention DES-5 appears to have satisfied the threshold basis and specificity requirements for admission of the contention; that is, particular design changes that might be cost-effective were at least identified. Whether that would ultimately be proven on the merits is another matter. That, however, is not the appropriate inquiry at the contention-admission stage. *Houston Lighting and Power Co.* (Allens Creek Nuclear Generating Station, Unit 1), ALAB-590, 11 NRC 542, 546-49 & n.10 (1980).⁷

⁴ This is so despite the facts that Limerick is a boiling water reactor (BWR) and the title of NUREG/CR-2666 refers only to pressurized water reactors (PWR).

⁵ The authors of NUREG/CR-2666 did not include consideration of the containment spray system currently installed at Limerick. NUREG/CR-2666 at 7-9.

⁶ The RDA status reports were submitted to the Licensing Board and were incorporated by reference in various LEA filings.

⁷ The Licensing Board did not give much weight to the staff-sponsored RDA studies LEA cited because the studies were still under way and the staff considered them to be "generic." See Tr. 9451, 9453-54,

(Continued)

Although the Licensing Board thus erred in excluding contention DES-5 for the reason it stated — i.e., the lack of basis and specificity — we do not reverse and remand for further consideration of that matter. For the litigation of contention DES-5 is, in any event, precluded by Commission policy. At the time of the Board's ruling, the Commission had proposed a policy statement on severe accidents. *See* 48 Fed. Reg. 16,014 (1983) [hereafter, "Proposed Severe Accident Policy"]. In it the Commission noted the several extensive research programs under way to reduce the uncertainty in risk calculations and to explore the feasibility of certain engineered safety features. But the Proposed Severe Accident Policy also pointed out that this research had "not yet produced significant new insights into consequence mitigation features sufficient to support further regulatory changes . . ." *Id.* at 16,018. Consequently, the Commission stated that "the capability of current designs or procedures (or alternatives thereto) to control or mitigate severe accidents should not be addressed in case-related safety hearings." *Ibid.*⁸

The Commission's Proposed Severe Accident Policy was recently made effective (in modified form) following consideration of public comments, and it dictates our ruling here. *See Potomac Electric Power Co.* (Douglas Point Nuclear Generating Station, Units 1 and 2), ALAB-218, 8 AEC 79, 82-83 (1974). As in the proposed version, the now-enacted policy statement finds no undue risk to the public health and safety and "no present basis for immediate action on generic rulemaking or other regulatory changes for [existing] plants because of severe accident risk." 50 Fed. Reg. 32,138, 32,143 (1985) [hereafter, "Severe Accident Policy Statement"]. Further, the Commission explicitly removes plant-specific reviews of severe accident vulnerabilities as "a necessary or routine part of an Operating License review." *Id.* at 32,144.⁹ Accordingly, it reiterates its earlier expressed position that severe accident miti-

9472. But despite the staff's generic label, the RDA studies included Mark II containments (such as Limerick) and used Limerick as a case study. Tr. 9451. Further, although the RDA work was not yet final, it had progressed enough by the time of the Board's consideration of DES-5 so that "idealized mitigation opportunities in Mark IIs" and "what they might cost" could be identified. Tr. 9453. That material provides at least as much basis and specificity as did the Federal Energy Administration report on which intervenors relied in *Allens Creek*, 11 NRC at 547.

⁸ In rejecting an earlier version of DES-5 (LEA's contention I-60), the Licensing Board relied, in part, on the Proposed Severe Accident Policy. LBP-83-39, 18 NRC 67, 87-88 (1983).

⁹ Thus, because severe accident mitigation is not material to its licensing decisions, the Commission can properly exclude this issue from adjudicatory hearings. *Union of Concerned Scientists v. NRC*, 735 F.2d 1437, 1444-51 (D.C. Cir. 1984), *cert. denied*, ___ U.S. ___, 105 S. Ct. 815 (1985); *Siegel v. AEC*, 400 F.2d 778, 783-85 (D.C. Cir. 1968).

gation measures, beyond already existing Commission requirements, "should not be addressed in case-related safety hearings." *Id.* at 32,145.¹⁰

This is not to say that severe accident mitigation is being ignored. As the Commission points out in both the proposed and promulgated versions of the policy statement, extensive research in this area — evidenced by the very studies LEA cites — is ongoing. "Should significant new safety information develop, from whatever source, which brings into question the Commission's conclusion that existing plants pose no undue risk, then at that time the specific technical issues suggesting undue vulnerability will undergo close examination and be handled by the NRC under existing procedures for issue resolution including the possibility of generic rulemaking where this is justifiable." *Id.* at 32,144.¹¹

We also note that, despite the exclusion of contention DES-5, the possible risks posed by the Limerick facility have received considerable attention from the staff. In accordance with the Commission's Statement of Interim Policy on "Nuclear Power Plant Accident Considerations under the National Environmental Policy Act of 1969," 45 Fed. Reg. 40,101, 40,103 (1980) [hereafter, "Interim NEPA Policy"], the final environmental impact statement for Limerick includes consideration of the environmental risks of both "design-basis" accidents and those that would be more severe.¹² As part of this enlarged environmental review,

¹⁰ LEA argues that the Policy Statement does not apply to DES-5 because in both the proposed and final versions the Commission refers to "safety hearings" and LEA's contention raises environmental — not safety — issues. See App. Tr. 114-15. We think LEA reads the Commission's statement too narrowly. It is unreasonable to believe the Commission intended to preclude litigation of severe accident mitigation measures under the rubric of safety issues, while permitting the litigation of the same subject matter as an environmental issue. This is especially so, given Commission precedent holding that NEPA could not logically require more than the safety provisions of the Atomic Energy Act, and court precedent recognizing the inherent interrelationship of these statutes and thus issues raised under each. See *Public Service Electric and Gas Co.* (Hope Creek Generating Station, Units 1 and 2), ALAB-518, 9 NRC 14, 39 (1979); *Citizens for Safe Power, Inc. v. NRC*, 524 F.2d 1291, 1299-1300 (D.C. Cir. 1975).

¹¹ On appeal (LEA Brief at 5), LEA refers to a portion of the Proposed Severe Accident Policy that states: "[i]n future CP [construction permit] applications . . . , filtered-vented containment systems, or a variation of such systems, should be provided if these yield a cost-effective reduction in risk." 48 Fed. Reg. at 16,019. See also *id.* at 16,020. (This language does not appear in the actual policy statement as enacted.) LEA claims that severe accident mitigation systems, such as a filtered-vented containment system, cannot therefore be considered "remote" or "speculative" and must be considered here. We agree that the *concept* of such systems is not remote, but that is a far cry from a determination that they are feasible and cost-effective. The purpose of the ongoing research is to analyze just that. See, e.g., *Consolidated Edison Co. of New York* (Indian Point, Unit No. 2), CLI-85-6, 21 NRC 1043, 1073 (1985). The fact that the Commission has directed consideration of these systems in "future CP applications" (none of which has been filed since the late 1970s) is in no way inconsistent with its conclusion to preclude their consideration in the licensing of existing plants.

¹² Such severe accidents were formerly termed "Class 9" and were not considered in the environmental reviews of proposed plants because of their low probability of occurrence. They postulate significant deterioration of the fuel and of the ability of the containment structure to limit radioactive releases into the environment.

a probabilistic risk assessment (PRA) of Limerick was performed. See NUREG-0974, "Final Environmental Statement" (April 1984) [hereafter, "FES"], at 5-73 to 5-126.¹³ Based on several factors including the results of the PRA, the staff has concluded that the likelihood of a severe accident at Limerick is "small and comparable to that of other reactors." *Id.* at 5-126.¹⁴ The staff goes on to state generally that, "[b]ased on the . . . considerations of environmental impacts of accidents, which have not been found to be significant, [it] has concluded that there are no special or unique circumstances about the Limerick site and environs that would warrant consideration of alternatives for Limerick Units 1 and 2." *Ibid.*¹⁵

This additional, special attention devoted to the possibility of a severe accident at Limerick was undertaken as a matter of Commission discretion. It is not required by NEPA and has only served to confirm the Commission's view of the low risk posed by the facility. See *San Luis Obispo Mothers for Peace v. NRC*, 751 F.2d 1287, 1301 (D.C. Cir. 1984), *vacated in part and reh'g en banc granted on other grounds*, 760 F.2d 1320 (1985). A fortiori, consideration of possible design alternatives to mitigate a severe accident is not required either. Thus, the exclusion of LEA contention DES-5 violates neither NEPA nor any regulation promulgated pursuant to it.

B. The Risk of Sabotage

Neither PECO's nor the staff's environmental review of Limerick considered the effects of sabotage because "such an analysis is considered to be beyond the state of the art of probabilistic risk assessment." FES at 5-74. A portion of LEA's contention DES-6 claimed that the exclusion of a sabotage-initiated accident scenario violates NEPA and Commission policy and regulations.¹⁶ As the basis for this contention, LEA submitted a one and one-half page excerpt of a report prepared by Steven Sholly of

¹³ Because Limerick is located in an area of relatively high population density, it is one of the few plants for which a PRA has been performed. The Commission recently described PRAs as "not empirically verifiable," but nevertheless "helpful supplement[s] to engineering judgment" and "very powerful tools for identifying strengths and weaknesses in reactor safety." *Indian Point*, 21 NRC at 1057.

¹⁴ The additional factors considered by the staff are set forth in the FES at 5-126.

¹⁵ A further staff review of the Limerick PRA revealed several areas where cost-effective improvements could reduce Limerick's vulnerability with respect to core damage accidents. The staff has found PECO's response to these concerns reasonable and acceptable. See NUREG-1068, "Review Insights on the Probabilistic Risk Assessment for the Limerick Generating Station" (August 1984), at 7-1 to 8-5. (The preparation of this document was briefly discussed at the hearing (see Tr. 9424-49), but the report itself was not completed until after the hearing concluded and about the time the Board issued the decision before us on appeal. It was, however, served on all parties by Board Notification 84-147 (September 17, 1984), and no party sought to reopen the record to pursue any of the report's findings.)

¹⁶ Contention DES-6 also concerned another issue, not raised here on appeal.

the Union of Concerned Scientists on the Severe Accident Risk Assessment (SARA) for Limerick. In this report, Sholly concludes that a sabotage risk analysis could be performed. LEA DES Contentions at 14; Letter to Licensing Board from J.A. Dorsey (August 31, 1983), Enclosure [hereafter, "LEA SARA Contentions"] fol. 21.

The Licensing Board, however, rejected the sabotage portion of contention DES-6. It determined that various Commission policy statements militate against litigation of such an issue. The Board referred specifically to the Proposed Severe Accident Policy, 48 Fed. Reg. 16,014, and the Commission's policy statement on the "Safety Goal Development Program," 48 Fed. Reg. 10,772 (1983) [hereafter, "Safety Goal Policy"]. Tr. 8778-80; Order of April 20 at 1, 3. In the latter policy statement, the Commission expressly excludes consideration of the possible effects of sabotage from its "safety goal" because "[a]t present there is no basis on which to provide a measure of risk on [this matter]." 48 Fed. Reg. at 10,773.¹⁷ The Proposed Severe Accident Policy takes note of this, but suggests that, in the future, applicants for standard design approvals or construction permits should nevertheless address the issue of sabotage in their Safety Analysis Reports. 48 Fed. Reg. at 16,020.

On appeal, LEA criticizes Commission policy as evidencing a "reluctance to confront the issue" of sabotage. LEA Brief at 14. It also argues that both NEPA and a CEQ regulation, 40 C.F.R. § 1502.22, require consideration of sabotage as part of a "worst case" analysis — even though there may be uncertainties in the data on which a sabotage risk analysis would be based. In LEA's view, a potentially catastrophic event (i.e., a severe accident triggered by sabotage) cannot properly be excluded from the environmental review simply because the likelihood of its happening is remote.

We conclude that the Licensing Board did not err in excluding LEA's sabotage contention. At the outset, it is important to place the contention in proper perspective. As already discussed above in Part I.A and as the staff points out in its brief, the FES does, in fact, consider a whole range of design-basis *and* severe accident scenarios. See NRC Staff's Response in Opposition to the Appeals (January 7, 1985) [hereafter, "Staff Brief"] at 58. Insofar as this review — undertaken pursuant to the Commission's Interim NEPA Policy — encompasses severe (beyond design-basis) accidents, it is not even required by NEPA. *San Luis Obispo Mothers for Peace*, 751 F.2d at 1301. LEA does not explain what separate

¹⁷ It is noteworthy that even the safety goals and design objectives that *are* included in the Commission's Safety Goal Development Program are "not to be litigated in the Commission's [licensing] hearings." 48 Fed. Reg. at 10,775.

consideration of sabotage as an initiator of such a severe accident would add, from a qualitative standpoint, to this *discretionary* environmental review. It would also add nothing of real quantitative significance.¹⁸ LEA has therefore failed to cast any serious doubt on either the staff's conclusion that a sabotage risk analysis is beyond state of the art probabilistic risk analysis or the Commission's similar determination that there is no basis by which to measure that risk. See FES at 5-74; 48 Fed. Reg. at 10,773.¹⁹ Contention DES-6 thus lacks even the threshold basis and specificity necessary to withstand rejection.

A second factor to bear in mind is that, although the risk of sabotage cannot be quantified in a way that would permit its litigation per se, the Commission's regulations nonetheless require each plant to have a detailed security plan to protect against external and internal sabotage. See 10 C.F.R. Part 73. The adequacy of such plans are subject to litigation in licensing hearings. See, e.g., *Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-653, printed as an Attachment to CLI-82-19, 16 NRC 53 (1982). LEA, however, has raised no challenge to Limerick's security plan.

LEA's argument that the risk of sabotage must be considered as part of the worst case analysis "required" by CEQ regulations is unavailing.²⁰ The provision in question, 40 C.F.R. § 1502.22, is addressed to "[i]ncomplete or unavailable information." As pertinent here, section 1502.22(b) provides:

¹⁸ The staff has explained that whatever additional risks might be associated with sabotage-initiated accidents are essentially already taken into account in the Limerick PRA within a general category of uncertainties. See FES at 5-74, 5-112. Sholly, however, apparently believes that a more precise calculation can be determined. By dividing the total number of reactor-years for all facilities through the end of 1981 (about 633) by the number of reported acts of insider sabotage between 1971 and 1981 (11), Sholly computes a frequency of roughly one act of sabotage for every 60 reactor-years. He acknowledges, however, that other variables would have to be added in order to refine the analysis. For one thing, his calculation fails to reflect that none of the 11 acts of sabotage was successful in initiating a reactor accident. Further, the analysis does not consider the frequency with which different systems of varying significance to the safe operation of the plant would be affected. Sholly himself thus admits that any sabotage risk analysis would have "large uncertainties." LEA SARA Contentions fol. 21. In effect, even this process would involve a substantial amount of guesswork. The staff's approach of considering sabotage along with other uncertainties is thus reasonable.

¹⁹ The Commission's recently adopted Severe Accident Policy Statement is consistent with this as well. It recognizes the importance of sabotage and indicates that this issue will be carefully analyzed "to the extent practicable" in the design and operating procedures for *new* plants. Existing plants, however, need only conform to the Commission's current regulatory requirements. 50 Fed. Reg. at 32,141, 32,144-45.

To the extent that LEA criticizes Commission policy, its argument is, of course, directed to the wrong forum.

²⁰ LEA presses its CEQ argument for the first time on appeal. In this circumstance, we would be justified in summarily dismissing it. *Tennessee Valley Authority* (Hartsville Nuclear Plant, Units 1A, 2A, 1B, and 2B), ALAB-463, 7 NRC 341, 348 (1978). Nevertheless, we explain below the several reasons why 40 C.F.R. § 1502.22 does not dictate a different result in this case.

If . . . the information relevant to adverse impacts is important to the decision and the means to obtain it are not known (e.g., the means for obtaining it are beyond the state of the art) the agency shall weigh the need for the action against the risk and severity of possible adverse impacts were the action to proceed in the face of uncertainty. If the agency proceeds, it shall include a worst case analysis and an indication of the probability or improbability of its occurrence.

In the Statement of Consideration for the 1984 revision of the NRC's environmental regulations, 10 C.F.R. Part 51, the Commission addresses the asserted requirements of 40 C.F.R. § 1502.22(b). It agrees that each agency must decide for itself whether the unknown information is relevant and important to its decision and whether it wishes to proceed with the action in question. The Commission objects, however, to the requirement of a worst case analysis, characterizing this as a substantive (rather than procedural) requirement, by which the NRC — as an independent regulatory agency — is not legally bound.²¹ Instead, the Commission states that its Interim NEPA Policy — with which the FES here complies — is designed to address the concerns of CEQ reflected in the worst case analysis regulation. 49 Fed. Reg. 9352, 9356-58 (1984).²² In any event, we in turn are bound by this judgment on 40 C.F.R. § 1502.22(b): we cannot accord binding effect to a regulation explicitly eschewed by the Commission itself.

Even if the Commission had not so clearly proscribed the application of 40 C.F.R. § 1502.22(b), we would conclude that, by its terms, the regulation would not mandate here the consideration of sabotage in a worst case risk analysis. Risk is the product of probability and consequences; the "worst case" is concerned with the consequences side of the equation. As discussed at pp. 696-97, *supra*, the worst case has in fact been addressed in the FES for Limerick. What has not been empirically considered is sabotage as the source of the worst case consequences because of the uncertainties in determining the *probability* of sabotage — not uncertainties in determining the *consequences*. The CEQ regulation, however, focuses on the latter and thus does not pertain here.²³

²¹ The Supreme Court has left open the question whether CEQ regulations are binding on independent agencies. *Baltimore Gas and Electric Co. v. Natural Resources Defense Council, Inc.*, 462 U.S. 87, 99 n.12 (1983).

²² We note that CEQ recently proposed the amendment of 40 C.F.R. § 1502.22 by eliminating the "worst case analysis" provision. See 50 Fed. Reg. 32,234 (1985).

²³ The language of the regulation bears this out. The last sentence of section 1502.22(b) states that the agency shall include "a worst case analysis *and* an indication of the probability or improbability of its occurrence" (emphasis added).

Finally, anticipating the argument that CEQ regulations are not binding on the NRC, LEA contends that NEPA itself requires a worst case analysis of sabotage risk. It relies principally on *Sierra Club v. Sigler*, 695 F.2d 957, 971 (5th Cir. 1983), which holds that the CEQ regulation in question merely codified the preexisting judicially-created “common law” of NEPA. Therefore, LEA argues, the NRC must weigh the cost of uncertainty concerning sabotage risk and consider in a worst case analysis a sabotage-initiated event of low probability but potentially catastrophic consequences. *See id.* at 971-72.

Assuming *Sigler* applies here, however, it does not aid LEA’s case.²⁴ In the first place, the court indicated that an agency “may (and should) consider remoteness.” *Id.* at 974. Perhaps more important, the court recognized that “[t]here must, of course, be a base of information upon which to project past these limits.” *Ibid.* Thus, it found that the Sierra Club’s proposed model of oil dispersion (caused by the total cargo loss of a supertanker) in a wildlife estuary — “based on *known* information about tides and currents in the Bay” — was “informative and useful” and “reasonably limit[ed] speculation.” *Ibid.* (emphasis in original). Thus, the unknown information in *Sigler* could reasonably be estimated from long-known, fundamental physical principles (tides and currents). We are aware of no similar principles (and LEA identifies none) that would permit reasonable prediction of — like the next high tide — the kind of stochastic human behavior displayed in an act of sabotage.

In sum, the risk of sabotage is simply not yet amenable to a degree of quantification that could be meaningfully used in the decisionmaking process. The Licensing Board therefore properly excluded LEA’s contention DES-6.

C. Socioeconomic Impacts

LEA’s contention DES-4(A) claimed that Supplement No. 1 to the staff’s Draft Environmental Statement (“DES Supplement”) failed to give adequate consideration to eight identified consequences of a severe accident. *See* LEA DES Contentions at 9. The Licensing Board permitted litigation of most of the eight areas. As pertinent to this appeal, however, the Board rejected the following two matters:

²⁴ We see somewhat of an inconsistency between *Sigler* and *San Luis Obispo Mothers for Peace*. The latter squarely holds that NEPA does not require the NRC to consider *at all* severe, beyond design-basis accidents because of their very low probability. 751 F.2d at 1301. Yet *Sigler* — cited with seeming approval in connection with a discussion of 40 C.F.R. § 1502.22 in *San Luis Obispo Mothers for Peace*, 751 F.2d at 1302 n.77 — suggests that the common law of NEPA requires an agency to perform a worst case analysis, even for events of low probability, whenever there are uncertainties in important information. *See* 695 F.2d at 971-72.

- (4) The socio-economic cost of compensation required for health effects induced by radiation exposure;
- (5) Industrial impacts beyond the first year following the accident, and quantification of costs beyond the "output loss" mentioned in DES [Supplement], p 5-46[.]

Ibid. The Board considered these parts of the contention "not admissible because they are speculative, both in terms of occurrence and in terms of any reasonable quantification, even given that occurrence, and they are remote in terms of our reasonable proximity . . . This is particularly so, given what the analyses include and other contentions, especially the other part of this very contention which in some respects goes more directly to things of concern, particularly with respect to 4." Tr. 8773-74. See Order of April 20 at 1, 2.

On appeal, LEA acknowledges that the FES discusses socioeconomic impacts but it argues that that discussion is too limited.²⁵ It also contends that, in violation of certain CEQ regulations, the Licensing Board ignored "additional significant economic impacts that can be known with reasonable certainty." LEA Brief at 20. LEA takes issue with the Board's statement that the impacts in parts (4) and (5) of contention DES-4(A) are speculative and not amenable to reasonable quantification.²⁶ It also asserts that there are enough data, provided by the staff itself, from which to calculate industrial impacts for periods in excess of 30 years. Even if there were difficulties in performing such computations, however, LEA argues that the NRC is nonetheless required to attempt them in the context of a worst case analysis.

We are not persuaded by LEA's arguments. It is not apparent from the actual wording of part (4) of contention DES-4(A) or LEA's brief on appeal exactly what LEA means by "[t]he socio-economic cost of compensation required for health effects." In response to the Licensing Board's questioning at the hearing, however, LEA's counsel clarified that DES-4(A)(4) concerns essentially the dollar value of compensation awarded to accident victims through insurance claims and lawsuits. See Tr. 8700-01.²⁷ By multiplying an assigned value per human life (e.g.,

²⁵ The relevant portion of the FES is virtually identical to that in the DES Supplement. As LEA has done in its brief on appeal, we will therefore refer to the FES, rather than the DES Supplement, from this point on.

²⁶ In this connection, LEA points out that the Price-Anderson Act, 42 U.S.C. § 2210, provides for compensation, up to a specified limit, to victims of nuclear power plant accidents. Thus, LEA reasons that the recovery of such compensation cannot properly be considered "speculative."

²⁷ No party cited to this portion of the record. We remind all litigants that, as an appellate body, we do not oversee licensing hearings and thus have no working familiarity with the lengthy record below.

(Continued)

one million dollars) by the estimated number of early fatalities from a severe accident (shown in the FES under the category of health effects), LEA suggests a basis for quantifying this “cost of compensation.” Tr. 8701-02. This is apparently the “additional significant economic impact[] that can be known with reasonable certainty,” which LEA claims must be considered in the environmental analysis of the plant. LEA Brief at 20.

We agree with the Licensing Board that this “simple” calculation of the cost of compensation is highly speculative. It yields a quantification of sorts, but it does not provide any reliable information of decisional significance in addition to that already quantified in the FES and admitted for litigation as a separate part of contention DES-4(A) — i.e., the health effects of a severe accident. Indeed, it might well be argued that inclusion of such hypothetical costs, determined on the basis of randomly selected values applied to an event of very low probability, diminishes the true worth of the FES in the decisionmaking process. In any event, part (4) of DES-4(A) surely involves the kind of “‘remote and highly speculative consequences’” that need not be addressed in an environmental impact statement. See *San Luis Obispo Mothers for Peace*, 751 F.2d at 1300 and cases cited.

The same is true for part (5). The staff recognizes that a severe accident might “force numerous businesses to temporarily or permanently close.” FES at 5-102. Nonetheless, its analysis of industrial impacts does not consider consequences beyond the first year following an accident “because they will vary widely depending on the level and nature of efforts to mitigate the accident consequences and to decontaminate the physically affected areas.” *Id.* at 5-106. LEA points to “probabilistic calculations of specific land area interdiction by time period, distance, and sector, together with the extensive land use data available in the applicant’s environmental documents” as support for its view that longer term impacts are not speculative and can indeed be quantified. LEA Brief at 24-25. But none of the empirical data mentioned by LEA or in the FES would make “more certain” — and thus, less speculative — the longer term uncertainties identified by the staff: the nature of efforts to mitigate the accident and to decontaminate affected areas. These are unknowns for which no relevant, practical experience exists.²⁸ The line

must accordingly rely heavily on the parties’ briefs for references to *all* relevant parts of the record. This is especially true where, as here, the rulings appealed were rendered from the bench and no detailed, written opinion by the Licensing Board is available.

²⁸ Even the 1979 accident at Three Mile Island did not involve the long-term industrial impacts to which DES-4(A)(5) is addressed. See *generally Report of the Governor’s Commission on Three Mile Island* (1980) at 18-21, 29-43.

has to be drawn somewhere, and we believe the staff's determination to consider only the first year of post-accident industrial impacts is a reasonable one. Consideration of longer term impacts would, again, involve engaging in a level of speculation not required by NEPA.

As in the case of LEA's other severe accident contentions discussed here on appeal, it is important to keep in mind what the environmental review for Limerick *does* encompass. LEA concedes that the FES, in fact, considers various socioeconomic impacts of a *very low probability* severe accident. This consideration was undertaken in compliance with the Commission's Interim NEPA Policy, 45 Fed. Reg. at 40,103.²⁹ The discussion of socioeconomic impacts, however, is more detailed and inclusive than LEA suggests. *See, e.g.*, FES at 5-93 to 5-94, 5-98, 5-99, 5-102, 5-106 to 5-107. Moreover, several of the estimates used in the analysis rely on somewhat conservative assumptions — for example, no use of unused capacity in an area *unaffected* by the accident to offset the initial lost production in the affected areas. *Id.* at 5-106. *See also id.* at 5-107. In the absence of any well-founded challenge to the adequacy of this discussion, we are therefore unable to conclude that either the Licensing Board's or the FES's consideration of the socioeconomic impacts of a severe accident is legally deficient.

D. Human Health Impacts

LEA's last environmental argument is essentially a procedural one. It complains that the FES does not contain the complete disclosure of certain nonfatal human health impacts of a severe accident, which NEPA assertedly requires. LEA lists six such impacts that the FES does not explicitly discuss, despite the fact that the risk of these effects is greater than that of most of those that the FES does address.³⁰

The Licensing Board agreed with LEA that "it would have been more helpful to lay members of the public if the FES had contained more complete disclosure and explicit consideration of [these impacts]."

²⁹ Thus, we need not decide whether the cases and various CEQ regulations to which LEA refers require NRC consideration of socioeconomic impacts. *See also* pp. 699-700, *supra*. We note, however, that the cases cited do not involve the socioeconomic impacts of an event of very low probability, such as that involved here. *See City of Rochester v. United States Postal Service*, 541 F.2d 967 (2d Cir. 1976); *Trinity Episcopal School Corp. v. Romney*, 523 F.2d 88 (2d Cir. 1975). The latter case also concerns a different section of NEPA.

³⁰ The six categories of impacts are: genetic effects/changes, nonfatal cancers, benign thyroid nodules and hypothyroidism, spontaneous abortions, sterility, and developmental impairment of children. Most of these are set forth in LEA's contention DES-4(A)(1).

LBP-84-31, 20 NRC at 551.³¹ But the Board also found that the evidence concerning these nonfatal human health impacts adduced by the staff and PECO at the hearing, along with the Board's findings and conclusions, properly amended the FES. The Board concluded that this practice is acceptable under both the Commission's prior and existing NEPA regulations (and Commission and court precedent alike). *Id.* at 552-53. It explained, in this regard, that this additional evidence did not substantially modify the FES or result in any change in the conclusions of that document about the total risk posed by the Limerick facility. *Id.* at 551, 552-53, 557, 560, 573. The Board went on to discuss the pertinent evidence at some length, concluding that "the nonfatal latent health effects have been adequately disclosed and considered" and that these risks are "clearly small." *Id.* at 554-60, 573.

On appeal, LEA disagrees with the Licensing Board's reading of the pertinent NEPA regulations. It contends that the only applicable existing NRC regulation does not permit supplementation of the FES through the hearing process. LEA does not, however, challenge the substance of either the record or the Board's detailed discussion of it. Instead, it seeks, in effect, summary reversal of the Board's conclusions and supplementation and recirculation of the FES. LEA Brief at 26-32.

Amendment of the FES by the adjudicatory hearing record and subsequent Licensing Board decision is entirely proper under NRC regulations and court precedent. The applicable regulation in effect at the time of the hearing, 10 C.F.R. § 51.52(b)(3) (1984), provided:

an initial decision . . . may include findings and conclusions which affirm or modify the content of the final environmental impact statement prepared by the staff. To the extent that findings and conclusions different from those in the final environmental statement prepared by the staff are reached, the statement will be deemed modified to that extent and the initial decision will be distributed as provided in § 51.26(c)

LEA seems to acknowledge, at least tacitly, that the Board's action fully complied with this provision. LEA Brief at 31. It argues, however, that this regulation was not readopted when the Commission revised 10 C.F.R. Part 51 in 1984; thus, it no longer exists and does not apply here. According to LEA, the new provision cited by the Board, 10 C.F.R. § 51.102 (1985) — which took effect soon after the hearing on this

³¹ The staff did not include this matter in the FES because it "believed that such disclosure was implicit by citing authoritative references which treat these matters in detail." It also believed these impacts are "relatively unimportant in its best-estimate calculations of the risks of potential reactor accidents at Limerick." LBP-84-31, 20 NRC at 559. The Board noted that "[p]erhaps [the omission of this material in the FES] was a consequence of using state-of-the-art knowledge and methodology." *Id.* at 573.

matter but before the second partial initial decision was issued — does not require recirculation for public comment of the FES, as amended by the Board's initial decision. The FES thus remains deficient under NEPA and can be cured only by recirculation. LEA Brief at 31-32.

We need not decide which regulation controls, for section 51.102 serves the same purpose as its differently worded predecessor, section 51.52(b)(3). LEA's argument is therefore without merit. Section 51.102(a) states that “[a] Commission decision on any action for which a final environmental impact statement has been prepared shall be accompanied by or include a concise public record of decision.” Generally, that record is to be prepared by the staff. 10 C.F.R. § 51.102(b). When an adjudicatory hearing is held on the action, however,

the initial decision of the [Licensing Board] . . . will constitute the record of decision. An initial or final decision constituting the record of decision will be distributed as provided in § 51.93.

10 C.F.R. § 51.102(c). Section 51.103 describes the contents of the “record of decision,” noting that it may incorporate by reference any material in the final environmental statement. On its face, 10 C.F.R. § 51.102 thus merges the FES with any relevant licensing board decision to form the complete environmental record of decision — just as former section 51.52(b)(3) did.³² But even under the stricter construction of section 51.102 urged by LEA, nothing in it *precludes* modification of an FES by licensing board decision.

Several federal courts of appeals have approved the procedure set forth in former section 51.52(b)(3), providing for the amendment of an FES through the adjudicatory process. *See New England Coalition on Nuclear Pollution v. NRC*, 582 F.2d 87, 93-94 (1st Cir. 1978); *Citizens for Safe Power*, *supra* note 10, 524 F.2d at 1294 n.5. *See also Ecology Action v. AEC*, 492 F.2d 998, 1001-02 (2d Cir. 1974).³³ There is no reason to

³² The Commission's Statement of Consideration for the 1984 revisions to Part 51 does not discuss section 51.102. *See* 49 Fed. Reg. 9352. The discussion of this section in the notice of proposed rulemaking, however, clearly contemplates modification of an FES by a board decision following evidentiary hearing on an environmental issue. *See* 45 Fed. Reg. 13,739, 13,741 (1980).

³³ LEA cites a decision of the First Circuit, *Grazing Fields Farm v. Goldschmidt*, 626 F.2d 1068 (1st Cir. 1980), in support of its view that an FES cannot properly be amended by the hearing record. But that decision — which does not even cite to that circuit's opinion in *New England Coalition*, rendered just two years earlier — is easily distinguished. The studies and memoranda on which the Federal Highway Administration relied in *Grazing Fields* — albeit in the administrative record — were “not incorporated in any way” into the environmental impact statement for the highway project there at issue. The court therefore concluded that such studies could not “bring into compliance with NEPA an EIS that by itself is inadequate.” *Id.* at 1072. Here, of course, the Licensing Board explicitly amended the FES by its decision. *See, e.g.,* LBP-84-31, 20 NRC at 572. Moreover, the FES itself is not inadequate. *See* p. 707, *infra*.

believe that the courts would not be just as approving of the same procedure today, either as embodied in section 51.102 or, indeed, in the absence of any regulation, as a matter of board practice.

While suggesting no prejudice to its own interests, LEA nonetheless voices concern that NEPA's purpose in providing the opportunity for public comment on an environmental statement is somehow thwarted by board amendment of an FES. But as the Licensing Board here pointed out, "the hearing . . . provide[s] the public ventilation that recirculation of an amended FES would otherwise provide." LBP-84-31, 20 NRC at 553, *citing* ALAB-262, 1 NRC 163, 197 n.54 (1975). This arguably allows for additional and a more rigorous public scrutiny of the FES than does the usual "circulation for comment." Further, like its predecessor regulation, section 51.102(c) requires that the decision amending the FES be distributed to various entities, including the Environmental Protection Agency, state and regional clearinghouses, and commenters on the FES. *See* 10 C.F.R. § 51.93(a). The staff has done so here. *See* Letter to A. Hirsch from A. Schwencer (December 3, 1984) and attached service list.³⁴

Finally, it bears repeating that the impacts at issue here are those that might result from a low probability severe accident — an event that, according to the court in *San Luis Obispo Mothers for Peace*, 751 F.2d at 1301, need not even be considered for NEPA purposes. Thus, the extensive consideration given at the hearing and in the Licensing Board's decision to the identified nonfatal human health impacts — which consideration LEA does not attack on the merits — can hardly be criticized as inadequate under NEPA.

E. Onsite Emergency Plan

1. In its first challenge on appeal to PECO's onsite emergency plan, LEA claims that the Licensing Board closed the record too soon on its contention VIII-8(b). That contention essentially complains that the emergency plan's descriptions of Limerick's Emergency Operations Facility (EOF), Technical Support Center (TSC), Operations Support Center (OSC), and unspecified emergency equipment and supplies are

³⁴ We are somewhat troubled, however, by several aspects of the staff's fulfillment of this distribution responsibility. For one thing, we do not understand why it took more than three months to perform this ministerial task. For another, although it is in the NRC's headquarters and local public document rooms, the Board's decision does not appear to have been served on a few FES commenters (for example, John Doherty and the Delaware River Basin Commission). Likewise, this Appeal Board — which clearly had jurisdiction over this part of the *Limerick* proceeding in December 1984 — was not served with a copy of Schwencer's letter. We learned of this only through PECO's brief. *See* Applicant's Brief (December 28, 1984) at 31 n.75.

insufficient to permit a meaningful assessment of these facilities' compliance with various regulatory criteria.³⁵

LEA argues that, at the time of the hearing on this contention, the staff had not yet evaluated these facilities, and it points to the Licensing Board's statement that "the Staff's review was still far from complete" at this juncture. LBP-84-31, 20 NRC at 527.³⁶ LEA requested the Board to await the staff's appraisal visit report and thereafter to afford the parties the opportunity to propose findings in this regard. The Board, however, declined to do so. It balanced the intervenor's possible interest in the outcome of the staff's review against the absence of anything particularly unusual or controversial about that review and the criteria applied by the staff. The Board also stressed that "LEA raises no specific concern that any of these facilities will not meet a particular requirement." *Id.* at 527-28. It therefore ruled in favor of PECO on the contention. *Id.* at 516.

LEA contends that the Licensing Board has failed to make all of the findings required by the Commission's various emergency planning documents in connection with contention VIII-8(b). In its view, the Board has improperly delegated to the staff the post-hearing resolution of this issue, in violation of the hearing requirement of section 189a of the Atomic Energy Act, 42 U.S.C. § 2239a, as well as Commission and court precedent and sections 5 and 7 of the APA, 5 U.S.C. §§ 554, 556.

We disagree. First, the staff's review of PECO's emergency planning facilities was more complete at the time of the hearing than either LEA or the Licensing Board's decision suggests. The staff had completed its review of PECO's revised emergency plan, which included, among other things, descriptions of the EOF, TSC, and OSC. *See* Applicant Exh. 32,

³⁵ The exact wording of contention VIII-8(b) follows.

The LNGSEP [Limerick Nuclear Generating Station Emergency Plan] fails to demonstrate that adequate emergency facilities and equipment to support emergency response are provided and maintained as required by 10 CFR § 50.47(b)(8), especially in that:

(b) The Plan's descriptions of the Emergency Operations Facility (Plan § 7.1.2), the Technical Support Center (Plan § 7.1.3), the Operational Support Center (Plan § 7.1.4), and emergency equipment and supplies are all insufficient to meaningfully assess compliance with 10 C.F.R. § 50.47(b)(8) and to evaluate the facilities with respect to the criteria of NUREG-0654, Supplement 1 to NUREG-0737 (§8), and NUREG-0696. Intervenor contends the applicant has not demonstrated that the facilities proposed are adequate. Applicant's response to Q 810.30 states that the plan will be expanded when final information is available on these facilities.

• • •

BASIS

10 CFR § 50.47(b)(8); Part 50, Appendix E; NUREG-0654, Criteria H.1, 2, 9, NUREG-0696, "Functional Criteria for Emergency Response Facilities: NUREG-0814, pp. 2-15; Supplement 1 of NUREG-0737, § 8.

LEA's Admitted On-Site Emergency Planning Contentions (November 14, 1983) [hereafter, "LEA's Emergency Planning Contentions"] at 7-8.

³⁶ The only direct evidence on onsite emergency planning was presented by PECO and the NRC staff. LBP-84-31, 20 NRC at 515.

§§ 7.1.2, 7.1.3, 7.1.4. The staff had also requested and obtained from PECO additional information concerning specific parts of the plan, which it reviewed (along with the plan itself) and found acceptable. Sears, fol. Tr. 9776, at 2-3, 9-12. Further, the staff had conducted a site visit of the facilities. *Id.* at 4; Tr. 10,061. The staff testified at the hearing that the facilities themselves were “near” or “very near to completion” — “well above 75 percent.” Tr. 10,062. Essential communications equipment, desks, the Radiation and Meteorological Monitoring System (RMMS), and the Emergency Response Facility Data System (ERFDS) were installed at the time of the staff’s tour but were not yet “hooked up” for operation. Tr. 10,061-62. All that remained were the staff’s final onsite appraisal of PECO’s capability to implement its overall emergency plan, and a determination of the reliability of the equipment in the facility. Sears, fol. Tr. 9776, at 3; Tr. 10,064-70.

The operability and reliability of the equipment and the conformity of the as-built emergency support facilities with their design, however, were not the subject of contention VIII-8(b). As noted above, that contention was directed to the adequacy of the *plan’s descriptions* of the EOF, TSC, OSC, and associated equipment vis-a-vis the Commission’s regulatory criteria. *See* note 35, *supra*. Perhaps LEA sought to litigate something else, but it is bound by the literal terms of its own contention.³⁷ Moreover, as the Licensing Board noted, LEA did not (and does not still) explain in what *particular* respects the emergency plan’s descriptions are inadequate. *See* LBP-84-31, 20 NRC at 528. The mere invocation of the NRC’s pertinent regulations and documents cannot suffice to prove LEA’s case. For the controlling regulations themselves are general and permit considerable leeway in their application.

The standard pertinent to contention VIII-8(b), 10 C.F.R. § 50.47(b)(8), simply states that “[a]dequate emergency facilities and equipment to support the emergency response [must be] provided and maintained.” Section IV.E of Appendix E to 10 C.F.R. Part 50 specifies *what* facilities and equipment must be provided — for example, “[a] licensee onsite technical support center and a licensee near-site emergency operations facility from which effective direction can be given and effective control can be exercised during an emergency” — but gives no details. Various NRC documents cited by LEA flesh out the generalized regulatory requirements of Part 50. *See, e.g.*, NUREG-0654, Rev. 1,

³⁷ Thus, LEA’s generalized complaint that its hearing rights under the Atomic Energy Act and the APA were impaired by the Licensing Board’s ruling is without merit: it cannot be wrongfully denied a hearing on an issue that it did not raise.

“Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants” (November 1980), at 52-55; NUREG-0696, “Functional Criteria for Emergency Response Facilities” (February 1981); NUREG-0737, Supplement No. 1, “Requirements for Emergency Response Capability” (Generic Letter No. 82-33) (December 1982) at 17-26; NUREG-0814, “Methodology for Evaluation of Emergency Response Facilities” (August 1981), at 2-1 to 2-15, 4-1 to 5-17. But these, too, are generalized or contain descriptions of the functions the emergency facilities and equipment are to perform, rather than descriptions of the facilities and equipment themselves. In any event, these NUREGs simply serve as guidance for the staff’s review and do not prescribe regulatory requirements, as do regulations like 10 C.F.R. § 50.47(b)(8). *Metropolitan Edison Co.* (Three Mile Island Nuclear Station, Unit No. 1), ALAB-698, 16 NRC 1290, 1298-99 (1982), *rev’d in part on other grounds*, CLI-83-22, 18 NRC 299 (1983).

Finally, the post-hearing appraisal of PECO’s emergency facilities by the staff is entirely appropriate. As explained in *Louisiana Power and Light Co.* (Waterford Steam Electric Station, Unit 3), ALAB-732, 17 NRC 1076, 1103-04 (1983), the Commission relies on predictive findings of adequacy in the emergency planning area more so than in other areas. The emergency plan itself need not even be final, so long as it is sufficiently developed to permit a board to make the necessary “reasonable assurance” finding. Here, given the substantial staff review that had already taken place at the time of the hearing and the limits inherent in LEA’s own contention (*see pp. 708-09, supra*), the plan was certainly developed enough to warrant the Licensing Board’s finding of adequacy, despite the review work yet to be done by the staff. Indeed, the staff’s final evaluation of the emergency facilities here is akin to the staff’s post-hearing review of a siren warning system, which review we found acceptable in *Waterford*, 17 NRC at 1104-05.³⁸ We therefore conclude that the Licensing Board did not err in refusing to hold the record open pending the results of the staff’s final onsite appraisal report.

³⁸ Recognizing that it is not in the record, we nonetheless note in passing that the staff conducted its appraisal of the onsite emergency plan for Limerick in June 1984 and issued a report two months later, identifying certain required corrective actions. As pertinent to contention VIII-8(b), the areas indicated by the staff as needing corrective action or improvement involved principally the implementation of the plan and operability of the equipment, but did not necessitate significant changes in the plan itself. *See* Inspection Report No. 50-352/84-18 at 9-13. PECO responded to the report and the staff subsequently concluded that PECO’s actions and commitments rendered the plan adequate for low-power operation. *See* NUREG-0991, Supplement No. 3, “Safety Evaluation Report” (October 1984) [hereafter, “SSER-3”], at 13-3 to 13-23. Later the staff gave its full approval to the overall emergency plan. *See* SSER-5 (July 1985) at 13-3.

2. The Commission's emergency planning regulations require "[a]rrangements [to be] made for medical services for contaminated injured individuals." 10 C.F.R. § 50.47(b)(12).³⁹ Section IV.E of Appendix E to 10 C.F.R. Part 50 describes the equipment, facilities, and arrangements for which "[a]dequate" provision must be made. Items 6 and 7 are most pertinent here:

6. Arrangements for transportation of contaminated injured individuals from the site to specifically identified treatment facilities outside the site boundary;
7. Arrangements for treatment of individuals injured in support of licensed activities on the site at treatment facilities outside the site boundary[.]

Ibid. (emphasis added). NUREG-0654, Rev. 1, at 69 (Planning Standard L.1) states that such arrangements should include "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" (emphasis added).⁴⁰ See also *id.* at 39 (Planning Standard B.9).

In an effort to comply with these requirements, PECO has arrangements with two hospitals for the treatment of individuals who are contaminated and injured onsite.⁴¹ Pottstown Memorial Medical Center (PMMC) — located about two miles from the plant site and within the 10-mile Limerick emergency planning zone (EPZ) — is the primary receiving point. Through an agreement with PECO's contractor, Canberra Radiation Management Corporation (RMC), the Hospital of the University of Pennsylvania (HUP) — about 45 minutes away by motor vehicle — is intended to serve as the backup facility for treatment of onsite personnel who are contaminated and injured. LBP-84-31, 20 NRC at 531-32. See Applicant Exh. 32, §§ 5.3.2.1, 5.3.2.2.

A portion of LEA's admitted contention VIII-12(a) questions the adequacy of these arrangements, especially in a "general emergency"⁴²

³⁹ As used here without dispute, "contaminated injured" means those who are traumatically injured and are also contaminated with radionuclides on or in their bodies. The Commission had, at one time, generically expanded the scope of this phrase, but in the wake of an adverse court decision (see note 45, *infra*), it is reconsidering that expanded definition. The usage of the phrase here, however, does not involve the expanded definition.

⁴⁰ Although NUREG-0654, Rev. 1, provides "guidance" (see pp. 709-10, *supra*), the Commission itself specifically relied on and endorsed Planning Standard 1 in *Southern California Edison Co.* (San Onofre Nuclear Generating Station, Units 2 and 3), CLI-83-10, 17 NRC 528, 535 n.9 (1983), *rev'd in part on other grounds*, *GUARD v. NRC*, 753 F.2d 1144 (D.C. Cir. 1985).

⁴¹ PECO does not dispute the need for both local and backup facilities. See Applicant's Brief at 39-40.

⁴² There are four emergency classes. A general emergency is the highest or most serious such category. See 10 C.F.R. Part 50, Appendix E, § IV.C.

when PMMC might be required to evacuate.⁴³ LEA argued before the Licensing Board that PECO should be required to make arrangements with a third hospital capable of treating the contaminated injured — specifically one that is less vulnerable to evacuation than PMMC but closer to Limerick than HUP.

Although a majority of the Licensing Board agreed that “it would be prudent to make more formal arrangements” with a closer backup hospital, it declined to require it. LBP-84-31, 20 NRC at 536. Significantly, it did not conclude that HUP is adequately close. Rather, the Board majority reached its judgment on the basis of four other factors. First, it noted the probability that PMMC would be unavailable to receive contaminated injured individuals is remote. Second, it referred to 19 other hospitals in the surrounding three-county area with “claimed capability” for handling these patients on an ad hoc basis in an emergency. *Ibid.* Third, the Board majority assumed that the staffs of PMMC, RMC, and HUP can and will provide assistance to one another in an emergency. Fourth, it noted that sheltering, rather than evacuation, is the first option during a general emergency. *Ibid.*

Judge Brenner, Chairman of the Licensing Board, dissented. *Id.* at 536-38. He agreed with his colleagues that evacuation of PMMC is improbable, but observed that the Commission’s emergency planning regulations and guidance nevertheless assume that life-threatening releases from a plant could occur, with a corresponding need to evacuate the 10-mile EPZ. In concluding that PECO’s medical arrangements for the contaminated injured are not adequate, Judge Brenner pointed out that HUP is available as a backup only when the trauma victims can withstand the 45-minute trip to that facility. As for the other 19 hospitals in the area to which the Board majority referred, Judge Brenner found “no reasonable assurance, due to the total absence of planning, that any of those hospitals is well prepared to treat such victims, especially if there were to be more than one or two victims.” *Id.* at 537. Putting himself in

⁴³ In pertinent part, contention VIII-12(a) states:

The onsite plans fail to demonstrate that adequate arrangements have been made, or will be made, for medical services for contaminated injured individuals on-site, as required by 10 CFR § 50.47(b)(2) and (12), in that:

• • • The plans contain an agreement with Pottstown Memorial Hospital, a facility only two miles from the site, to provide emergency treatment to contaminated patients. In a general emergency, the hospital will be required to evacuate its own patients, which will preclude acceptance and treatment of radiation victims coming from the site. The status of medical support from the Hospital of University of Pennsylvania is unclear as well. . . . These are the only two hospitals listed in the Plan as available for medical services to on-site contaminated victims. See NUREG-0654, Criteria B.9 and L.1.

LEA’s Emergency Planning Contentions at 10-11.

the shoes of a potentially contaminated injured worker at Limerick, Judge Brenner would have required PECO, as a condition for full-power operation of Limerick, to make arrangements similar to those with PMMC with a third hospital, "less vulnerable to evacuation, and significantly more accessible than HUP." *Id.* at 538, 537.

On appeal, LEA essentially repeats the arguments it made below. It asks that we reverse the Board majority and order further action consistent with Judge Brenner's dissent. *See* LEA Brief at 39-46. On this point, we agree with LEA: we are not persuaded that PECO has made adequate arrangements for the treatment of certain onsite personnel who are contaminated as well as traumatically injured. For such persons whose traumatic injuries require prompt medical attention, HUP is too distant to serve as an adequate backup hospital.

The reasons given by the Board majority in declining to require a closer backup hospital do not withstand scrutiny. As Judge Brenner noted, the improbability of PMMC's evacuation and consequent unavailability to receive contaminated injured workers is beside the point. The Commission's emergency planning regulations are premised on the assumption that a serious accident might occur and that evacuation of the EPZ might well be necessary. *See San Onofre*, CLI-83-10, *supra* note 40, 17 NRC at 533. The adequacy of a given emergency plan therefore must be adjudged with this underlying assumption in mind. As a corollary, a possible deficiency in an emergency plan cannot properly be disregarded because of the low probability that action pursuant to the plan will ever be necessary. Thus, the Licensing Board majority gave undue weight to the fact that evacuation of PMMC is remote.

There is also no basis in this record for the Board majority's reliance on the existence of some 19 (by the Board's count) other hospitals in the area, and on the assumption that these institutions are "adequately prepared" to serve as a backup to PMMC on an ad hoc basis. LBP-84-31, 20 NRC at 535. The Board majority conceded it had "no detailed knowledge of the specific abilities and training of the emergency medical service personnel at these potential alternative receiving hospitals." *Ibid.* But it was apparently influenced in this regard by the testimony of PECO's witness, Dr. Roger E. Linnemann, that all accredited hospitals are required by the national Joint Committee on Hospital Accreditation (JCHA) to have some plan for handling contaminated injured persons. *See id.* at 534; Tr. 9912-14. Of course, on this record the 19 hospitals have not even been identified, much less verified as accredited by the JCHA. In any event, we are inclined to agree with Judge Brenner's observation that, "[i]f JCHA accreditation were sufficient . . . , there

would be no need to provide [PMMC] with special training and equipment.” LBP-84-31, 20 NRC at 537.⁴⁴ Moreover, there is no evidence if any of these assertedly capable facilities would be *willing* to enter an agreement with PECO to serve as a backup facility. *See generally* Tr. 9843-44, 9911-18. The record here simply does not provide any basis for the sanguine assumptions about the other 19 hospitals in which the Board majority has indulged.⁴⁵

Similarly, there is no record basis for the Licensing Board majority’s assumption that any assistance provided one another by the staffs of PMMC, RMC, and HUP somehow militates against the need for a closer backup hospital. In this connection, it assumes “that in the event of a hospital evacuation, trained personnel and some equipment would travel to the [unidentified] receiving hospital and provide assistance.” LBP-84-31, 20 NRC at 535. A more reasonable assumption, however, is that, in an evacuation, the PMMC staff would be fully occupied with relocation efforts. HUP and its staff would still be 45 minutes away, and RMC is not a hospital.

The Board majority’s findings thus are not supported by the record. *Compare Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-781, 20 NRC 819, 833-34 (1984). On the other hand, we find the dissenting opinion of Judge Brenner convincing.

⁴⁴ Dr. Linnemann’s own testimony in this proceeding and others stresses the need for special procedures and training to handle patients who are not only traumatically injured but also contaminated by radionuclides. *See, e.g.*, Tr. 9845, 9919-20; *Southern California Edison Co.* (San Onofre Nuclear Generating Station, Units 2 and 3), ALAB-680, 16 NRC 127, 137 (1982). One can reasonably infer from Dr. Linnemann’s testimony that, before approving a hospital for handling radioactively contaminated patients, he would expect more than just JCHA accreditation on the basis of “some type of plan.” Tr. 9914. So, too, should the NRC.

⁴⁵ The District of Columbia Circuit’s decision in *GUARD*, *supra* note 40 — rendered subsequent to the Licensing Board’s decision here on review — provides yet an additional reason to eschew ad hoc reliance on these other hospitals. There, the court struck down the Commission’s determination in *San Onofre*, CLI-83-10, that “a simple list of treatment facilities already in place” could satisfy the requirement of 10 C.F.R. § 50.47(b)(12) for “[a]rrangements . . . made for medical services.” 753 F.2d at 1146. The court found that this planning “starts and stops with a list.” The actual medical services for radiation exposure would be “arranged entirely ad hoc after the onset of an emergency.” *Id.* at 1149 (emphasis in original). In overturning this interpretation, the court stated: “A provision calling for pre-event arrangements is not sensibly met by post-event prescriptions.” *Ibid.* The court went on to rebuff efforts to show certain arrangements were adequate in the absence of any record evidence to that effect, and to reject generalized assumptions about the availability of adequate facilities to serve victims of a radiological emergency. *Id.* at 1149-50.

To be sure, there are differences between *GUARD* and the instant case. The Commission’s *San Onofre* interpretation was rendered in the context of its consideration of medical arrangements for persons *offsite* exposed to dangerous levels of radiation (not just contaminated). Nevertheless, section 50.47(b)(12) applies to both onsite and offsite emergency planning. *See* 10 C.F.R. § 50.47(b). The court’s common sense construction of these same words — albeit in a different context — cannot reasonably be disregarded. The message is clear: if a list of facilities is not an “arrangement,” the Licensing Board majority’s taking notice of the existence of 19 unidentified facilities cannot suffice either, even as a backup.

As he noted, all parties agree that “it is prudent and proper medical practice that a hospital being relied upon for treatment of traumatic injury, contaminated or not, be reasonably close (accessible) to the plant.” LBP-84-31, 20 NRC at 537. See Tr. 9844-45, 9906, 9929-30. And PECO acknowledges that “prudence” is the proper standard by which to measure emergency provisions. Applicant’s Brief at 43. See *San Onofre*, CLI-83-10, 17 NRC at 533.

Applying that standard in the circumstances here, our judgment is that, for the treatment of certain traumatic injuries where time is of the essence (such as a serious injury to the head or a heart attack), reliance on a backup hospital 45 minutes away is not prudent.⁴⁶ This is not a sparsely populated, rural area with limited medical facilities. In such a case, a 45-minute trip to the hospital might well be acceptable as the only alternative. But here, all agree that numerous other options exist and that “it would be prudent to have at least skeletal arrangements with a hospital between PMMC and HUP.” LBP-84-31, 20 NRC at 537 (Brenner, dissenting). The Commission’s emergency planning regulations do not require “extraordinary measures.” *GUARD*, 753 F.2d at 1150 n.7. On the other hand, we think it reasonable — indeed, prudent — to expect an applicant to pursue the *existing* options in an effort to comply with those regulations. We therefore reverse the Licensing Board’s decision, in part, and remand for further proceedings to consider alternative options.⁴⁷

One matter remains — the effect of our decision here on the full-power operating license recently issued by the Commission to PECO. See CLI-85-15, 22 NRC 184 (1985). Although we have concluded that PECO’s onsite emergency plan is inadequate in one respect, the Commission’s emergency planning regulations contemplate such an eventuality. Under 10 C.F.R. § 50.47(c)(1), failure to satisfy the emergency planning standards in section 50.47(b) “may result in the Commission[’s] declining to issue an operating license” unless one of three factors is demonstrated:

⁴⁶ It is not clear from the record whether this 45-minute “distance” took into account the inevitable traffic congestion that would occur in a general emergency during which evacuation is ordered. See Tr. 9844. Moreover, helicopter transport was not considered an option in this circumstance. See LBP-84-31, 20 NRC at 534 n.16, 537 n.17, 540.

⁴⁷ We do not impose any particular requirements on PECO’s arrangements for adequate backup medical services for persons who are contaminated and injured onsite. We simply expect PECO to explore the entire range of reasonable options addressed to the concerns raised by LEA’s contention. Thus, the facility selected should lie beyond the area subject to potential evacuation, but should otherwise be as close as possible to Limerick. This could even include HUP if arrangements for a significantly shorter transport time (for example, by air) could be reasonably assured.

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

We need not look beyond the first alternative criterion. In our view, the deficiency in PECO's emergency plan identified here is not so significant as to warrant license suspension. Primary medical arrangements for contaminated and injured onsite personnel have been made and found adequate. All that is lacking are *backup* arrangements with an additional hospital closer to the site than HUP for those contaminated persons whose traumatic injuries require immediate medical attention. Moreover, the deficiency is not a permanent one. Although we prescribe no schedule, we trust that the Licensing Board and the parties (particularly, PECO) will act as expeditiously as possible in response to our remand, and that complete and adequate backup medical arrangements will be in place soon. In these circumstances, license suspension is not warranted.⁴⁸

II. AWPP'S APPEAL

AWPP's arguments on appeal challenge the Licensing Board's disposition, after hearing, of two AWPP contentions. One concerns the potential for aircraft carburetor icing caused by water vapor emissions from the Limerick cooling towers. The other contention raises questions about the effectiveness of PECO's quality assurance program. After review of the record and the arguments presented here, we conclude that there is no basis for overturning the Licensing Board's decision in either of these areas.

A. Aircraft Carburetor Icing

AWPP's contention V-4, raised as an environmental issue under NEPA, states:

Neither the Applicant nor the Staff have [sic] adequately considered the potential for, and the impact of, carburetor icing in aircraft flying into the airspace that may be affected by emissions from the Limerick cooling towers.

⁴⁸ We note that the court in *GUARD*, *supra* note 45, did not direct the Commission to suspend the operating licenses for the San Onofre facility, despite its determination that the requirements of 10 C.F.R. § 50.47(b)(12) had not been fulfilled. And in a policy statement issued in response to the court's remand, the Commission explicitly approved interim reliance on section 50.47(c)(1) as a means to address the offsite emergency planning problem identified in *GUARD*. See 50 Fed. Reg. 20,892, 20,893-94 (1985). Our determination not to suspend PECO's operating license here is thus consistent with both the court's and the Commission's actions in a similar circumstance.

AWPP Motion to Reword Contention V-4 (September 26, 1983). The Licensing Board succinctly explained that “[c]arburetor icing is a well-recognized hazard to carburetor-equipped aircraft[,] . . . caused by water vapor freezing in the carburetor If permitted to accumulate, the ice can cause degrading engine performance to the point of failure.” LBP-84-31, 20 NRC at 454. The Limerick facility uses two natural draft hyperbolic cooling towers to remove waste heat from the plant. About 35 million gallons of water vapor will be released per day from the towers, creating both visible and invisible plumes. Smith and Seymour, fol. Tr. 6234, at 5. AWPP fears that these emissions will cause carburetor icing in aircraft flying in the vicinity of the plant and that inexperienced pilots, in particular, will be unable to deal with this potential problem.

The Licensing Board held five days of hearings on contention V-4, at which several witnesses for PECO and the staff (including meteorologists and pilots) testified. AWPP also presented testimony from one witness, its lay representative, who is a chemist and pilot. The Board concluded that contention V-4 lacks merit. Specifically, the Board found that PECO, “without any reasonable contradiction, has established by the overwhelming preponderance of the evidence that the Limerick cooling tower plumes will not have temperature and moisture conditions significantly different from the ambient air beyond a quarter mile from the tower.” LBP-84-31, 20 NRC at 456. Within a quarter mile, a plane would pass through the area “in a matter of seconds — much too soon for hazardous carburetor ice to accumulate.” *Id.* at 462. The Board stressed that these findings are based on several conservative assumptions — among them, the “unrealistic” assumption that a pilot could or would do nothing to prevent or remedy carburetor icing, if encountered. *Ibid.* In this regard, the Board noted that 99 percent of the carburetor aircraft flown in the Limerick area are equipped with carburetor heat systems. By use of these systems and proper flight procedures, a trained pilot could avoid carburetor icing problems. *Id.* at 462-64.

AWPP attacks the Licensing Board’s decision on several grounds. Essentially, it contends that the plume of water vapor emitted from the Limerick cooling towers extends over a greater distance and poses more of a hazard to aircraft in the vicinity than acknowledged by the Board. AWPP also asserts that detection of carburetor icing is difficult because most planes do not have gauges to indicate icing, and the symptoms of icing can be confused with those of other aircraft failures. Thus, if icing cannot be readily detected, pilots (especially those who are inexperienced) cannot always respond quickly enough. AWPP, in addition, objects to certain aspects of the Board’s decision on procedural grounds. We find none of AWPP’s arguments, however, convincing.

AWPP first argues that PECO and the Board improperly relied on data generated by the 1981 Thomson-Pennsylvania State University study of cooling tower plume behavior. The results of that study show that, beyond a quarter mile from the towers, the temperature and humidity within the plume are indistinguishable from those of the ambient air. *Id.* at 458. In AWPP's view, the towers used in that study (at the Keystone power plant in western Pennsylvania) differ from those at Limerick, making any comparison unreliable. AWPP also asserts that the purpose of the Thomson study was not to study the issues it regards as critical here — i.e., invisible plumes and the distances traveled by such plumes. Finally, AWPP complains that PECO's witnesses did not perform the Thomson study themselves.

The Licensing Board correctly determined that the results of the Thomson study are valid for Limerick. The evidence and testimony cited by the Board, and not contradicted on this record, show that the applicable weather and topographical conditions at Limerick and Keystone are quite similar, and the difference in cooling tower height would not affect plume behavior. Both visible and invisible plumes were tested by airplane flights cutting across and through the plumes at various altitudes and distances up to 10 miles. *See id.* at 458-59. *See also* Smith and Seymour, fol. Tr. 6234, at 5-6.

The fact that PECO's witnesses themselves did not perform the Thomson plume study does not detract significantly from the weight properly accorded to their testimony or render the results of the study invalid. We held long ago that an expert witness may testify about analyses performed by other experts. *See Wisconsin Electric Power Co.* (Point Beach Nuclear Plant, Unit 2), ALAB-78, 5 AEC 319, 332 (1972), where we observed that “[a]n expert is, of course, not expected to derive all his [or her] background data from experiments which he [or she] personally conducts; if that were required, scientific experts would rarely, if ever, be qualified to give any opinion on any subject whatsoever.” Expert testimony that relies on the work of others is essentially hearsay. Hearsay, however, is generally admissible in administrative proceedings, providing its reliability can be determined — usually through questioning of the witness giving the hearsay. *Id.* at 332-33. *See Duke Power Co.* (William B. McGuire Nuclear Station, Units 1 and 2), ALAB-669, 15 NRC 453, 477 (1982). Here, PECO witnesses Maynard E. Smith and David Seymour (experienced meteorologists and, in the latter case, a holder of a commercial pilot's license) were subject to considerable cross-examination by AWPP at the hearing. AWPP thus had a fair opportunity to discredit their testimony and reliance on the Thomson study. But as noted above, AWPP failed to do so.

AWPP similarly objects to the Board's reliance on the results of an experiment conducted on the ground with an automobile engine and airplane carburetor. See LBP-84-31, 20 NRC at 461; Smith and Seymour, fol. Tr. 6234, at 9. AWPP contends that the study's results are invalid because it was not done with an airplane in flight. It also complains that PECO's witnesses did not take part in these experiments, which were performed by other individuals (Gardner and Moon). We have already determined, as discussed above, that PECO's experts may testify about the experiments of others. As for the study itself, its purpose was to accumulate the greatest amount of carburetor ice in the least amount of time — i.e., the worst possible conditions — in order to determine various power losses over intervals of time. As explained by witness Seymour, creating and maintaining the conditions most likely to cause carburetor icing are more easily accomplished in a laboratory environment. He also stressed that while the type of engine used is not important, the use of an airplane carburetor to simulate aircraft behavior is necessary, given the purpose of the experiment. Tr. 6507-09. Thus, the worst case scenario created in this laboratory experiment provided more conservative, and therefore more reliable, results than could have been achieved in the manner AWPP suggests.

AWPP repeatedly argues that PECO's and the staff's testimony about aircraft and pilot response to carburetor icing is contradictory; that it is not fact, but only opinion; and that, therefore, the Board's decision is not based on "beyond-a-reasonable-doubt" fact." Appeal of Air & Water Pollution Patrol (October 10, 1984) [hereafter, "AWPP Brief"] at 15. We have reviewed the record, along with these claims, and disagree with AWPP. The Licensing Board's decision fully and accurately summarizes the written evidence and oral testimony adduced at the hearing. See LBP-84-31, 20 NRC at 454-64. No purpose would be served by our rehearsal of it here. Suffice it to say that we do not see the asserted contradictions in the testimony perceived by AWPP.⁴⁹ We see instead a

⁴⁹ For example, one such contradiction upon which AWPP dwells is assertedly found in the testimony of staff witness Bernard Geier, Manager of the General Aviation and Commercial Division, Office of Flight Operations, Federal Aviation Administration. AWPP points to Geier's statement that "ice can form instantaneously," claiming it contradicts PECO's testimony that it would take approximately eight minutes (without carburetor heat) for enough carburetor ice to form to cause a hazard to the aircraft. See Geier, fol. Tr. 6883, at 2; Smith and Seymour, fol. Tr. 6234, at 9. Geier's complete testimony on this matter, however, states: "Although ice can form instantaneously under the proper conditions, *it does not accumulate at such a rate* that the pilot who pays attention to the signs cannot prevent engine stoppage due to blocking by ice of the carburetor throat." Geier, fol. Tr. 6883, at 2 (emphasis added). As can be seen, the statements are clearly reconcilable. It is not the mere formation of ice that is significant, for ice can form and quickly melt under certain climatic conditions. What is significant is the buildup of ice and the rate at which it develops. Geier was not able to set a time frame within which enough ice could accumulate to cause a hazard, but he acknowledged that he had no basis for disputing

(Continued)

record well developed by the testimony of the expert witnesses presented by PECO and the staff.⁵⁰ On the other hand, AWPP's evidence is more anecdotal than empirical, and, despite AWPP's protestations to the contrary, neither it nor AWPP's cross-examination seriously challenged the testimony of the PECO and staff witnesses. *See, e.g.,* Romano, fol. Tr. 6725.⁵¹

AWPP's objection that the witnesses testified about their opinions rather than the facts is unavailing. Expert testimony, such as that here at issue, is typically a mixture of scientific principles (known to the expert through his or her training and experience), data derived from analyses or by perception, *and* the expert's *opinions* based on these principles and data.⁵² It is the Licensing Board that must "find the facts" based on the whole record, which includes not only the proffered expert opinion but also any contrary evidence (including opposing opinion). Here, the Board found the expert opinion testimony of PECO's and the staff's witnesses to be convincing and unrefuted. To be sure, AWPP disagrees with these conclusions, but it has failed to demonstrate that the Board's decision does not comport with the record or is unreasonable. Moreover, contrary to AWPP's view, the Board measured the evidence by the correct standard of proof — a preponderance of the evidence. *See, e.g.,* LBP-84-31, 20 NRC at 456. *See also* *Commonwealth Edison Co.* (Zion Station, Units 1 and 2), ALAB-616, 12 NRC 419, 421 (1980).⁵³

AWPP's "due process" arguments are likewise without merit. AWPP's representative contends that he "was not given [his] legal right to cross examine as [his] own witness as Judge Brenner had, before the hearings, told [him he] would have." AWPP Brief at 5. We fail to comprehend what AWPP's point here is. What is clear, however, is that AWPP was given more than ample time for cross-examination of

PECO's testimony on that score. Tr. 7002-03. His principal point was that aircraft are equipped with the means, and pilots are routinely trained, to prevent and eliminate carburetor icing before it accumulates to a hazardous level. Geier, fol. Tr. 6883, at 2-5.

⁵⁰ As noted by the Licensing Board and not challenged by AWPP, the credentials of the five PECO and staff witnesses are impressive. All are experienced meteorologists and/or pilots. One is also a nuclear engineer. *See* LBP-84-31, 20 NRC at 455.

⁵¹ AWPP refers to and submits with its brief on appeal several articles and other references that are not in the evidence of record before the Licensing Board. It is well-settled that, as an appellate tribunal, we must judge appeals on the basis of the record developed at the hearing below. *Puerto Rico Electric Power Authority* (North Coast Nuclear Plant, Unit 1), ALAB-648, 14 NRC 34, 36 (1981). Consequently, the additional material supplied by AWPP is not properly before us and will not be considered.

⁵² Rule 702 of the Federal Rules of Evidence — to which we have previously turned for guidance — specifically provides that an expert witness may testify "in the form of an opinion or otherwise." *See* *McGuire*, 15 NRC at 475.

⁵³ The "beyond a reasonable doubt" standard urged by AWPP applies in criminal, not civil or administrative, proceedings. *See* *McCormick on Evidence* §§ 339, 341, 357 (3d ed. 1984).

PECo's and the staff's witnesses, as well as time for presentation of its own case. See Tr. 6252-6433, 6442-6529, 6685-6713, 6716-23, 6899-6914, 6920-7090, 7109-20; Romano, fol. Tr. 6725; Tr. 6853-56.⁵⁴ We discern no way in which AWPP's right to cross-examination was impaired.

AWPP also charges that the Licensing Board was personally biased against it. Evidence of this bias, according to AWPP, can be found in the Board's reference to "an unfortunate apparent inability [by AWPP's representative] to understand the testimony." LBP-84-31, 20 NRC at 459. AWPP also cites other Board statements to the effect that AWPP did not contradict certain PECO testimony.

We believe AWPP is overly sensitive about language commonly used in legal proceedings and opinions. There is no indication, in either the Board's decision or the lengthy transcript, of any bias whatsoever on the part of the Board. In fact, the Board took due account that AWPP was not represented by counsel and was quite indulgent of the shortcomings in AWPP's participation at the hearing. The Board comments to which AWPP takes offense are consistent with the record and merely reflect the Board's judgment concerning the persuasiveness of the respective positions of the parties. We perceive no personal disparagement and we believe none was intended. As the Commission recently observed, "the right to an impartial adjudicator does not mean that favorable rulings must be divided equally between the parties, or that a judge may not occasionally use strong language toward a party or in expressing his [or her] views on matters before him [or her]." *Metropolitan Edison Co.* (Three Mile Island Nuclear Station, Unit 1), CLI-85-5, 21 NRC 566, 569 (1985), *aff'd sub nom. Three Mile Island Alert, Inc. v. NRC*, 771 F.2d 720 (3d Cir. 1985). In any event, disqualifying bias must stem from an extrajudicial source — that is, it must be based on something other than what the adjudicator has learned from participating in the case. *Houston Lighting and Power Co.* (South Texas Project, Units 1 & 2), CLI-82-9, 15 NRC 1363, 1365 (1982). AWPP has alleged no extrajudicial source for the Board's asserted bias and we see none.

AWPP complains that witness Geier was permitted to correct certain errors in his prefiled testimony. Such changes are routinely made at the beginning of a witness's testimony, in order to correct typographical and

⁵⁴ Indeed, our review of the hearing transcript indicates that the Board was extremely generous in its allotment of time to AWPP for cross-examination, especially in light of the disorganized and confusing questioning of the witnesses by AWPP's representative. The Board also gave AWPP a second chance to submit a cross-examination plan for PECO's witnesses, after it failed to do so initially. See Licensing Board Memorandum and Order of December 1, 1983 (unpublished), at 8.

other errors as well as to update the testimony.⁵⁵ The corrections to Geier's testimony were necessary to reflect a recent change in traffic patterns at the Limerick airport. Tr. 6884-85. Inasmuch as AWPP had an opportunity to cross-examine Geier, there is no basis for its not fully developed claim of error.

Finally, AWPP asserts that its contention V-4 has merit and requires "special attention." AWPP Brief at 14. The record and Licensing Board's decision unequivocally show that this contention got special attention. The Board initially denied PECO's motion for summary disposition and went on to hold five days of oral hearings on this issue alone. See Licensing Board Memorandum and Order of November 8, 1983 (unpublished), at 3-8. We have now reviewed the matter further. The "hard look" at environmental issues required by NEPA has been fully satisfied. See *Natural Resources Defense Council, Inc. v. Morton*, 458 F.2d 827, 838 (D.C. Cir. 1972). Moreover, we agree with the Licensing Board that the record shows that water vapor emissions from the Limerick cooling towers will not cause a significant carburetor icing hazard to aircraft.⁵⁶ Thus, contention V-4 is without merit.

B. Quality Assurance

A chronology of AWPP's quality assurance (QA) contention VI-1 is necessary to an understanding of the arguments AWPP raises on appeal.⁵⁷ As originally proffered, the contention stated:

Applicant has failed to establish and carry out an adequate quality assurance program as required by Appendix B of 10 CFR Part 50. 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.

It went on to refer to, among other things, unspecified defects in concrete, record keeping infractions, the failure to follow proper welding

⁵⁵ AWPP's witness was afforded such an opportunity with respect to his prefiled statement. See Tr. 6723-25.

⁵⁶ It is important to keep in mind that the Licensing Board did not find that aircraft could never be placed in a hazardous situation by carburetor icing. LBP-84-31, 20 NRC at 464. It properly recognized that such a circumstance is possible. But the Board stressed, first, that the conditions in the plume (simply a man-made cloud) most likely to be encountered by aircraft in the area are virtually indistinguishable from the conditions naturally present in the air, and, second, that routine procedures and means exist for pilots to prevent or eliminate icing. In other words, the Limerick emissions pose no greater threat of carburetor icing than already exists.

⁵⁷ The NRC requires an applicant to have a quality assurance program to ensure that a plant and its parts are designed and constructed or fabricated in accordance with acceptable standards. The necessary elements of a QA program are set forth in 18 criteria specified in 10 C.F.R. Part 50, Appendix B.

procedures, the effects of quarry blasting, and inadequate corrective actions. The basis of the contention was a list of NRC inspection reports and related correspondence from 1976-1978. Supplemental Petition of Coordinated Intervenors (November 24, 1981) at 74-75. Noting the importance of an effective QA program to the safety of a plant, the Licensing Board conditionally admitted this contention in 1982 (except insofar as it concerned the effects of quarry blasting), "subject to the development of specific contentions and their bases." LBP-82-43A, 15 NRC 1423, 1518 (1982). *See also* Licensing Board Memorandum and Order of July 14, 1982 (unpublished), at 6. After several months of informal discovery, the Board set a time for the filing of such specifications. Licensing Board Memorandum and Order of February 10, 1983 (unpublished), at 6.

AWPP accordingly submitted a revised version of contention VI-1. It still asserted, in general terms, a pattern of careless workmanship and lack of quality assurance during the construction of Limerick. The basis for the contention, however, dealt principally with various welding deficiencies discussed in several NRC inspection reports. *See* Letter to Licensing Board from J.A. Dorsey (April 12, 1983), Enclosure ("VI. Quality Assurance/Control") [hereafter, "AWPP Revised QA Contention"]. After a special prehearing conference, the Licensing Board rejected the contention. The Board stressed the importance, in litigating QA problems, of showing either existing construction defects or a pattern of related deficiencies, rather than merely existing assorted noncompliances over the years. Despite the additional information supplied by AWPP, "[t]he Board could perceive no particular pattern from the allegations or summaries of reports in the contention." LBP-83-39, *supra* note 8, 18 NRC at 89. Nonetheless, it expressed some concern about whether PECO's corrective action for certain defective welds identified in the staff's Inspection Report No. 50-353/76-06 (November 10, 1976) was adequate. The Board, however, believed this matter could be resolved easily by appropriate affidavits and made its rejection of revised contention VI-1 subject to these forthcoming assurances from PECO. *Id.* at 89-91.

The information provided by PECO was not quite what the Board expected. *See* Tr. 4610-14. Thus, following AWPP's request for reconsideration and subsequent discussion at a prehearing conference, the Board reversed its decision and admitted contention VI-1 in part, reworded as follows:

Applicant has failed to control performance of welding and inspection thereof in accordance with quality control and quality assurance procedures and requirements,

and has failed to take proper and effective corrective and preventive actions when improper welding has been discovered.

The Board also directed AWPP, after further discovery, to file a list of all the welding deficiencies (including those relating to inspection and correction) it believed were pertinent to the contention, and to identify the reports or other documents relevant to each such instance. The Board stressed that AWPP's case on the merits would be limited to the instances set forth in the list. As for the remainder of the contention that did not concern welding (for example, the part alleging improper placement of concrete), the Board found no basis for it and therefore confirmed its earlier rejection of this matter. Licensing Board Memorandum and Order of October 28, 1983 (unpublished), at 5-7.

AWPP submitted a list of approximately 35 instances of welding "infractions."⁵⁸ In response to PECO's motion to strike certain items on the list, the Board struck some parts as beyond the scope of the contention and retained others. Licensing Board Memorandum and Order of April 2, 1984 (unpublished). Litigation of the contention consumed about four days of hearing. Witnesses testified for PECO and the staff and were cross-examined by AWPP. The direct testimony offered on behalf of AWPP, however, was rejected for the reasons set forth in Licensing Board Memorandum and Order of May 2, 1984 (unpublished), at 1-6. At the conclusion of the hearing, the Board announced its tentative judgment that PECO had overwhelmingly met its burden of proof on the contention. It thus determined there was no need for PECO to file proposed findings of fact and conclusions of law. The Board deferred final ruling, however, in order to give AWPP an opportunity to file its proposed findings. Tr. 11,046-60.

After receipt of AWPP's findings, the Board heard oral argument and ruled from the bench that contention VI-1 lacked merit. See Tr. 11,915-94. It later confirmed this ruling in its second partial initial decision. LBP-84-31, 20 NRC at 511. The Board noted that, although some welding defects had been discovered among the two million safety-related welds at Limerick, there was no evidence of a pattern of such deficiencies, so as to suggest a breakdown of the Limerick QA program. *Id.* at 512-13. The Board also expressed its satisfaction with the truthfulness of PECO's witnesses and with the corrective actions undertaken by PECO. *Id.* at 512.

⁵⁸ Although it is not dispositive of AWPP's appeal, we note that AWPP's list (dated March 5, 1984) is technically not part of the official record in this proceeding. This document has no certificate of service and was not served on either us or the Commission's Secretary. See 10 C.F.R. § 2.701.

AWPP raises essentially four arguments on appeal from the Licensing Board's decision on contention VI-1. We address them in turn, finding each without merit.

1. AWPP first objects to the Board's rewording of its contention so as to focus only on welding matters. In its view, the Board "emasculated the force of the contention" — i.e., a pattern of carelessness during construction of the plant. AWPP Brief at 16. Apparently, AWPP intended to litigate an asserted overall breakdown in the Limerick construction quality assurance program. But if the Board committed any error, it likely was in admitting the contention in the first place.

In our view, AWPP's original contention (*see* p. 722, *supra*) lacked the basis and specificity required by the Commission's Rules of Practice. *See* 10 C.F.R. § 2.714(b). If AWPP sought to litigate a complete breakdown in QA, then surely more of a basis was required than a few NRC inspection reports identifying discrete deficiencies. *See generally Louisiana Power & Light Co.* (Waterford Steam Electric Station, Unit 3), ALAB-812, 22 NRC 5, 16-44 (1985). The Licensing Board essentially recognized this by *conditionally* admitting the contention, subject to greater specification in the future. *See* LBP-82-43A, 15 NRC at 1518. A short time later, however, we held the conditional admission of any contention to be unauthorized under the Commission's rules. *Duke Power Co.* (Catawba Nuclear Station, Units 1 and 2), ALAB-687, 16 NRC 460, 467 (1982). On review of that decision, the Commission held further that the admission of contentions after the time specified in the Rules of Practice was to be determined by balancing the five "late contention" factors in 10 C.F.R. § 2.714(a)(1). *Id.*, CLI-83-19, 17 NRC 1041, 1045 (1983). Thus, the Licensing Board's subsequent admission and litigation of AWPP's contention VI-1 in *any* form — without balancing the five factors in section 2.714(a)(1) — afforded AWPP greater participatory rights than those to which it was strictly entitled.⁵⁹

But even if the conditional admission of contention VI-1 were authorized, we see no error in the Board's limiting of its scope to possible welding deficiencies. When AWPP submitted its revised contention in April 1983, its focus was clearly on welding. *See* AWPP Revised QA Contention at 1-4. After the Board's conditional rejection of the revised contention in LBP-83-39, 18 NRC at 88-91,⁶⁰ AWPP successfully sought recon-

⁵⁹ Indeed, the Licensing Board gave AWPP several gratuitous opportunities to conform its QA contention to the Commission's basis and specificity requirements.

⁶⁰ AWPP seems to interpret certain language in that decision (LBP-83-39) as unfairly critical of AWPP's reliance on NRC staff inspection reports. It argues that the Licensing Board's comments in this regard show the Board's bias against AWPP. AWPP Brief at 18-19. AWPP, however, has misunderstood

(Continued)

sideration, again raising concerns principally with welding. See Letter to Licensing Board from F.R. Romano (August 5, 1983), Enclosures. The only other articulated issue that AWPP repeatedly tried to raise (including here on appeal) concerns certain defects in concrete placement at the site. But as the Licensing Board noted, AWPP's representative had raised this identical issue several years earlier in a petition to the NRC's Director of Nuclear Reactor Regulation. The matter was thoroughly investigated, and the staff was ultimately satisfied with PECO's resolution of the problem. DD-79-16, 10 NRC 609, 610-11 (1979). When pressed by the Board, AWPP was unable to provide any new information concerning possible concrete defects; it simply expressed its belief that the matter had not been fully corrected. See Tr. 4883-94, 4911-12. In these circumstances, the Board's admission of a contention limited in scope to welding matters was fully justified. See Tr. 4610-14, 4912-19.

2. AWPP argues that the Licensing Board prejudged its case when the Board "arbitrarily" dispensed with the need for PECO to file proposed findings of fact and conclusions of law. AWPP Brief at 19. We disagree. At the time the Board announced its tentative judgment that PECO had overwhelmingly met its burden of proof and thus relieved PECO of the obligation to file proposed findings and conclusions, the Board had already heard *all* of the evidence presented on contention VI-1. Tr. 11,046-48. Given the completeness of the evidentiary record at this point, *prejudgment* on the part of the Board was not possible. The Board simply gave its preliminary assessment of the evidence of record and eliminated a round of filings (PECO's proposed findings and conclusions) that would have been superfluous in the circumstances.

More important, the Board explicitly stated that its determination was only tentative, and it strongly urged AWPP to file proposed findings and conclusions of its own. Tr. 11,048-60. AWPP did so and presented oral argument to the Board as well. See Tr. 11,915-94. Thus, AWPP was, in

the Board's statements. The Board does not state that an intervenor can never properly rely on staff documents like inspection reports. Rather, it states that "the mere recitation of *unrelated* adverse findings" in such reports "does not supply information on what *specifically* would be litigated." It is too "broad" and "unfocused." But where "*particular* allegations of *specific* patterns of QA/QC [quality control] problems" are shown through the use of staff inspection reports, such matters can and will be considered and, if justified, litigated. LBP-83-39, 18 NRC at 89 (emphasis added). Cf. *Waterford*, ALAB-812, 22 NRC at 14, 17 & n.7 (staff documents are generally acceptable evidence to support motion to reopen on QA).

AWPP also claims bias in the Board's conditional rejection of its revised contention and in an assertedly possibly inaccurate statement by the Board. AWPP Brief at 19. As noted at p. 721, *supra*, unfavorable rulings do not establish bias on the part of the adjudicator. Nor do inadvertent and possibly inaccurate statements. Moreover, in this instance, the Board reversed itself in response to AWPP's request for reconsideration and admitted the contention on welding. Given the Board's dogged pursuit of this matter and the many opportunities afforded AWPP (see pp. 722-24 and note 59, *supra*), the latter's claim of bias is particularly groundless.

fact, afforded a full and fair opportunity to be heard. Finally, the Commission's Rules of Practice provide licensing boards with considerable flexibility to regulate the course of a hearing and designate the order of procedure. 10 C.F.R. §§ 2.718(e), 2.731. *See Metropolitan Edison Co. (Three Mile Island Nuclear Station, Unit 1), ALAB-772, 19 NRC 1193, 1245-46 (1984), rev'd in part on other grounds, CLI-85-2, 21 NRC 282 (1985).* Although the rules set forth a general schedule for the filing of proposed findings, licensing boards are authorized to alter that schedule or to dispense with it entirely. *See* 10 C.F.R. § 2.754(a). The Licensing Board's actions here are therefore entirely consistent with the Rules of Practice.⁶¹

3. AWPP disputes the Licensing Board's finding that "[t]he circumstances relating to two structural weld deficiencies . . . have been fully and truthfully described in the Applicant's and Staff's testimony." *See* LBP-84-31, 20 NRC at 513. The welds in question — performed during early plant construction — were in an area not readily accessible; in order to reach the area, the welder attached the electrode holder to a broomstick — hence, AWPP's characterization of this incident as the "Broomstick Affair." An NRC inspector discovered these welds in 1976 and concluded that the welder who had done them was not qualified to use this "extension" technique. PECO, however, disagreed with the NRC inspector's interpretation of the pertinent codes and standards. After closer visual inspection, the NRC found the welds themselves to be unacceptable, despite earlier acceptance by a quality control (QC) inspector for PECO's architect-engineer and constructor, Bechtel Power Corporation. PECO subsequently repaired the welds and reinspected all the accessible structural welds that had been inspected by the Bechtel inspector who had accepted the "broomstick" welds. Boyer, et al., fol. Tr. 10,321, at 40-41. PECO also issued a directive prohibiting the unauthorized use of electrode extensions and provided additional training for all QC and field welding personnel. Durr and Reynolds, fol. Tr. 10,977, at 18-20.

⁶¹ One aspect of the Board's conduct of the proceeding, though not challenged by AWPP, warrants some comment. After receiving AWPP's proposed findings and the replies of the staff and PECO, the Board issued its final ruling on contention VI-1 orally from the bench. *See* Tr. 11,915-94. Fortunately, the Board later confirmed that ruling in LBP-84-31, 20 NRC at 511-13, for the Commission's rules require an initial decision to be in writing. 10 C.F.R. § 2.760(c). The Board's discussion of contention VI-1 in LBP-84-31, however, is brief, supplemented with many references to the transcript of its bench ruling. Although it is not legally deficient, this method of decisionmaking in complicated NRC licensing hearings has some significant drawbacks and should be avoided. For one thing — as is evident from this case — a board's bench ruling provides many opportunities for interruption and argument by the parties. As a result, such a transcript is hard to follow and counterproductive to meaningful appellate review.

According to AWPP, however, the testimony of PECO's witnesses (especially Boyer and Clohecy) in this regard was not truthful.⁶² AWPP provides no references whatsoever to this claimed untruthfulness at the hearing, but directs our attention, instead, to portions of an earlier deposition by these individuals, assertedly showing their "evasion." AWPP Brief at 20. The deposition, however, was not admitted or introduced into evidence in this proceeding and therefore cannot be relied upon. See note 51, *supra*. AWPP's reliance on this extra-record material is particularly inappropriate here, where the deponents were available for, and subject to, lengthy cross-examination by AWPP. See Tr. 10,456-617, 10,644-75, 10,683-719, 10,728-98, 10,816-30, 10,841-927. Moreover, the Licensing Board specifically reminded AWPP's representative that the deposition was not in evidence but could nonetheless be used to question the witnesses. Tr. 10,602-04. Thus, AWPP had an opportunity to establish the witnesses' "untruthfulness" *on the record*, having failed, it cannot now attempt to do so on the basis of material *not* in the record.⁶³

AWPP does not otherwise directly attack the evidence adduced by PECO and the staff concerning the various welding deficiencies specified by AWPP in advance of the hearing. See p. 724, *supra*. AWPP implies, however, disagreement with the Licensing Board's conclusion that these deficiencies

are isolated, nonprogrammatic, and, particularly given their source, in general, indicative of the effectiveness of the Limerick QA program. There has been no "breakdown" of the Limerick QA program for welding.

LBP-84-31, 20 NRC at 513. AWPP further suggests that PECO management "condoned" improper welding procedures. AWPP Brief at 20. But we have reviewed the testimony and fully agree with the Board's judgment. To be sure, the NRC inspection reports covering 10 years of construction activity show some violations in welding and inspection procedures. But the record (especially with regard to the instances highlighted by AWPP) shows that the violations were few in number for the two million safety-related welds at the facility and did not demonstrate a pattern of improper actions. Moreover, where deficiencies were identified, PECO performed extensive reinspection of the affected work and took proper corrective action. See Durr and Reynolds, fol. Tr. 10,977, at 3, 11-23; Boyer, et al., fol. Tr. 10,321, at 4, 27-90.

⁶² AWPP does not raise similar objections to the testimony of staff witnesses Durr and Reynolds.

⁶³ Even if AWPP could properly rely on the deposition in question, our review of the referenced portions reveals no inconsistency with the deponents' testimony at the hearing.

Our observation in *Union Electric Co.* (Callaway Plant, Unit 1), ALAB-740, 18 NRC 343, 346 (1983), is pertinent here:

[i]n any project even remotely approaching in magnitude and complexity the erection of a nuclear power plant, there inevitably will be some construction defects tied to quality assurance lapses. It would therefore be totally unreasonable to hinge the grant of an NRC operating license upon a demonstration of error-free construction. Nor is such a result mandated by either the Atomic Energy Act of 1954, as amended, or the Commission's implementing regulations. What they require is simply a finding of reasonable assurance that, as built, the facility can and will be operated without endangering the public health and safety. 42 U.S.C. §§ 2133(d), 2232(a); 10 C.F.R. § 50.57(a)(3)(i). Thus, in examining claims of quality assurance deficiencies, one must look to the implication of those deficiencies in terms of safe plant operation. [Footnote omitted.]

The requisite reasonable assurance exists if all ascertained construction errors have been corrected, and there is no showing of a pervasive breakdown in quality assurance so as to raise serious doubt about the overall safety of the plant. *Ibid.* The record shows that test has been met here.

4. AWPP's last argument is that the Licensing Board erred in rejecting the proffered testimony of AWPP's witness, Dr. Gudmund R. Iversen, a professor of statistics at Swarthmore College. Under the terms of an earlier Board order, the prefiled direct testimony for all parties on contention VI-1 was due by April 16, 1984. Licensing Board Order of March 15, 1984 (unpublished), at 6. *See also* 10 C.F.R. § 2.743(b). In its April 16 filing, AWPP simply submitted Dr. Iversen's name as a witness concerning PECO's auditing methods; no testimony or statement of the witness's qualifications was tendered. Testimony of Air & Water Pollution Patrol (April 16, 1984) at J. The Licensing Board ruled that Dr. Iversen would not be permitted to testify because of AWPP's failure to comply with the Board's order and 10 C.F.R. § 2.743(b), requiring the advance filing of written direct testimony. Memorandum and Order of May 2 at 3. AWPP nonetheless produced Dr. Iversen and his written testimony the day the hearing began, seeking reconsideration of the Board's ruling. The Board entertained argument on the matter but again rejected the testimony because it was unjustifiably and unduly late. The Board also concluded that the testimony was not confined to the scope of the revised contention or sufficiently probative of the welding QA issue under consideration. Tr. 10,413-36, 11,931; LBP-84-31, 20 NRC at 510.

The Board was entirely justified in rejecting AWPP's testimony on the ground of lateness. AWPP had ample notice of the filing requirements for this particular direct testimony. *See* Tr. 8322-24, 10,413, 10,415-16, 10,417, 10,429. Moreover, by this time AWPP had been a participant in

the proceeding for several years and had reason to be knowledgeable about the Commission's general requirements for prefilings testimony. See 10 C.F.R. § 2.743(b). Its excuse that it is "a citizen group without any attorney and . . . [the] resources of the Applicant" is thus particularly unavailing. AWPP Brief at 21. See *Statement of Policy on Conduct of Licensing Proceedings*, CLI-81-8, 13 NRC 452, 454 (1981) ("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"). As the Licensing Board stressed, these are complex proceedings that demand an orderly process; requiring parties to produce their direct testimony in advance of oral hearing is not a mere technicality but an essential ingredient of such process. See Tr. 10,431.

The Board's assessment of the relevance and probative value of Dr. Iversen's testimony is also correct. We have examined this testimony (AWPP Exh. 3) and find that it refers to various PECO audit reports and other matters not encompassed within revised contention VI-1 and AWPP's list of welding deficiencies. See p. 724, *supra*. Although AWPP refers to Dr. Iversen's "statistical analysis" (AWPP Brief at 21), no such analysis is included in the four pages of proffered testimony; instead, there is only generalized criticism of apparently PECO's program for auditing the installation of pipe hangers. See AWPP Exh. 3 at 2-3. The Board reasonably concluded that, even if timely, this testimony would not have been of probative value to the consideration of contention VI-1.

III. ANTHONY/FOE'S APPEAL

ARCO Pipe Line Company transports petroleum products through an underground pipeline that traverses the Limerick site. Columbia Gas Transmission Corp. similarly operates two underground natural gas pipelines near the site. LBP-84-31, 20 NRC at 467-69, 474-76. A major part of the Licensing Board's second partial initial decision addresses Anthony/FOE's concerns, set forth in contentions V-3a and V-3b, about the effects of a pipeline accident on the Limerick nuclear plant. See *id.* at 464-97. These contentions state:

- V-3a: In developing its analysis of the worst case rupture of the ARCO pipeline, the Applicant provided no basis for excluding consideration of siphoning. Thus, the consequences from the worst case pipeline accident are understated.

V-3b: In discussing deflagration of gas and petroleum due to pipeline rupture, no specific consideration has been given to the effect of radiant heat upon the diesel generators and associated diesel fuel storage facilities.

Licensing Board Order of November 22, 1982 (unpublished), at 5, 7.

The Board oversaw the development of an extensive record on these contentions, devoting considerable attention to

the nature of the materials transported in the pipelines, how much of these materials could react to produce heat and blast overpressures and the ability of safety-related structures, systems and components to withstand such impacts, including interactions from the nonsafety-related structures, systems and components that could be damaged from the results of potential heat or blast impacts.

LBP-84-31, 20 NRC at 466. Indeed, the Board's consideration extended well beyond the four corners of contentions V-3a and V-3b to encompass the Columbia gas pipelines and the effect of overpressures (from the detonation of fuel oil or gas released after a pipeline rupture) on various structures at the site. *See, e.g., id.* at 465-66, 482.⁶⁴ The Board determined, on the basis of "very conservative postulates of accident scenarios" and the evidence adduced by PECO and the staff, that these structures are adequate to withstand the calculated radiant heat loads and overpressures. It therefore concluded that contentions V-3a and V-3b have no merit. *Id.* at 466, 467.

Anthony/FOE raise myriad arguments on appeal in connection with the Board's disposition of their pipeline rupture contention. Apart from some more generalized arguments at the outset, Anthony/FOE's brief is essentially a collection of comments on various Board findings — some expressing agreement, but most disagreeing with the Board's judgment.⁶⁵ We have considered all of Anthony/FOE's arguments in the context of the record evidence and the Licensing Board's decision and find none

⁶⁴ The Licensing Board, in effect, raised these matters sua sponte. *See* 10 C.F.R. § 2.760a. No party complains here about that action. Thus — particularly in view of the outcome — we need not decide if the Board violated the internal procedure for notifying the Commission of an intent to raise an issue sua sponte. *See Houston Lighting and Power Co.* (South Texas Project, Units 1 and 2), LBP-81-54, 14 NRC 918, 922-23 & n.4 (1981).

⁶⁵ Attached to Anthony/FOE's brief as "Exhibit A" is a document entitled "Rebuttal of Applicant's Reply Findings" (June 6, 1984). It was submitted to the Licensing Board, but apparently never formally accepted or rejected. On March 8, 1985, Anthony/FOE submitted to us their "Additions to Oral Argument." Neither document is authorized under the Commission's Rules of Practice, and thus they will not be considered. We note, however, that both of these submittals largely contain arguments or information already before the Licensing Board and pressed before us in Anthony/FOE's brief on appeal. Thus, nothing in either document — even if considered — would affect the outcome here.

convincing. We group what we perceive as related arguments and address the most significant below.⁶⁶

A. Expert Witness Qualifications

1. Anthony/FOE object to the Licensing Board's reliance on the testimony of PECO witness John D. Walsh. They contend that, as a meteorologist, Walsh does not have the credentials and training to qualify him as an expert witness on their pipeline accident contentions. They also list several areas in which Walsh "was proven wrong" but do not provide any citations to the record or Board decision to support this allegation. R.L. Anthony/FOE Brief in Support of Appeal (November 23, 1984) [hereafter, "Anthony/FOE Brief"] at 2.

We have reviewed Walsh's credentials and testimony and agree with the Licensing Board that he is qualified and competent to testify in connection with contentions V-3a and V-3b. Walsh has an undergraduate degree in meteorology and has taken graduate level courses in meteorology, physics, and mathematics. He has worked as a professional meteorologist since 1959 and has done research in atmospheric dispersion. Walsh has also performed accident analyses for over a dozen nuclear power plants, including analyses of natural gas or petroleum products pipelines near several such plants. See Professional Qualifications [of John D. Walsh, fol. Tr. 5411; Tr. 5453.

The Licensing Board relied on Walsh's testimony for principally those parts of its decision that deal with the formation and dispersion of a flammable mixture in the atmosphere — matters clearly within Walsh's expertise. See LBP-84-31, 20 NRC at 470-72, 476-77.⁶⁷ A meteorologist is not just the person who predicts the weather on the evening news. Meteorology is

[t]he study dealing with the phenomena of the atmosphere. This includes not only the physics, chemistry, and dynamics of the atmosphere, but is extended to include many of the direct effects of the atmosphere upon the earth's surface, the oceans, and life in general. The goals often ascribed to meteorology are the complete understanding, accurate prediction, and artificial control of atmospheric phenomena.

⁶⁶ As noted above, the Board's discussion of the issues raised in conjunction with contentions V-3a and V-3b is extensive. We repeat only those facts or background information necessary for the disposition of the discrete arguments raised by Anthony/FOE's appeal.

⁶⁷ As we stated at note 52, *supra*, we rely on the standard in Rule 702 of the Federal Rules of Evidence for determining a witness's qualifications as an expert. *McGuire*, 15 NRC at 475. Under that rule, a witness is qualified as an expert by "knowledge, skill, experience, training, or education."

Glossary of Meteorology 367 (R. Huschke ed. 1959). In other areas (for example, whether the ARCO pumps would shut down), the Board earlier determined that Walsh was *not* qualified to testify, and it relied instead on the most conservative assumptions (for example, that the ARCO pumps would operate continuously, maximizing the amount of fuel released into the atmosphere). Memorandum and Order of November 8 at 9-10; LBP-84-31, 20 NRC at 470-71. The Board thus looked closely at Walsh's testimony and properly relied on those portions within his area of demonstrated expertise. *But see* pp. 736-37, *infra*.

2. Anthony/FOE also complain that Robert L. Anthony was not permitted to testify about pipelines and the Limerick site. The Licensing Board granted PECO's motion to strike Anthony's testimony, concluding that he "is not qualified by knowledge, skill, experience, training, education, or any other basis to testify as an expert on any matters related to the contentions." The Board noted that Anthony had conceded his lack of expertise, claiming he only wanted to present certain information as a "coordinator." The Board determined, however, that the information in question was expert matter on which Anthony was not competent to testify. Memorandum and Order of December 1, *supra* note 54, at 1-2. *See also* LBP-84-31, 20 NRC at 466.

The Board's refusal to let Anthony testify was proper. Anthony is a retired art therapist, who has participated as a lay advocate in various land use and related environmental hearings. He has no background relevant to pipeline location or accidents, yet his proposed testimony covered such material. *See* Testimony of Robert L. Anthony (November 14, 1983) at 1-3.⁶⁸ This type of testimony requires sponsorship by an expert witness "who can be examined on the reliability of the factual assertions and soundness of the scientific opinions found in the documents." *McGuire*, 15 NRC at 477. An expert witness would also be necessary to relate the generalized material in question to the particular pipelines at Limerick. By his own acknowledgment, Anthony is not such an expert. *See* note 67, *supra*.

B. Overpressure Calculations

After noting several areas of agreement with the Licensing Board, Anthony/FOE object to certain aspects of the Board's decision insofar as it concerns the calculations of the overpressures on Limerick structures in the event of a rupture of the ARCO or Columbia pipelines. With respect

⁶⁸ This submission, like others (*see* note 58, *supra*) was not served properly and thus was difficult to locate for the purpose of appellate review.

to the ARCO line, Anthony/FOE contend that the Board should have used a larger “spray area” (i.e., the surface area of the gasoline as it covers the ground after a pipe break) than 24,800 square feet as part of that calculation.⁶⁹ The surface area is important because it determines the rate at which the gasoline evaporates and combines with air to form an explosive mixture. LBP-84-31, 20 NRC at 471. Anthony/FOE argue that the overpressure calculations should have been based on the spray area used by their witness, Bevier Hasbrouck — 10,000 square meters, or roughly 108,000 square feet. *See* Hasbrouck #1, fol. Tr. 5750, at 2.

The Board, however, correctly found “no scientific basis” for the surface area used by Hasbrouck. LBP-84-31, 20 NRC at 473. In fact, he agreed at the hearing that there was no basis for the area he assumed. Tr. 5995, 6004, 6100-01, 6115. On the other hand, the 24,800 square feet area, used by the staff in its calculations and accepted by the Board, is based in reality and properly conservative as well. The staff derived this figure by adding the area of the spill pathway on the hillside (assuming a pipe break at Possum Hollow Run) and the surface area of a pool at the bottom of the hill where the gasoline would collect. The pool width assumed for the calculation is especially conservative. *See* LBP-84-31, 20 NRC at 472; Ferrell, fol. Tr. 7136, at 2; Tr. 7155-57.

Anthony/FOE argue, in this regard, that the Licensing Board misunderstood or rejected their scenario of a larger pool — with a correspondingly larger surface and evaporative area — created by the damming of Possum Hollow Run by a PECO road parallel to a railway embankment. The record, however, again shows no basis for the surface area assumed in such a scenario. Moreover, the staff’s witnesses testified that, even if there were a legitimate basis for the dimensions Anthony/FOE give to this pool, it would not measurably affect their calculation of how much gasoline would be evaporated. Tr. 7531-34, 7536-45. The Board therefore correctly “assign[ed] no credence to the FOE postulates and resulting calculations.” LBP-84-31, 20 NRC at 474.

As for the Columbia gas pipelines, Anthony/FOE first note that “diffusion” would be impeded during inversion conditions. Anthony/FOE Brief at 4.⁷⁰ No one disputes this. Hence, PECO’s calculations assumed

⁶⁹ Gasoline was used for the ARCO calculations, as it is the most volatile of the petroleum products transported in that line. LBP-84-31, 20 NRC at 470.

⁷⁰ When leaving a broken pipe, the natural gas in the air will be too highly concentrated to burn or detonate. Only after considerable dispersion to reduce its concentration will the gas-air mixture be in the flammable range. A slow “diffusion” rate (such as would result from an atmospheric inversion condition) thus would allow more time for the natural gas cloud to float toward the plant before its concentration decreases into the flammable range. Further dispersion reduces the concentration below the flammable range and thereby eliminates the ability of the gas-air mixture to burn or detonate. *See generally* Walsh, fol. Tr. 5411, at 11-12.

an inversion even though “[a]tmospheric conditions actually are more conducive to dispersion 95% of the time.” LBP-84-31, 20 NRC at 477. See Walsh, fol. Tr. 5411, at 11-12.

Anthony/FOE next complain that the Licensing Board did not consider the “fire-hose effect” of a gas pipe break. The Board, however, did hear testimony on this scenario, but relied on PECO’s calculations, which assumed an even more conservative (i.e., worse) scenario than the fire-hose effect. PECO assumed a pipe rupture in which there is a complete separation of the pipe and both pipe ends are forced straight up and out of the ground. The gas is assumed to be released in a vertical jet and then to travel, with minimal dispersion, in a cloud as near as possible to the Limerick facility before deflagration. Any other orientation would cause more rapid mixing and dilution of the gas at a ground level source, resulting in detonation or deflagration *farther* from the plant. *Id.* at 10-12. See LBP-84-31, 20 NRC at 477. For example, in the fire-hose effect, the pipe ends are in a horizontal orientation at ground level, directed toward the plant. More turbulence and thus dilution with air would occur on the ground, with greater likelihood of flammability nearer *the break*, rather than the plant. This scenario would therefore *reduce* the overpressure calculations, contrary to Anthony/FOE’s implicit suggestion. Tr. 5422-24, 5473, 5476.

Anthony/FOE argue that the Board erred in giving “no weight” to Hasbrouck’s postulate of a flammable gas mixture that travels 5500 feet (more than a mile) to within 800 feet of the facility and remains in a flammable concentration. See LBP-84-31, 20 NRC at 479. The Board pointed out, however, that Hasbrouck had no technical basis for his testimony and that he himself had characterized his theory as “half-baked.” *Ibid.* See Tr. 6008-09. Compare Campe, fol. Tr. 6131, at 3-4. Indeed, where an asserted expert witness can supply no scientific basis for his statements (other than his “belief”) and disparages his own testimony, a board would be remiss in giving such testimony any weight whatsoever.⁷¹

With respect to the actual overpressure calculations for ruptures of the ARCO and Columbia pipelines, Anthony/FOE object to the Licens-

⁷¹ Anthony/FOE voice an additional complaint, but provide no supporting cites to the record. They claim that the Licensing Board ignored their “scenario for an ignition trigger from gas confined at plant level.” Anthony/FOE Brief at 4. To the extent we understand this cryptic argument, it is without merit. If there is no legitimate basis for assuming a detonable cloud within 800 feet of the plant, there is no reason to consider an ignition trigger at this point. We note, however, that PECO’s analysis assumed an explosion at 1200 feet, “triggered by some undefined high-energy ignition source.” LBP-84-31, 20 NRC at 478.

ing Board's reliance on the NRC staff's calculations.⁷² Overpressure calculations are ordinarily derived by reference to the blast effects of TNT. Thus, the mass of gasoline or natural gas vapor released as a consequence of a pipeline rupture must be converted to an equivalent mass of TNT in order to determine the blast effects of detonation of the vapor. The staff based its overpressure calculations on a TNT conversion factor of 240 percent, or a factor of 2.4. This conversion factor is found in NRC Regulatory Guide 1.91 (Rev. 1), "Evaluations of Explosions Postulated to Occur on Transportation Routes Near Nuclear Power Plants" (February 1978), at 1.91-2. Some of PECO's computations, however, used a conversion factor of 10, which the Licensing Board described as "4 times too great." LBP-84-31, 20 NRC at 473. Anthony/FOE assert that PECO's calculations discredited those based on Regulatory Guide 1.91 (Rev. 1), and that PECO's higher conversion factor must be used for a worst case analysis.

We disagree. Regulatory Guide 1.91 (Rev. 1) relies on studies that generally show less than one percent of the heat energy is released in a blast of hydrocarbon vapor. The heat of combustion of hydrocarbons is about 10 times that of TNT, resulting in an equivalence on a mass basis of 10 percent ($1\% \times 10 = 10\%$); i.e., the blast effect of one unit of hydrocarbon vapor is about ten percent of (or 0.1) that of an equal mass of TNT. But because actual blast energy is a function of accident-specific phenomena, Regulatory Guide 1.91 (Rev. 1) adds in a substantial (as much as 24-fold) conservatism: it sets a reasonable upper bound to the blast energy of a vapor cloud at 240 percent. In other words, it assumes that the blast effect of one unit of hydrocarbon vapor is 240 percent of (or 2.4 times) that of an equal mass of TNT.

PECO's witness (Walsh) neither rejected nor discredited Regulatory Guide 1.91 (Rev. 1). He was well aware of the 2.4 conversion factor but nonetheless assumed that *all* of the gas-air mixture within explosive limits is detonated, releasing 100 percent of the available blast energy. (In contrast, with its built-in, approximately 24-fold conservatism, Regulatory Guide 1.91 (Rev. 1) assumes that about 24 percent of the available energy is released when the gas-air mixture is detonated. Thus, Walsh's conversion factor is about four times that of the staff's.) Walsh, however, gave no scientific basis for this assumption: he did it "[t]o be conservative." Tr. 5430-31, 5551-54.

Conservatisms and margins for error in such calculations are necessary and desirable, but must be footed to some extent in reasonable, scientific

⁷²The staff calculated a peak overpressure of 2.1 psi (pounds per square inch) for a rupture of the ARCO line and 7.4 psi for the Columbia line. *Id.* at 474, 480.

ground. Conservatism upon conservatism can distort technical data to the point where it no longer meaningfully describes the mechanism at issue. This is especially true here, where Walsh provided no explanation for the 100 percent detonation hypothesis in his overpressure calculations. Moreover, Walsh's credentials as a meteorologist — albeit pertinent to the formation and dispersion of hydrocarbon vapors in the atmosphere — do not encompass expertise in calculating the explosive force and overpressures created by the detonation of such vapors. In this circumstance, there is no reason to give weight to Walsh's overpressure calculations.

Rejection of Walsh's overpressure calculations, however, does not automatically "validate" the Board's reliance on the staff's Regulatory Guide 1.91 (Rev. 1) calculations. Regulatory guides and the like do not prescribe regulatory requirements. In general, they are "treated simply as evidence of legitimate means for complying with regulatory requirements, and the staff is required to demonstrate the validity of its guidance if it is called into question during the course of litigation." *TMI-1 Restart*, ALAB-698, 16 NRC at 1299. Regulatory Guide 1.91 (Rev. 1) was admitted into evidence, without objection, as Staff Exh. 7. Expert staff witnesses testified as to the bases for the 2.4 TNT conversion factor in this regulatory guide. *See* Tr. 6150-55; Ferrell, fol. Tr. 6136, at 8.⁷³ The Licensing Board therefore did not err in accepting the overpressure calculations determined by the staff using the TNT conversion factor found in Regulatory Guide 1.91 (Rev. 1).⁷⁴

C. Structural Integrity

The Licensing Board actively explored, on its own, "the ability of safety-related structures at the Limerick Generating Station to withstand the effects of postulated detonations resulting from the assumed rupture of the ARCO and Columbia Gas transmission pipelines." LBP-84-31, 20 NRC at 482. It concluded, on the basis of "conservative" calculations and analyses performed by PECO and the staff's review, that the safety-related structures are adequate to withstand both the direct overpres-

⁷³ One such NRC witness, Dr. Kazimieras M. Campe, is responsible for the evaluation of industrial hazards like explosions and is therefore especially qualified to testify on this matter. *See* "Kazimieras M. Campe Professional Qualifications," fol. Tr. 6131.

⁷⁴ Anthony/FOE argue that some witnesses actually calculated considerably higher overpressures (e.g., 24 psi) during cross-examination. *See, e.g.*, Tr. 7507. It is apparent from this testimony, however, that the witnesses simply performed mathematical computations with input and assumptions provided by Anthony/FOE but did not signify agreement with those assumptions. *See* Tr. 7506-09.

tures from a pipeline explosion and the indirect effects of failure of nonsafety-related structures. *Id.* at 467. *See id.* at 483-93.

Anthony/FOE challenge the Board's decision in this regard on numerous grounds, but fail to develop fully their argument on any particular point. *See* Anthony/FOE Brief at 5. Nonetheless, we briefly address those concerns that we are able to understand.⁷⁵

Anthony/FOE question the validity of the "critical element" used in the structural integrity analysis for each safety-related structure. *See* LBP-84-31, 20 NRC at 485. They contend that the "weakest points" in the walls and roof provide the only valid test for structural integrity. Anthony/FOE Brief at 5. The critical element, however, is "that beam, column, wall, slab, or floor that because of its geometry and/or orientation bears a significantly larger stress than other like structural elements." Kuo, fol. Tr. 9043, at 3. Here, the critical wall of each structure was first determined and then the critical element of that wall selected — a one-foot wide beam with fixed ends, with no credit taken for the additional support provided by adjacent walls. *Id.* at 3-4. Thus, the "weakest" part of the structure, viewed as a function of stress, was used in the analyses.⁷⁶

The structural adequacy of a critical element can be expressed in terms of the "ductility ratio." The pertinent building code allows a mid-span ductility ratio of 3.0 and an end-point ratio of 10. *See* LBP-84-31, 20 NRC at 485. The highest such ratios calculated here were 2.2 (mid-span) and 2.9 (end-point). Tr. 8947-48, 9069-70. Anthony/FOE complain that the margin for the mid-span ductility ratio is not adequate. They also make related arguments that the "failure threshold" of a structure must be evaluated, and that the margins between the calculated overpressures and the design basis pressure for each structure are inadequate. *See* Table II, LBP-84-31, 20 NRC at 496. But as the Licensing Board correctly explained, such code values are not intended to express the ultimate failure threshold of a structure; they include "some *additional* unquantified safety margin." *Id.* at 486 (emphasis added). Thus, a structure "built to code" has an added margin of safety. Structures

⁷⁵ In this portion of their brief, Anthony/FOE again object to any reliance by the Board on overpressure calculations determined in accordance with the TNT conversion factor of Regulatory Guide 1.91 (Rev. 1). We will not revisit that discussion. *See* pp. 735-37, *supra*. We note, however, that PECo recalculated blast overpressures from a rupture of the Columbia gas pipeline by this method and derived data similar to those of the staff. LBP-84-31, 20 NRC at 483-84.

⁷⁶ Anthony/FOE also assert that the "as built" condition of the structures, rather than their design, should have been taken into account. Whether the Limerick facility has been built in accordance with its approved design, however, goes well beyond not only Anthony/FOE's contentions V-3a and V-3b, but also the Licensing Board's own expanded consideration of the effects of a pipeline explosion.

within the code values — such as those here — have still more margin and cannot be fairly characterized as inadequate.

Anthony/FOE assert that the Licensing Board erred in comparing the stresses on a structure caused by an earthquake, which operate through the ground, with those that would result from a pipeline explosion in the air. Based on PECO's analysis, the Board found that the overturning moment and the story shear associated with the design basis "safe shutdown earthquake" for Limerick were larger than those associated with the postulated explosions.⁷⁷ The Board thus concluded: "[s]ince the plant has been designed to withstand the safe shutdown earthquake loading values, there is more than adequate structural capacity to resist the forces associated with the postulated explosions." *Id.* at 487.

The Board did not err in making this comparison. Overturning moment and story shear are different types of "forces" that can be exerted on a structure. *See* Kuo, fol. Tr. 9043, at 8-9.⁷⁸ As a result, they can be expressed as numerical values. Once such a value is determined, the cause of the building response — i.e., an earthquake in the ground or a blast in the air — is irrelevant. Either a structure can withstand that moment or shear, or it cannot. Hence, comparison of values calculated from blast overpressures with those already accepted in connection with the seismic capability of the plant is not only valid, but useful. It simply provides yet another means of judging the structural integrity of the facility by reference to a known and accepted standard.

Anthony/FOE also claim that the Licensing Board ignored or did not adequately consider a variety of factors in connection with a pipeline explosion — to wit, dead weight as an additive to blast pressure on the roofs, vibratory load, temperature differentials, hydrostatic forces, differential settlement, failure of louver and roof openings, overturning of the cooling towers and transmission towers, and breach of the cooling tower basin. But intervenors' claim is seriously at odds with the Board's decision and the record. Each of these matters was fully considered by PECO and the staff, and the Licensing Board's decision contains extensive discussion on these subjects. *See* LBP-84-31, 20 NRC at 487-92. Inasmuch as Anthony/FOE challenge virtually none of the Board's findings in this regard, we need not repeat them here.⁷⁹ We add only that

⁷⁷ The safe shutdown earthquake is based on site-specific characteristics and "produces the maximum vibratory ground motion for which certain structures, systems, and components are designed to remain functional." 10 C.F.R. Part 100, Appendix A, § III(c).

⁷⁸ In engineering terminology, overturning moment and story shear are overall responses of a building to an external phenomenon.

⁷⁹ Anthony/FOE expressly object to one aspect of the Board's discussion of a postulated failure of certain louver and roof openings in the reactor building. The Board noted that, even if the pressure from

(Continued)

none of these factors was shown to present a threat to the integrity of any safety-related structure at Limerick.

Finally, Anthony/FOE contend that the issue of possible damage to the spray pond from missiles generated as a result of a pipeline explosion is unresolved. The evidence shows, however (and Anthony/FOE do not disagree), that whatever missiles might be generated would not affect the spray pond building, fixtures, or pipes leading to the fixtures. The only matter still “open” at the time of the hearing was the effect of a *tornado* on safety-related spray nozzles and piping within the pond — an issue not raised by any contention. PECO then had under way a probabilistic risk assessment of a tornado and its effects on this hardware, which the staff expected to evaluate. But the unrefuted testimony of both PECO and staff witnesses was that a blast wave from an explosion exerts force downward and thus would not lift up and carry away missiles that could affect the spray nozzles, as a tornado might. *Id.* at 492-93. *See* Tr. 8900-01, 9367-68. Thus, nothing directly pertinent to Anthony/FOE’s pipeline explosion scenario was or is “unresolved” by the Board’s decision.⁸⁰

D. Other Issues

Anthony/FOE contend that the extensive record developed in connection with their contentions V-3a and V-3b proves that the ARCO and Columbia pipelines pose a risk to the Limerick plant. In their view, it was the Licensing Board’s “function . . . to establish that accidental releases from the pipelines could cause explosions which could impact the plant[,]” and “duty . . . to eliminate this risk.” Anthony/FOE Brief at 1.

A licensing board’s function, however, is to oversee the *parties’* development of the record on contested issues and to issue an initial decision

an explosion were not absorbed in some other way (as PECO’s calculations showed it would be), a failed ventilation louver would allow the pressure inside the building to increase by no more than 0.016 psi and have a negligible effect. LBP-84-31, 20 NRC at 489. For a roof opening panel failure, the reactor building pressure would increase only about 0.01 psi. *Ibid.* Anthony/FOE argue that this obscures the real hazard, radioactive contamination of the outside air. While it is agreed that failure of the ventilation louver or roof opening will result in the reactor building being open to the outside air, a staff witness testified that ordinarily (and in this case) there would not be any airborne contamination in the reactor building that could be released. Tr. 9111-12, 9128-29. In agreeing with Anthony’s assertion that failure of the ventilation louver would leave the reactor building with an opening to the outdoors, PECO witness Boyer characterized this occurrence as “a maintenance problem.” Tr. 8967. In fact, the roof opening is specifically designed as a blowout panel to relieve overpressure inside the building. Tr. 8959.

⁸⁰ PECO subsequently completed its tornado PRA. The staff evaluated it and concluded that, subject to certain improvements in procedures, the pertinent design criteria were satisfied with respect to protection against such natural phenomena and the missiles that they might generate. *See* SSER-3 at 9-1 to 9-4; SSER-4 (May 1985) at 9-1 to 9-3.

containing the board's findings of fact and conclusions of law on the matters in controversy. See 10 C.F.R. §§ 2.718, 2.760, 2.760a.⁸¹ This does not mean that a board must stand mute during the hearing and ignore deficiencies in the testimony; it must, of course, " . . . satisfy itself that the conclusions expressed by expert witnesses on significant safety or environmental questions have a solid foundation." *South Carolina Electric and Gas Co.* (Virgil C. Summer Nuclear Station, Unit 1), ALAB-663, 14 NRC 1140, 1156 (1981), *review declined*, CLI-82-10, 15 NRC 1377 (1982). The Licensing Board more than fulfilled that obligation here, soliciting testimony on matters not even within the scope of the admitted contentions. See pp. 731, 737, *supra*.

A board is not obliged, however, to eliminate all risk that may be revealed in connection with a facility. "Reasonable assurance" that the plant will be operated safely and that public health, safety, and environmental concerns will be adequately protected is the standard by which a licensing board is to measure an application; a "risk-free environment" is not required. *Carstens v. NRC*, 742 F.2d 1546, 1557 (D.C. Cir. 1984), *cert. denied*, ___ U.S. ___, 86 L. Ed. 2d 694 (1985).⁸² Again, the record and Licensing Board decision here amply demonstrate reasonable assurance that the public health and safety are protected from the risks of a pipeline explosion at Limerick.⁸³

The Licensing Board's second partial initial decision, LBP-84-31, is *affirmed*, except insofar as it approves PECO's onsite emergency plan medi-

⁸¹ Anthony/FOE point out that, had it not been for their pursuit of the issue, the potential danger from the pipelines near Limerick would not have been analyzed as thoroughly. Anthony/FOE Brief at 1. That may well be true. Intervenor can therefore feel gratified that their participation in this proceeding has contributed to a greater demonstration of the Limerick facility's ability to withstand the postulated pipeline explosions.

⁸² The court went on to reject the notion that the Commission is required "to adopt wholesale the worst case scenario that a party may gloomily frame." *Carstens*, 742 F.2d at 1557.

⁸³ In view of our decision upholding the Licensing Board's disposition of contentions V-3a and V-3b, we need not address the specific relief requested by Anthony/FOE — relocation of the pipelines. See Anthony/FOE Brief at 1. We note, however, that the NRC does not have regulatory jurisdiction over pipelines; the Federal Energy Regulatory Commission and the states regulate various aspects of these entities. The NRC, of course, must approve the location selected for a nuclear power plant. Alternative site issues, however, can be raised only at the construction permit stage and not in connection with an operating license. See 10 C.F.R. §§ 51.106(c), (d).

cal arrangements. On that issue, we *reverse and remand* for further action consistent with this opinion.

It is so ORDERED.

FOR THE APPEAL BOARD

C. Jean Shoemaker
Secretary to the
Appeal Board

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

Alan S. Rosenthal, Chairman
Dr. W. Reed Johnson
Howard A. Wilber

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)**

October 24, 1985

The Appeal Board denies intervenor's application for a stay *pendente lite* of a Licensing Board decision (LBP-85-35, 22 NRC 514) in this operating license proceeding.

**RULES OF PRACTICE: STAY OF AGENCY ACTION
(CRITERIA)**

In passing upon stay requests, the following criteria are to be applied: whether the movant has made a strong showing that it is likely to prevail on the merits; whether the movant will be irreparably harmed in the absence of a stay; whether the granting of a stay would harm other parties; and where the public interest lies. 10 C.F.R. § 2.788(e). The same criteria are applied by the courts. See, e.g., *Virginia Petroleum Jobbers Ass'n v. FPC*, 259 F.2d 921 (D.C. Cir. 1958); *Washington Metropolitan Area Transit Comm'n v. Holiday Tours, Inc.*, 559 F.2d 841 (D.C. Cir. 1977).

RULES OF PRACTICE: STAY OF AGENCY ACTION (CRITERIA)

The second of the 10 C.F.R. § 2.788(e) factors — whether the movant will be irreparably harmed in the absence of a stay — is often the most important in determining the need for a stay. *See, e.g., Duke Power Co.* (Catawba Nuclear Station, Units 1 and 2), ALAB-794, 20 NRC 1630, 1633 (1984), *quoting Philadelphia Electric Co.* (Limerick Generating Station, Units 1 and 2), ALAB-789, 20 NRC 1443, 1446 (1984). *See also Public Service Co. of Indiana* (Marble Hill Nuclear Generating Station, Units 1 and 2), ALAB-437, 6 NRC 630, 632 (1977).

RULES OF PRACTICE: STAY OF AGENCY ACTION (CRITERIA)

The strength or weakness of the showing by the movant on a particular 10 C.F.R. § 2.788(e) stay factor influences how strong the showing on the other factors must be in order to justify the sought relief. *Public Service Co. of New Hampshire* (Seabrook Station, Units 1 and 2), ALAB-338, 4 NRC 10, 14 (1976). *See also Cuomo v. NRC*, 772 F.2d 972, 974 (D.C. Cir. 1985).

RULES OF PRACTICE: STAY OF AGENCY ACTION (IRREPARABLE INJURY)

A party applying for a stay is required to demonstrate that the claimed irreparable injury is both “certain and great.” *Cuomo*, 772 F.2d at 976, *quoting Wisconsin Gas Co. v. FERC*, 758 F.2d 669, 674 (D.C. Cir. 1985).

RULES OF PRACTICE: STAY OF AGENCY ACTION (IRREPARABLE INJURY)

Speculation about a nuclear accident does not, as a matter of law, constitute the imminent, irreparable injury required for staying a licensing decision. *Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), CLI-84-5, 19 NRC 953, 964 (1984), *citing New York v. NRC*, 550 F.2d 745, 756-57 (2d Cir. 1977) and *Virginia Sunshine Alliance v. Hendrie*, 477 F. Supp. 68, 70 (D.D.C. 1979).

APPEARANCES

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

Jay E. Silberg, Harry H. Glasspiegel, Michael A. Swiger, and Rose Ann C. Sullivan, Washington, D.C., for the applicants Cleveland Electric Illuminating Company, *et al.*

Colleen P. Woodhead for the Nuclear Regulatory Commission staff.

MEMORANDUM AND ORDER

On September 3, 1985, the Licensing Board rendered its Concluding Partial Initial Decision on Emergency Planning, Hydrogen Control and Diesel Generators.¹ That decision paved the way for the issuance of operating licenses for the two-unit Perry nuclear facility, subject to (1) compliance by the applicants with certain specified conditions imposed by the Board; and (2) the requisite findings by the Director of Nuclear Reactor Regulation on matters not placed in controversy before the Licensing Board.²

Intervenors Sunflower Alliance (Sunflower) and Ohio Citizens for Responsible Energy (OCRE) have appealed the September 3 decision.³ OCRE, but not Sunflower, has accompanied its appeal with an application under 10 C.F.R. 2.788 for a stay of the effectiveness of the decision *pendente lite*.⁴ According to OCRE, all four of the established criteria to

¹ LBP-85-35, 22 NRC 514.

² *Id.* at 588. See also 10 C.F.R. 50.57(a).

By virtue of 10 C.F.R. 2.764(f)(2), however, the Director may not authorize the operation of the facility at power levels above five percent of rated power without prior Commission approval following the conduct of an "immediate effectiveness" review. It is currently uncertain when that review will be completed. In this connection, applicants' counsel recently furnished us with a copy of an October 11, 1985 letter from an official of the lead applicant to the Director of Nuclear Reactor Regulation in which the Director was informed that Unit 1 of the facility "may be ready to load fuel as early as November 8, 1985." It would thus appear unlikely that that unit will be in a position to operate at above the five percent level prior to the turn of the year.

³ Both appeals are addressed to certain previously entered interlocutory orders as well.

The applicants also filed a notice of appeal from the decision. They subsequently withdrew the notice, however, upon obtaining Licensing Board clarification respecting the timing of two conditions imposed by the Board in the area of offsite emergency planning.

⁴ Motion for a Stay Pendente Lite (September 25, 1985) ["Stay Motion"]. A previously filed motion seeking the same relief was rejected as illegible. See Order of September 23, 1985 (unpublished). The specific difficulties were the size of the type employed and the clarity of the print. On the former score,

(Continued)

be applied in passing upon stay requests support the grant of such relief here.⁵ The applicants and the NRC staff argue otherwise and, accordingly, oppose the application.⁶ For the reasons stated below, we deny it.

A. The second section 2.788(e) stay criterion — whether OCRE has demonstrated that it will be irreparably injured unless its application for such relief is granted — commands our attention first because it is “often the most important in determining the need for a stay.”⁷ Most appeals present at least some close questions. Where no threat of irreparable injury is established, both the need for and the wisdom of our precipitous pronouncement on the merits of the appellant’s claims are doubtful at best.⁸

We now turn to OCRE’s specific allegations of irreparable injury.

although they do not explicitly prescribe a minimum type size, the Rules of Practice most assuredly implicitly mandate that the type be large enough to be read without incurring undue eye strain. See 10 C.F.R. 2.708(b).

⁵ Those criteria, set forth in 10 C.F.R. 2.788(e), 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.

The same criteria are applied by the courts. See, e.g., *Virginia Petroleum Jobbers Ass’n v. FPC*, 259 F.2d 921 (D.C. Cir. 1958); *Washington Metropolitan Area Transit Comm’n v. Holiday Tours, Inc.*, 559 F.2d 841 (D.C. Cir. 1977).

⁶ Applicants’ Answer to Ohio Citizens for Responsible Energy’s “Motion for a Stay Pendente Lite” (October 10, 1985) [“Applicants’ Response”]; NRC Staff Response in Opposition to the Motion for Stay filed by Ohio Citizens for Responsible Energy (OCRE) (October 9, 1985) [“Staff’s Response”].

⁷ See, e.g., *Duke Power Co.* (Catawba Nuclear Station, Units 1 and 2), ALAB-794, 20 NRC 1630, 1633 (1984), quoting *Philadelphia Electric Co.* (Limerick Generating Station, Units 1 and 2), ALAB-789, 20 NRC 1443, 1446 (1984). See also *Public Service Co. of Indiana* (Marble Hill Nuclear Generating Station, Units 1 and 2), ALAB-437, 6 NRC 630, 632 (1977):

The factor which has proven most crucial in our deliberations (as it often does in judicial ones) is the question of irreparable injury to the movants. It is the “established rule that a party is not ordinarily granted a stay of an administrative order without an appropriate showing of irreparable injury.” *Permian Basin Area Rate Cases*, 390 U.S. 747, 773 (1968).

⁸ If the stay application does not contain the requisite showing of irreparable injury, it is similarly unlikely that the third and fourth stay criteria (harm to other parties resulting from a grant of stay relief and public interest considerations) would call for affirmative action on the application. See *Catawba*, 20 NRC at 1635.

It need be added in this regard only that the proposition stated in the text is entirely consistent with our long-held view that “the strength or weakness of the showing by the movant on a particular factor influences principally how strong his showing on the other factors must be in order to justify the sought relief.” *Public Service Co. of New Hampshire* (Seabrook Station, Units 1 and 2), ALAB-338, 4 NRC 10, 14 (1976). In the same vein, the Court of Appeals for the District of Columbia Circuit recently observed in a case involving administrative action of this agency:

To justify the granting of a stay, a movant need not always establish a high probability of success on the merits. Probability of success is inversely proportional to the degree of irreparable injury evidenced. A stay may be granted with either a high probability of success and some injury, or vice versa.

Cuomo v. NRC, 772 F.2d 972, 974 (D.C. Cir. 1985). It reasonably follows that one who establishes *no* amount of irreparable injury is not entitled to a stay in the absence of a showing that a reversal of the decision under attack is not merely likely, but a virtual certainty.

1. OCRE maintains that operation of the Perry facility will expose the public to "routine non-natural radioactive emissions."⁹ In this connection, it offers the affidavits of Dr. Carl J. Johnson and Susan L. Hiatt. For his part, Dr. Johnson expresses the opinion that chronic exposure to the low levels of ionizing radiation that will be released during normal Perry operation will result in "carcinogenic damage to body cells" posing a "grave risk to the health of those living near" the facility and, further, that a "person having a history of cancer on both sides of the family is especially at risk."¹⁰ According to Ms. Hiatt's one-page affidavit, she is an OCRE member who lives in the vicinity of the Perry facility and has several other contact points with the area in close proximity to the facility site.¹¹ We are told, without elaboration, that "[t]here is a history of cancer on both [her] mother's and father's side of [her] family."¹²

As the Court of Appeals for the District of Columbia Circuit has twice emphasized in recent months, "[a] party moving for a stay is required to demonstrate that the injury claimed is 'both certain and great.'"¹³ It is readily apparent that neither affidavit amounts to such a showing.

To begin with, Dr. Johnson offers no authority whatever in support of his opinion that the radioactive effluents from normal plant operation pose a "grave" cancer risk to members of the public in the vicinity of the facility. Nor does he confront (any more than did OCRE below) the staff's conclusion in the Perry Final Environmental Statement that, even if subjected to the maximum possible exposure to the radioactive effluents associated with normal plant operation, an individual would incur a minimal risk of premature death from cancer — i.e., less than one chance in a million per each year of reactor operation.¹⁴ It appears that this estimate was derived from a report of the Advisory Committee on the Biological Effects of Ionizing Radiations of the National Academy of Sciences.¹⁵ Surely, if Dr. Johnson disagrees (as he presumably does)

⁹ Stay Motion at 7.

¹⁰ Affidavit of Dr. Carl J. Johnson (September 5, 1985), attached to Stay Motion, at 4. Dr. Johnson informs us that he possesses doctorates in both medicine and veterinary medicine, as well as a master's degree in public health. *Id.* at 1. Although going on to describe himself as "a recognized expert in the epidemiology of illness due to environmental pollutants such as radionuclides" (*ibid.*), he does not illumine the basis for that statement and makes no reference to either present or past professional undertakings.

¹¹ Affidavit of Susan L. Hiatt (September 19, 1985), attached to Stay Motion.

¹² *Ibid.*

¹³ *Cuomo*, 772 F.2d at 976, quoting *Wisconsin Gas Co. v. FERC*, 758 F.2d 669, 674 (D.C. Cir. 1985).

¹⁴ NUREG-0884, Final Environmental Statement for the Perry facility (August 1982) ["FES"] at 5-27.

¹⁵ *Id.* at 5-21. This report, entitled "The Effects on Populations of Exposure to Low Levels of Ionizing Radiation," was published in November 1972 and is frequently referred to as "BEIR I." As the FES further observes (at 5-23), the values for risk estimators employed by the staff

(Continued)

with the content of that report, it was incumbent upon him to explain why the report (and the staff's conclusion founded thereon) should be laid to one side in favor of the acceptance of his views. This is particularly so given the fact that his thesis would seem to apply with equal force to every operating nuclear power facility in the United States; i.e., he does not assert that the Perry facility will occasion uniquely high radiation releases in normal operation. Thus, to credit his sweeping claim that a grave cancer risk stems from routine radiation emissions would bring into question, without the slightest substantiation of that claim, the propriety of permitting operation of all nuclear power plants — not just Perry.¹⁶

Similarly, Dr. Johnson does not endeavor to supply a foundation for his belief that “genetic factors play a role in determining which persons in a population exposed to carcinogens will be afflicted with cancer” — the belief undergirding his conclusion that persons are at greater risk if there is a history of cancer on both sides of their family. Likewise, Ms. Hiatt's representation of her assertedly higher risk of cancer is not substantiated with the type of documentation on which we must base our decisions.

2. OCRE also claims that Perry operation will subject its members and the general public to the risk of “a severe nuclear reactor accident.”¹⁷ In common with the movant for a stay in *Catawba*, however, OCRE does not treat either “the manner in which the postulated accidents might be created [or] the probability of their occurrence.”¹⁸ Accordingly, as the like assertion in *Catawba*,¹⁹ the claim must be rejected for want of other than a purely conjectural basis.²⁰

3. Finally, OCRE is concerned that, unless a stay is issued, it may lose by reason of mootness its challenge to the Licensing Board's dismissal of its contention to the effect that the applicants should be required

are consistent with the recommendations of a number of recognized radiation-protection organizations, such as the International Commission on Radiological Protection (ICRP), the National Council on Radiation Protection and Measurement (NCRP), the National Academy of Sciences (BEIR III), and the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR).

¹⁶ The ten-page limitation on the length of stay applications imposed by 10 C.F.R. 2.788(b) is “exclusive of affidavits.” This being so, the limitation did not preclude a full exposition by Dr. Johnson of the foundation for the views set forth in his affidavit.

¹⁷ Stay Motion at 7.

¹⁸ 20 NRC at 1634.

¹⁹ *Ibid.*

²⁰ As the Commission has observed:

It is well-established that speculation about a nuclear accident does not, as a matter of law, constitute the imminent, irreparable injury required for staying a licensing decision. *Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), CLI-84-5, 19 NRC 953, 964 (1984), citing *New York v. NRC*, 550 F.2d 745, 756-57 (2d Cir. 1977) and *Virginia Sunshine Alliance v. Hendrie*, 477 F. Supp. 68, 70 (D.D.C. 1979).

to install an automated standby liquid control system to mitigate the consequences of an anticipated transient without scram.²¹ Even if it were warranted, that concern scarcely can be converted into a claim of irreparable injury in the absence, as here, of a demonstration that plant operation without the automated system would pose an immediate and serious threat to the health and safety of persons (such as OCRE members) in the vicinity of the plant.²² Additionally, should we ultimately agree with OCRE that the automated system contention was improperly dismissed, it is not clear that the fact that the plant was allowed to operate *pendente lite* would stand in the way of its obtaining relief on a remand to the Licensing Board for further consideration of the contention.

B. In light of the foregoing, it is unnecessary to consider at length the other three section 2.788(e) stay criteria. It is enough to note that OCRE's showing on none of them comes close to offsetting the absence of any demonstrated or discernible irreparable injury associated with plant operation during the pendency of its appeal. In this regard, OCRE may or may not ultimately prevail on the merits of its various challenges to Licensing Board findings and conclusions. That matter must await the full briefing and oral argument of the appeal. All we need or do decide now is that OCRE has not established the existence of such manifest Board error as would warrant our intercession at this early stage of the appellate process.

OCRE's stay application is *denied*.²³
It is so ORDERED.

FOR THE APPEAL BOARD

C. Jean Shoemaker
Secretary to the
Appeal Board

²¹ See LBP-84-40, 20 NRC 1181 (1984). Because the dismissal order was manifestly interlocutory, OCRE had to abide the event of an appealable decision before seeking our review.

²² See *Catawba*, 20 NRC at 1635.

²³ Also denied as moot is OCRE's October 15, 1985 Motion to Strike Portions of the Applicants' Response to the Stay Application. That motion is addressed to (1) the applicants' citation to prior decisions of a federal district court and this Board in which the worth of Dr. Johnson's testimony and views was discussed; and (2) certain affidavits submitted by the applicants in support of their opposition to OCRE's stay application. As seen, we have not cited, let alone relied upon, any of the assertedly objectionable material.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

**Gary J. Edles, Chairman
Dr. W. Reed Johnson
Christine N. Kohl**

In the Matter of

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

**METROPOLITAN EDISON COMPANY,
*et al.***

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

October 25, 1985

Acting on a referral by the Licensing Board of an intervenor's petition to reopen the proceeding, the Appeal Board (1) affirms the Licensing Board's ruling that that Board lacks jurisdiction to consider the petition and (2) declares its own lack of jurisdiction to consider it.

RULES OF PRACTICE: JURISDICTION (APPEAL BOARD)

If an appeal board has previously considered an issue and (by either the action or inaction of the Commission) the determination amounts to final agency action on that issue, the appeal board has no jurisdiction over a subsequent attempt to raise that matter once again. Such requests are, in general, more properly directed to the Director, Nuclear Reactor Regulation, even though other issues in the same proceeding may still be pending before the board. When an issue sought to be considered anew, or to be reconsidered, has a reasonable nexus to a discrete matter still pending before an appeal board, the board has jurisdiction over it.

Louisiana Power & Light Co. (Waterford Steam Electric Station, Unit 3), ALAB-792, 20 NRC 1585, 1588 (1984). See also *Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-782, 20 NRC 838, 841 (1984). The “reasonable nexus” test can be satisfied where the new issues overlap those pending before the board; a total identity or commonality of issues is not necessary. *Louisiana Power & Light Co.* (Waterford Steam Electric Station, Unit 3), ALAB-797, 21 NRC 6, 8-9 (1985).

MEMORANDUM AND ORDER

We have before us a petition to reopen this proceeding, filed with the Licensing Board by Marvin I. Lewis and referred to us by that Board. The petition seeks a reopening with regard to the so-called “Hartman Allegations . . . expanded to take in all aspects of leak rate,” as set forth in the following new contention:

Leak rates have been and are being measured erroneously. Erroneous leak rates allow the TMI #1 reactor to be operated outside technical specification limits, increasing danger of a major nuclear accident and reducing the public’s safety.¹

In support of his petition, Mr. Lewis relies on a September 6, 1985, memorandum from the Director, Division of Reactor Safety, NRC Region I, to the Director, Division of Licensing, Office of Nuclear Reactor Regulation (NRR), regarding leak rate test results obtained during a recent heatup of TMI Unit 1. This memorandum states that, although “evaporative losses” actually appear to be zero, this term is not in the TMI Unit 1 technical specifications. The memorandum accordingly goes on to recommend modification of the technical specifications. Mr. Lewis alleges that this is additional evidence of what he describes as a “continuing pattern of incompetence” by the licensee, its nuclear steam system supplier, and the Commission as well.² The licensee and the NRC staff oppose the petition.³

¹ Petition of Marvin I. Lewis, Intervenor, for A New or Expanded Contention Concerning the Hartman Leak Rate Allegations (September 19, 1985) at 4.

² *Id.* at 3.

³ See Licensee’s Response to the Petition of Marvin I. Lewis for a New Leak Rate Contention (October 4, 1985); NRC Staff’s Answer to Petition of Marvin I. Lewis, Intervenor, for a New or Expanded Contention Concerning the Hartman Leak Rate Allegations (October 9, 1985).

The Licensing Board denied the petition, finding it lacks jurisdiction to entertain it. The Board nonetheless referred it to us — not for review of *its* ruling, but rather for determination of whether *we* independently have authority to consider it.⁴ We conclude that we do not. We also affirm the Board's ruling as to its own jurisdiction.

In our *Waterford* opinion we addressed the matter of our authority to consider issues raised in a petition to reopen. We observed:

If we have previously considered an issue and (by either the action or inaction of the Commission) our determination amounts to final agency action on that issue, we have no jurisdiction over a subsequent attempt to raise that matter once again. Such requests are, in general, more properly directed to NRR. This is true despite the fact that other issues in the same proceeding may still be pending before us. On the other hand, when an issue sought to be considered anew, or to be reconsidered, has a reasonable nexus to the discrete matter still pending before us, we have jurisdiction over it.⁵

In response to a request for clarification of that opinion, we held that the "reasonable nexus" test could be satisfied where the new issues overlap those pending before us, because "a total identity or commonality of issues" is not necessary.⁶

In the instant case, we earlier completed appellate review of all but four matters. Specifically, we ordered the Licensing Board to conduct further hearings with regard to (i) the adequacy of the licensee's training program, (ii) the so-called Dieckamp mailgram, (iii) the Hartman allegations of falsification of leak rate data at Unit 2, and (iv) other allegations regarding falsification of leak rate data at Unit 1.⁷ The Commission, however, reversed our decision regarding the Unit 1 leak rate issue and decided that no hearing on that subject was warranted.⁸ The Commission also determined that the Hartman allegations concerning Unit 2 did "not raise a currently significant safety issue" so as to require further hearings in this proceeding.⁹ Nevertheless, it decided to institute a sepa-

⁴ Licensing Board Memorandum and Order of October 15, 1985 (unpublished).

⁵ *Louisiana Power & Light Co.* (Waterford Steam Electric Station, Unit 3), ALAB-792, 20 NRC 1585, 1588 (1984). See also *Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-782, 20 NRC 838, 841 (1984).

⁶ *Louisiana Power & Light Co.* (Waterford Steam Electric Station, Unit 3), ALAB-797, 21 NRC 6, 8-9 (1985).

⁷ ALAB-738, 18 NRC 177 (1983) (Hartman allegations); ALAB-772, 19 NRC 1193 (1984) (training, Dieckamp mailgram, and Unit 1 leak rate data falsification).

⁸ CLI-85-2, 21 NRC 282, 306-14, *reconsideration denied*, CLI-85-7, 21 NRC 1104 (1985).

⁹ *Id.* at 304-05.

rate proceeding with regard to certain aspects of the Hartman allegations.¹⁰ That brought to an end the adjudicatory consideration in this proceeding of allegations concerning falsification of leak rates (including the Hartman allegations) and left pending only the issues of licensed operator training and the Dieckamp mailgram.¹¹

It is not entirely clear whether Mr. Lewis is concerned with an assertedly ongoing pattern of leak rate problems — of which the new information is simply another example — or a wholly new matter (or both). If it is the former, the Commission has already taken final action on such matters and determined that they shall not be evaluated in this proceeding. If his petition raises a new concern, no reasonable nexus to the two discrete matters still pending before us is asserted or apparent. In either circumstance, we lack authority to consider the issue raised in the petition.¹²

¹⁰ *Id.* at 305-06.

¹¹ The Commission subsequently lifted the order directing that Unit 1 remain shut down and permitted resumption of operations. CLI-85-9, 21 NRC 1118, *aff'd*, *Three Mile Island Alert, Inc. v. NRC*, 771 F.2d 720 (3d Cir. 1985).

In response to our remand, the Licensing Board has issued LBP-85-15, 21 NRC 1409 (1985), and LBP-85-30, 22 NRC 332 (1985), resolving both the training and Dieckamp mailgram issues in the licensee's favor. Appeals from those decisions were timely filed but have since been withdrawn. Our *sua sponte* review, however, has not yet been completed. *See* Appeal Board Order of October 21, 1985 (unpublished).

¹² *Waterford*, ALAB-792, 20 NRC at 1588, and ALAB-797, 21 NRC at 8-9.

As for the Licensing Board's ruling concerning its own lack of jurisdiction in this matter, we affirm. Its jurisdiction over *all* matters in this proceeding ceased with the filing of an appeal from its last decision on the Dieckamp mailgram.¹³

The petition of Marvin I. Lewis is *dismissed*.¹⁴
It is so ORDERED.

FOR THE APPEAL BOARD

C. Jean Shoemaker
Secretary to the
Appeal Board

¹³ See ALAB-699, 16 NRC 1324, 1326-27 (1982).

¹⁴ Several other matters are noteworthy. First, the instant case is a "special proceeding" in which the Commission has directed adjudicatory consideration of only selected issues. See CLI-80-5, 11 NRC 408 (1980). It is not clear that the matter Mr. Lewis seeks to raise falls within those designated by the Commission for adjudicatory examination. Second, the Licensing Board previously ruled that Mr. Lewis had not demonstrated the requisite standing to intervene in this proceeding, although it nonetheless allowed him to participate with respect to a contention dealing with the adequacy of the TMI filter system for radioactive effluents, an issue not advanced by any other intervenor. See LBP-81-32, 14 NRC 381, 392 n.4 (1981). Given our disposition of the petition as noted above, however, we need not determine whether the issue he now seeks to raise is actually embraced within the matters delegated to the adjudicatory boards by the Commission, or whether he has the requisite standing to raise it.

Finally, we note that the September 6 memorandum does not appear to raise any genuine safety question. Indeed, it indicates that the current leak rate at Unit 1 is "essentially zero" and suggests no safety concerns on the part of the staff.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

**Peter B. Bloch, Chairman
Dr. Kenneth A. McCollom
Dr. Walter H. Jordan
Herbert Grossman, Esq.**

In the Matter of

**Docket Nos. 50-445-OL&OL-2
50-446-OL&OL-2
(ASLBP No. 79-430-06-OL)**

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

October 2, 1985

In this Memorandum, the Board clarifies its previous order in which it stated that it might not "accept" evidence submitted by Applicants based on the work of the Comanche Peak Response Team, stating that the degree of independence of that Team would affect the weight of the evidence and not whether it would be received into evidence.

RULES OF PRACTICE: EVIDENCE

Studies of plant quality may be admitted into evidence even if the study group was not independent of plant management. Lack of independence of a study group may affect whether a Board will "accept" the evidence because it affects the weight to be accorded to the evidence.

QUALITY ASSURANCE/QUALITY CONTROL

The extent to which management may not have properly controlled plant quality during construction may affect the required intensity of review of the finished construction in order to demonstrate the adequacy of construction.

MEMORANDUM AND ORDER (Applicants' Motion for Modification)

Memorandum

Applicants' Motion for Modification, filed September 25, 1985, shall be granted in part.

We agree with Texas Utilities Electric Company, *et al.* (Applicants) that the degree of independence of the Comanche Peak Response Team (CPRT) affects the weight of the evidence and not whether it would be received into evidence. See *The Dallas Morning News* article of August 30, 1985 (at 16A) cited by Applicants.

We find that the remainder of our Memorandum and Order dealing with the way in which management has exercised its responsibility requires neither modification nor correction in response to Applicants' motion. The assessment of plant quality is a complex matter. There are allegations of a pattern of construction and design deficiencies. A determination concerning how management has exercised its responsibility for the quality of design and construction and the adequacy of QA/QC would, at the very least, affect the necessary scope and intensity of review, including sample sizes.

With respect to *sua sponte* matters, our view of our responsibilities differs from that of Applicants. In particular, the timeliness factors that affect us are different from those affecting intervenors. Intervenors must submit new issues in a timely manner when information relevant to those matters raises their suspicions. It is not, on the other hand, appropriate for a Licensing Board to act on suspicion. We wait. We hear the presented evidence. We declare issues *sua sponte* when the evidence suggests the necessity for our doing so.

Our unwillingness to act on suspicion is tempered by our awareness that in complex litigation it may be proper to discuss our views, in a preliminary and nonbinding manner, in order to assist the parties in anticipating their evidentiary needs. This can avoid the extensive delay that

might arise if our views came as a surprise to a party later in the litigation. Hence, we prefer to put the parties on notice of our preliminary views — providing them with a fair opportunity to assemble and present relevant evidence.

At the present time, the way in which management exercised its responsibility for the construction of Comanche Peak is relevant to the compiling of an adequate record about plant quality. In addition to the present significance of this information, we will consider the implications for the safe operation of the plant of whatever we learn from this relevant evidence.

We expect Applicants, either in the hearing context or outside of it, to address management's responsibility in a careful fashion that reflects their concern for the public safety. We expect to be apprised of any documents that reflect the way in which management exercises this responsibility.

Whether or not Applicants harassed workers or otherwise deviated from Appendix B requirements, as alleged, affects our assessment of the adequacy with which QA/QC observed the quality of the plant. In assessing the significance of QA/QC deficiencies and the remedies that might be appropriate with respect to such deficiencies, we would be concerned were we to conclude that *present* management has difficulty assessing and learning from management's previous errors. Consequently, should carefulness be missing from Applicants' studies of their own management behavior (or should Applicants fail to develop an adequate understanding of their own behavior), we would consider the implications of that lack of concern.¹

To the extent that the CPRT does not assess management actions, including actions with respect to this litigation, we are hopeful that the Staff will rise to fill that void. If not, we will need to consider whether to declare a *sua sponte* issue, considering all the evidence before us as this case is developed.

Since Applicants have withdrawn their summary disposition motions, we will not act on those motions.² Typically, when a motion is withdrawn it becomes moot. However, the submission of these summary disposition documents may reflect on management's ability to understand and

¹ Of course, to the extent that the evidence might indicate that Applicants' QA/QC program was adequate, the need for management to demonstrate an appreciation for its own deficiencies would be diminished.

² Although Applicants appear to be withdrawing *all* their summary disposition motions, including those we have already acted on, we do not interpret their motion to apply to withdrawal of motions covered by final decisions of the Board. If we are incorrect in this interpretation, Applicants should notify us promptly, stating why they would have us withdraw decisions that we have already issued.

control the quality of design.³ The affidavits were submitted for our formal consideration. To the extent that the evidence was incomplete or misleading, we still expect Applicants to fulfill their obligation to correct our record. If necessary, they should explain the reason for the incomplete or misleading affidavits.

Order

For all the foregoing reasons and based on consideration of the entire record in this matter, it is, this 2nd day of October 1985,

ORDERED:

Applicants' September 25, 1985 Motion for Modification of our order of August 29, 1985, is granted in part — by clarification in the accompanying Memorandum of the Board's concern about the independence of the CPRT. In all other respects, the Motion is denied.

**FOR THE ATOMIC SAFETY AND
LICENSING BOARD**

**Peter B. Bloch, Chairman
ADMINISTRATIVE JUDGE**

Bethesda, Maryland

³ We note that our December 1983 Memorandum and Order, LBP-83-81, 18 NRC 1410 at 1452 concluded, in part, that "[t]he record before us casts doubt on the design quality of Comanche Peak, both because applicant has failed to adopt a system to correct design deficiencies promptly and because our record is devoid of a satisfactory explanation for several design questions raised by intervenors." Nothing subsequently presented to us, up to this time, has detracted from this conclusion.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

**Herbert Grossman, Chairman
Dr. A. Dixon Callihan
Dr. Richard F. Cole**

In the Matter of

**Docket Nos. 50-456-OL
50-457-OL
(ASLBP No. 79-410-03-OL)**

**COMMONWEALTH EDISON COMPANY
(Braidwood Nuclear Power Station,
Units 1 and 2)**

October 4, 1985

The Licensing Board grants a protective order providing for confidential treatment of the names and otherwise identifying information of Intervenors' quality assurance witnesses to be disclosed to the other parties during discovery.

RULES OF PRACTICE: PROTECTIVE ORDER

The Board weighs the benefit of encouraging confidential deposition testimony upon the *prima facie* showing of its significance to the proceeding and the witnesses' reluctance to otherwise testify for supportable reasons, against the detriment of inhibiting public access to the information and the cumbersome procedures that a protective order necessitates, and finds the balance in favor of issuing the protective order.

MEMORANDUM AND ORDER (Granting Protective Order)

Memorandum

I. INTRODUCTION

Intervenors Bridget Little Rorem, *et al.*, have moved for an order providing for confidential treatment of the names and otherwise identifying information regarding prospective witnesses on Intervenors' Quality Assurance contention. Intervenors seek the entry of a protective order limiting the disclosure of such identifying information during the course of this litigation. The order sought would confer confidentiality protections only during the present discovery phase of these proceedings (although the protections afforded would continue thereafter), but no request is now made for a ruling on *in camera* evidentiary hearings that might follow, which Intervenors submit (Intervenors' Motion at 7-8) would be premature and speculative at this time and may well not ultimately be required.

Intervenors seek confidential treatment at this time for eleven present and former L.K. Comstock quality control inspectors and, as necessary, for other prospective witnesses to be identified by Intervenors at a later date. The protective order would provide for limited disclosure of names and identifying information strictly on a "need to know" basis as required for participation by a party in the proceeding. Disclosure of such protected information would be limited to persons who have executed affidavits of nondisclosure to be filed with the Board and available to the parties. Although Intervenors appended to their motion a copy of a form of protective order and affidavit of nondisclosure that was approved by the Commission with regard to a security plan in *Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), CLI-80-24, 11 NRC 775 (1980), Intervenors submit that a less elaborate order and affidavit would effectively meet the needs for confidential treatment here. Intervenors would undertake to negotiate the contents of such an order and affidavit with the other parties if this motion is granted.

Applicant and NRC Staff oppose the motion.

We grant the motion and authorize Intervenors to negotiate the contents of the order and affidavit with the other parties, to be submitted to the Board for approval. If an agreement is not forthcoming, Intervenors shall submit a proposed order and affidavit to the Board.

II. FACTUAL BASIS FOR INTERVENORS' MOTION

Intervenors summarize the factual claims of harassment and fear of reprisal in their motion and rely upon an unexecuted affidavit of one Comstock QC inspector, that was appended to Intervenors' prior motion, of July 12, 1985, concerning the protective order. The unexecuted affidavit indicates that the affiant QC inspector has personal knowledge of widespread intimidation, harassment and retaliation at Comstock; has had extensive discussions with at least thirty other Comstock QC inspectors, who have knowledge of harassment and intimidation by Comstock management and who, he believes, would cooperate with the Licensing Board; and has spoken to at least ten Comstock QC inspectors, who were eager to present such testimony and provide documentation, but had expressed fear of retaliation based upon harassment which they have already experienced. According to Intervenors, however, the affiant has become fearful of being fired by Comstock management if he takes any further voluntary affirmative steps in this proceeding such as executing the affidavit, and has consequently not signed it. As part of their factual basis for the motion, Intervenors also refer to the finding of a U.S. Department of Labor area director sustaining an employee's complaint of unlawful discrimination by Comstock in violation of the employee protection provisions of the Energy Reorganization Act of 1974, 42 U.S.C. § 5851, and to a March 29, 1985 complaint to the NRC by twenty-four Comstock QC inspectors of harassment and technical concerns, including threats of physical violence by a Comstock supervisor. Intervenors further state that, as directed by the Board, after the July 23, 1985 prehearing conference they communicated further with each of previously identified sixteen Comstock QC inspectors and that eleven of the sixteen expressed fear of reprisal or discrimination, requested confidential treatment of their names, and asked Intervenors to seek a protective order providing for the maximum protection available even where absolute confidentiality could not be secured.

III. DISCUSSION

In opposing Intervenors' motion for protective order, Applicant and Staff rely heavily upon *Kansas Gas and Electric Co.* (Wolf Creek Nuclear Generating Station, Unit 1), ALAB-327, 3 NRC 408 (1976), as establishing the standards for granting a protective order for withholding information from the public. According to Applicant (Applicant's Response at 3) and Staff (Staff's Response at 2), the Appeal Board adopted a four-part analysis requiring that a party seeking to protect information

from public disclosure must demonstrate: (1) that the information is of a type customarily held in confidence; (2) that the information has in fact been kept confidential by its originator; (3) that the information is not available from public sources; and, (4) that there is a rational basis for holding the information confidential.

We do not find the *Wolf Creek* standards, which involve the protection of proprietary information, to be of much assistance in determining whether the public interest would be served by the issuance of an order to protect the confidentiality of prospective witnesses. Nevertheless, Intervenor's showing appears to satisfy the four requirements: (1) We take official notice of the fact that the NRC Staff and Atomic Safety and Licensing Boards (whether or not in published orders) have customarily granted confidential treatment to quality control inspectors who would otherwise refuse to come forward with information concerning harassment and intimidation for fear of reprisal by the company. (2) The names of the prospective witnesses have been kept confidential, to the extent of being disclosed only to a more limited class than under the proposed protective order. (3) The information is not currently available to those who would not receive it under the protective order. And, (4) there is a rational basis for treating the information confidentially, if we are to believe the representations by Intervenor that the prospective witnesses would be fearful of coming forward with their information without confidentiality because of past incidences of harassment and intimidation, including the three instances of individual reprisal enumerated in Intervenor's motion (at 3-5).

The situation here stands in stark contrast to that of *Houston Lighting and Power Co.* (Allens Creek Nuclear Generating Station, Unit 1), ALAB-535, 9 NRC 377 (1979), upon which Applicant and Staff rely so heavily to deny the request for confidentiality. In *Allens Creek*, the Appeal Board denied "standing" to an intervenor organization that sought to base its representational standing on the residence of a member in close proximity to the facility site, whose name the organization would not disclose to the parties or the Board. The organization proposed submitting an affidavit by its attorney attesting to the proper standing. In rejecting this approach, the Appeal Board noted that such a procedure would deny the Board and the other parties the right "to determine *for themselves*, by independent inquiry if thought warranted, whether a basis existed for a formal challenge to the truthfulness of the assertions" of intervenor. 9 NRC at 393 (emphasis in original).

Here, the names of the protected witnesses would be disclosed to the other parties and the Board, and the parties would have every right to depose these witnesses. All of the assertions made in Intervenor's

motion and in the unexecuted affidavit attached to Intervenor's prior motion could be tested by the other parties.

The Board does not favor conferring confidentiality on witnesses or information. The main detriment is not to the ability of the parties to marshal their known witnesses and information to counter unfavorable confidential testimony. The parties, after all, will have whatever information is disclosed during the confidential discovery, on a "need to know" basis. Rather, the price that will be paid is in not having the confidential information disclosed to the public so that further information, unknown to the parties at this time, might become available to them and the Board. In that respect, we can only surmise that Intervenor's case would be harmed more than that of the other parties by having the information disclosed to the parties during discovery kept confidential from the public, because of Intervenor's more limited access to direct information about practices on the site. But, be that as it may, we do not see any great harm in granting this limited confidentiality at this discovery stage, considering that, while information gleaned through discovery is legally accessible to members of the public, it is rarely disseminated to them.

On the other hand, if confidentiality is not offered at this point, we risk losing the testimony of a number of witnesses who might make a valuable contribution to the hearing record according to the *prima facie* showing made by Intervenor.

We are further persuaded from Intervenor's motion that Intervenor has made some effort at informing the prospective witnesses of the limited nature of the confidentiality that would be bestowed by the protective order and the risks attendant upon maintaining their secrecy, as opposed to public disclosure and the full protections that might be afforded them under the Energy Reorganization Act of 1974, 42 U.S.C. § 5851. We are not convinced that their choice of limited confidentiality, rather than full public disclosure, is in their best interest. However, we are not fully knowledgeable about their working conditions. It is possible that any perceived threats to their employment security might emanate more from fellow employees and low-level supervisors who might not become privy to the confidential discovery, than from higher-level employees who would receive that information on a "need to know" basis.

We make no determination that the prospective witnesses should be in fear of reprisal for testifying or that they have wisely chosen to seek confidentiality. We simply weigh the benefit of encouraging their testimony, upon the *prima facie* showing made by Intervenor of its significance to this proceeding and the witnesses' reluctance to testify otherwise for supportable reasons, against the detriment of inhibiting public access to the information and the cumbersome procedures that a protec-

tive order necessitates, and find the balance in favoring of issuing the protective order.

Order

For all the foregoing reasons and based upon a consideration of the entire record in this matter, it is, this 4th day of October 1985,

ORDERED

- (1) That Intervenors' motion for a protective order is *granted*;
- (2) That Intervenors' counsel is directed to negotiate the form and substance of the protective order and accompanying affidavit of non-disclosure; and
- (3) That Intervenors are directed to submit a proposed protective order and affidavit subsequent to their negotiation with the other parties, with or without agreement.

**FOR THE ATOMIC SAFETY AND
LICENSING BOARD**

**Herbert Grossman, Chairman
ADMINISTRATIVE JUDGE**

October 4, 1985
Bethesda, Maryland

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

**Peter B. Bloch, Chairman
Dr. Kenneth A. McCollom
Dr. Walter H. Jordan
Herbert Grossman, Esq.**

In the Matter of

**Docket Nos. 50-445-OL&OL-2
50-446-OL&OL-2
(ASLBP No. 79-430-06-OL)**

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

October 31, 1985

In this Memorandum and Order, the Licensing Board rules on various procedural matters.

RULES OF PRACTICE: DISCOVERY; SEPARATE DOCKETS

When two separate dockets for an operating license case are interrelated, discovery filed in one docket should be considered filed in both and responses should be made unless the request is irrelevant to both dockets.

RULES OF PRACTICE: EVIDENCE; SEPARATE DOCKETS

When two separate dockets for an operating license case are interrelated, evidence filed in one docket should be considered filed in both and may be relied on in the other docket if it is relevant.

RULES OF PRACTICE: MULTIPLE REPRESENTATIVES OF PARTIES

Multiple representatives of a party should coordinate their cases.

RULES OF PRACTICE: DISCOVERY

When a case is unfolding gradually because of a major study that is under way, it is appropriate for a party to request documents that have not yet been created; such documents should be supplied as they become available.

RULES OF PRACTICE: DISCOVERY

Parties should exchange information voluntarily. Also, when a party believes that discovery requests made of it seem too broad, they should be narrowed by a rule of reason and responded to in the narrowed form.

QUALITY ASSURANCE: DESIGN

Errors in design documents are an independent concern, regardless of whether they may be corrected before the plant is completed. Although errors may be made, significant errors should be promptly identified, documented, and corrected with reasonable speed. When Applicants become aware of deviations from these principles, they should investigate the root cause of the deviations.

TECHNICAL ISSUE DISCUSSED

Quality Assurance for Design.

MEMORANDUM AND ORDER **(Procedural Rulings; Board Concern About QA for Design)**

Memorandum

This Memorandum addresses issues raised in the course of the discovery process that is under way and it also raises a Board concern arising out of a Board notice of a meeting between Staff and the Applicants about pumps and valves.

I. PROCEDURAL MATTERS

On October 25 to 28 the parties responded to discovery matters raised by the Board in an off-the-record telephone conference held on October 15, 1985. In that conference, the Boards asked the parties to respond to the following statement:

This is a single case: (a) in which CASE's representatives should make a good faith effort to coordinate their discovery activities; (b) in which Applicants should provide more specific responses to discovery, identifying prior responses whenever they believe that they have been subject to a redundant request, and (c) in which objections as to relevance may not be restricted to relevance to a particular docket.

Applicants disagree that this is a single case. To the extent that there are two separate Boards with separate jurisdiction, based on the Notice of Hearing for each case, Applicants are correct. However, as other parties have pointed out, the cases are richly intertwined. As a consequence there are matters occurring in one docket that may be relevant to the other docket. To that extent, the two Boards agree that discovery requests filed in one docket shall be deemed to be filed in the other docket as well. Hence it will not be necessary for either Board to make narrow procedural rulings whose only consequence would be refiling in the other docket.

With respect to evidence, it also is obvious that material in one docket may be relevant in the other. The Board has discussed this question with respect to paint quality assurance, for example. To the extent that there may be a pervasive breakdown in paint quality assurance, this appears to be relevant to the question of whether paint quality assurance inspectors or Mr. Lipinski may have been subjected to harassment or intimidation. Thus, technical questions in docket 1 may bear on issues in docket 2.

Since the dockets are factually intertwined, a party may wish to rely on evidence from the other docket. We consider it preferable to permit such reliance rather than to require refiling the evidence in the second docket.

The extent to which a party in one docket relies on evidence in the other docket will be revealed when the party files proposed findings of fact.¹ Hence, there will be no fair notice problem. Lawyers in both dockets must, therefore, be alert to implications for the other docket. We

¹ Given the way in which the Boards have determined that this case may be considered a single case for purposes of discovery, there is no need for us to clarify the scope of Docket 2, as Staff requests. Docket 2 deals with harassment and intimidation — terms bearing a natural meaning. We also recall having commented on the meaning of these terms previously.

will consider evidence relevant to one docket to be available for citation in the other docket, providing that it is relevant to the issues in the second docket.

We note that *both* parties have multiple representatives who should coordinate their discovery activities, including their responses to discovery. Similarly, both parties should identify particular prior responses when they respond to an interrogatory or document request by claiming to have responded to discovery in the other docket.

To the extent that Applicants have objected to discovery requests because they refer to documents not yet in existence, we do not expect to honor that objection. If there are no documents of a requested type available, Applicants should say so. Then, given the gradually unfolding nature of this case, they should update their response periodically until the period of discovery is closed by Board order, pursuant to this Order of the Board and to 10 C.F.R. § 2.740(e)(3).

We continue to encourage cooperation among the parties concerning the informal exchange of information. To the extent that any of the parties have objected to the participation of other parties in meetings to exchange information, we are hopeful that a more cooperative attitude may prevail in the future. Each of the parties has demonstrated the ability and willingness to participate in constructive dialogue. We are hopeful that each of the parties will keep this in mind and will not only encourage cooperation but will seek to learn from and benefit from the contributions of the other parties.

In the interest of efficiency, we require parties faced by a discovery request considered to be overly broad to explain why the request is too broad and, if feasible, to interpret the request in a reasonable fashion and to supply documents (or answer interrogatories) within the realm of reason.

II. STRESS ALLOWABLES FOR ACTIVE VALVES

The Board in the principal docket has discussed the Summary of Meeting Held on September 17, 1985 — for NRC/TUGCO to Discuss the Potential Deviation from FSAR Commitment on Stress Allowables for Active Valves (filed with us October 17, 1985). We are concerned that the problem discussed in that meeting should be pursued further with respect to the Board's findings on Quality Assurance for Design, set forth in LBP-83-81, 18 NRC 1410, 1428 (1983); LBP-84-10, 19 NRC 509, 513 (1984) (“[t]here has been no recognition that errors in design documents are an independent concern, regardless of whether they may be corrected before the plant is completed. . . . Although errors may be

made, significant errors . . . should be promptly identified, 'documented,' and corrected with reasonable speed.")

In particular, we are concerned that there may not have been a procedure to document deficiencies in specifications detected by vendors, that there apparently was no documentation of or prompt followup of such deficiencies in this instance and that whatever system existed to control the quality of design documents did not detect that specifications had deviated from FSAR commitments. We expect the Applicants or the Staff to investigate the implications of these problems for the adequacy of the system for controlling the quality of design documents.

Order

For all the foregoing reasons and based on consideration of the entire record in this matter, it is, this 31st day of October 1985,

ORDERED:

1. Discovery requests filed in one docket shall be deemed to be filed in the other docket as well.
2. Evidence relevant to one docket is available for citation in the other docket.
3. Both parties have multiple representatives who should coordinate their discovery activities.
4. Both parties should identify particular prior responses when they respond to an interrogatory or document request by claiming to have responded to discovery in the other docket.
5. Parties faced by a discovery request considered to be overly broad should explain why the request is too broad and, if feasible, should interpret the request in a reasonable fashion and supply documents (or answer interrogatories) within the realm of reason.
6. To the extent that this Order affects the validity of discovery responses or objections that have already been filed, a party may promptly file an amended response.

**FOR THE ATOMIC SAFETY AND
LICENSING BOARDS**

**Peter B. Bloch, Chairman
ADMINISTRATIVE JUDGE**

Bethesda, Maryland

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

Alan S. Rosenthal, Chairman
Gary J. Edles
Dr. Reginald L. Gotchy

In the Matter of

Docket Nos. 50-338-OLA-1
50-339-OLA-1

**VIRGINIA ELECTRIC AND POWER
COMPANY**

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

November 1, 1985

After conducting its *sua sponte* review, the Appeal Board affirms the Licensing Board's initial decision (LBP-85-34, 22 NRC 481 (1985)) authorizing the Director of Nuclear Reactor Regulation to issue a license amendment for the North Anna nuclear facility, Units 1 and 2, to permit the receipt and storage of 500 spent fuel assemblies from the Surry Power Station.

MEMORANDUM AND ORDER

On September 3, 1985, the Licensing Board issued its initial decision authorizing the Director of Nuclear Reactor Regulation to issue a license amendment for the North Anna nuclear facility, Units 1 and 2, to permit the receipt and storage of 500 spent fuel assemblies from the Surry Power Station. LBP-85-34, 22 NRC 481. No appeals from the

Board's decision have been filed. We have therefore conducted our customary *sua sponte* examination of the initial decision and relevant portions of the underlying record. That examination has disclosed no error warranting corrective action with regard to the Board's ultimate determination in the applicant's favor. For this reason, we *affirm* the Board's decision.¹

It is so ORDERED.

FOR THE APPEAL BOARD

C. Jean Shoemaker
Secretary to the
Appeal Board

¹ See generally *Arizona Public Service Co.* (Palo Verde Nuclear Generating Station, Units 1, 2 and 3), ALAB-713, 17 NRC 83, 85 (1983).

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

Christine N. Kohl, Chairman
Gary J. Edles
Dr. Reginald L. Gotchy

In the Matter of

Docket Nos. 50-352-OL
50-353-OL

PHILADELPHIA ELECTRIC COMPANY
(Limerick Generating Station,
Units 1 and 2)

November 19, 1985

The Appeal Board, finding that it does not have jurisdiction over intervenors' motion to reopen the record, refers the motion to the Commission for its consideration.

RULES OF PRACTICE: JURISDICTION

Jurisdiction to rule on a motion to reopen on certain issues, filed after exceptions have been taken to a Licensing Board decision on those issues, rests with the appeal board rather than the licensing board. *Metro-politan Edison Co.* (Three Mile Island Nuclear Station, Unit No. 1), ALAB-699, 16 NRC 1324 (1982).

RULES OF PRACTICE: JURISDICTION

Jurisdiction to rule on a motion to reopen on certain issues, filed after petitions for review of an Appeal Board decision on those issues have been filed with the Commission, no longer rests with the appeal board.

APPEARANCE

Robert L. Anthony, Moylan, Pennsylvania, intervenor pro se and for intervenor Friends of the Earth.

MEMORANDUM AND ORDER

On October 22, 1985, we issued ALAB-819, 22 NRC 681, completing our appellate review of numerous issues raised in connection with the Licensing Board's second partial initial decision in this proceeding. *See* LBP-84-31, 20 NRC 446 (1984). Among the issues we addressed was the Board's disposition of contentions V-3a and V-3b, raised by intervenors Robert L. Anthony and Friends of the Earth (Anthony/FOE). Those contentions concerned the possible effects of a gas or petroleum pipeline explosion on structures at the Limerick nuclear plant. We considered the many arguments raised on appeal by Anthony/FOE and found none to have merit. We thus affirmed the Licensing Board's determination that the Limerick structures are adequate to withstand the postulated explosion scenarios. *See* ALAB-819, 22 NRC at 730-41.

Anthony/FOE, in a motion filed November 12, 1985, now ask us to reopen the record on contentions V-3a and V-3b and to stay the operation of Limerick Unit 1. The basis of their motion is an October 31 letter from applicant Philadelphia Electric Company (PECo), enclosing a recent Licensee Event Report (LER). That report (No. 85-080) notes a potential condition not previously covered by the plant's operating or emergency procedures — a postulated cooling tower basin break with resultant entry of water into the lower elevations of the plant control structure due to the present status of Unit 2 construction and grading. Such an event could affect the Control Structure Chilled Water Systems (used to remove heat from areas such as the main control room through the heating, ventilation, and air conditioning system), but assertedly would not prevent the safe shutdown of the plant. According to Anthony/FOE, this new information undermines the Licensing Board's conclusions regarding the ability of safety-related structures to withstand such flooding. *See* LBP-84-31, 20 NRC at 490-92. Because ALAB-819 affirms the Board's partial initial decision, Anthony/FOE seek our reconsideration of ALAB-819 in light of the information contained in LER No. 85-080. We no longer have jurisdiction over matters relating to contentions V-3a and V-3b, however, and therefore refer Anthony/FOE's motion to the Commission for its consideration.

As we have noted on several past occasions, the Commission's Rules of Practice provide no ready answer to questions concerning the division of authority and jurisdiction among the various decisionmaking entities within the NRC. Similarly, we could locate no case precedent directly applicable to the situation presented by Anthony/FOE's motion. Our decision in *Metropolitan Edison Co.* (Three Mile Island Nuclear Station, Unit No. 1), ALAB-699, 16 NRC 1324 (1982), however, addresses a closely related issue. In that case, an intervenor filed a motion with the Licensing Board, seeking reopening of certain issues that Board had decided previously in one of several partial initial decisions. Because intervenor's motion was submitted after the filing of exceptions to that Licensing Board decision — thereby initiating Appeal Board review — we concluded (in agreement with the Licensing Board) that jurisdiction over the motion to reopen rested with us rather than the Licensing Board.

That reasoning provides a fair and workable solution to the problem here. Two petitions for review of ALAB-819 have already been filed with the Commission (one by PECO on November 5, and the other by intervenor Limerick Ecology Action on November 8), thereby triggering the Commission's consideration of that decision, including our rulings in connection with Anthony/FOE's contentions V-3a and V-3b. Therefore, the Commission is logically the proper entity within the adjudicatory chain that should consider Anthony/FOE's motion to reopen on these same contentions.

Anthony/FOE's November 12, 1985, motion to reopen is therefore *referred* to the Commission.

It is so ORDERED.

FOR THE APPEAL BOARD

C. Jean Shoemaker
Secretary to the
Appeal Board

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

Alan S. Rosenthal, Chairman
Gary J. Edles
Howard A. Wilber

In the Matter of

Docket No. 50-322-OL

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

November 21, 1985

The Appeal Board affirms the Licensing Board's partial initial decision (LBP-85-18, 21 NRC 1637 (1985)) which determined that, for the first fuel cycle, the three Transamerica Delaval, Inc. emergency diesel generators installed at the Shoreham nuclear facility will satisfy the requirements of General Design Criterion 17, 10 C.F.R. Part 50, Appendix A.

**REGULATIONS: INTERPRETATION (10 C.F.R. PART 50,
APPENDIX A)**

The General Design Criteria for Nuclear Power Plants "establish minimum requirements for the principal design criteria for water-cooled nuclear power plants similar in design and location to plants for which construction permits have been issued by the Commission." 10 C.F.R. Part 50, Appendix A.

REGULATIONS: INTERPRETATION (10 C.F.R. PART 50, APPENDIX A)

Both pressurized water and boiling water reactors are equally subject to the requirements of General Design Criterion 17, and fulfill those requirements in the same fashion.

ATOMIC ENERGY ACT: HEARING RIGHT

The hearing right granted by section 189a. of the Atomic Energy Act of 1954, as amended, 42 U.S.C. § 2239(a), carries with it no license to encumber the record with evidence of little, if any, intrinsic worth on the theory that the examination and cross-examination of other witnesses might establish the proposition for which that evidence had been offered. *See Abernathy v. Superior Hardwoods, Inc.*, 704 F.2d 963, 968 (7th Cir. 1983). *See also* 10 C.F.R. § 2.743(c).

APPEARANCES

Fabian G. Palomino, Albany, New York, for the intervenors State of New York and Suffolk County (**Lawrence Coe Lanpher**, **Alan Roy Dynner**, and **Douglas J. Scheidt**, Washington, D.C., were on the brief for Suffolk County).

T.S. Ellis, III, Richmond, Virginia (with whom **W. Taylor Reveley, III**, Richmond, Virginia, **Odes L. Stroupe, Jr.**, Raleigh, North Carolina, and **Lucinda E. Minton**, Washington, D.C., were on the brief), for the applicant Long Island Lighting Company.

Richard J. Goddard (with whom **Edwin J. Reis** was on the brief) for the Nuclear Regulatory Commission staff.

DECISION

Before us is the joint appeal of intervenors Suffolk County and the State of New York from the Licensing Board's June 14, 1985 partial initial decision in this operating license proceeding involving the Shoreham

nuclear facility.¹ In its decision, the Board determined that, for the first fuel cycle, the three Transamerica Delaval, Inc. (TDI) emergency diesel generators installed at the facility will satisfy the requirements of General Design Criterion (GDC) 17.² Insofar as here relevant, that criterion provides:

Electric power systems. An onsite electric power system and an offsite electric power system shall be provided to permit functioning of structures, systems, and components important to safety. The safety function for each system (assuming the other system is not functioning) shall be to provide sufficient capacity and capability to assure that (1) specified acceptable fuel design limits and design conditions of the reactor coolant pressure boundary are not exceeded as a result of anticipated operational occurrences and (2) the core is cooled and containment integrity and other vital functions are maintained in the event of postulated accidents.

The onsite electric power supplies, including the batteries, and the onsite electric distribution system, shall have sufficient independence, redundancy, and testability to perform their safety functions assuming a single failure.

* * * * *

Although a large number of subsidiary findings and conclusions undergird the Licensing Board's ultimate determination on the short-term acceptability of the TDI generators, the appeal presents a single, and relatively narrow, issue. That issue concerns the exclusion by the Board of certain evidence offered by the intervenors that purportedly reflects the NRC staff's interpretation of the requirements imposed by GDC 17. For the reasons that follow, we conclude that the evidence in question could not serve its intended purpose and, therefore, was properly excluded. In addition, we have conducted our customary *sua sponte* review of the ultimate determination of the Licensing Board on the acceptability of the TDI generators. Finding no error requiring corrective action, we affirm the partial initial decision.

A. In the case of a loss of offsite power accompanied by a loss-of-coolant accident (regarded as the "worst case" event for analytic purposes),³ the Shoreham emergency generators must be capable of furnishing sufficient AC power to enable various systems to bring the reactor to a safe shutdown condition. In order to ascertain whether the TDI generators satisfy this requirement, one of them was subjected to an endurance test. It was successfully operated for a period of 740 hours at power

¹ LBP-85-18, 21 NRC 1637.

² The General Design Criteria for Nuclear Power Plants are found in Appendix A to 10 C.F.R. Part 50. As the Introduction to the Appendix states, they "establish minimum requirements for the principal design criteria for water-cooled nuclear power plants similar in design and location to plants for which construction permits have been issued by the Commission."

³ Dawe, *et al.*, fol. Tr. 27,153, at 8, 29.

levels that, for the most part, met or exceeded 3300 kilowatts (kW).⁴ Each of the generators was therefore deemed capable of supplying power in that amount over a protracted period.⁵ On this basis, the staff found the generators "qualified" to fulfill their assigned function; i.e., should the worst case event occur, they would provide an adequate amount of electricity to the required systems.⁶

For their part, the intervenors did not contend that the continuous emergency power need imposed on any one generator might exceed 3300 kW.⁷ They nonetheless claimed that the generators should not have been deemed acceptable unless it had been demonstrated that each was capable of delivering more than that amount of power. To the extent pertinent to their appeal, this claim rested on the proposition that, as interpreted and applied by the staff, GDC 17 requires that emergency generators be equipped not merely to provide the electricity necessary to take care of the expected maximum loads during the postulated worst case event but, as well, to accommodate unexpected and unnecessary additional loads stemming from possible untoward operator actions.

In an endeavor to buttress this proposition, the intervenors offered the written testimony of two officials of a "technical consulting firm on nuclear power plant safety and licensing matters."⁸ These witnesses maintained that "[i]t has been the standard practice in the licensing of all boiling water reactors" to require the "maximum rated load" of the emergency generators to exceed by a "significant margin" the amount of power required to shut down the reactor safely.⁹ The essential foundation for this assertion was a table referring to 27 operating boiling water reactors located in 18 nuclear power facilities.¹⁰ That table, which was ap-

⁴ See LBP-85-18, 21 NRC at 1681, 1697.

⁵ As a general matter, the staff relies upon the power ratings assigned by the manufacturer. Tr. 27,759-60, 27,968-69. See Regulatory Guide 1.9, Revision 2, "Selection, Design, and Qualification of Diesel-Generator Units Used as Standby (Onsite) Electric Power Systems at Nuclear Power Plants" (December 1979) (Long Island Lighting Company (LILCO) Exhibit C-3). Because of problems encountered by TDI generators, the staff suggested that the capacity of those generators (whether installed at Shoreham or at another nuclear facility) be determined through an extensive empirical test. Tr. 27,981-84. See also Dawe, *et al.*, fol. Tr. 27,153, at 9-10.

⁶ Knox, fol. Tr. 27,735, at 12; Tr. 27,787, 27,945-46.

⁷ See LBP-85-18, 21 NRC at 1689, 1691. Although the intervenors did argue before the Licensing Board that there might be intermittent power demands that would produce a total load on a single generator in excess of 3300 kW, that thesis is not renewed in connection with their appeal. In any event, we see no reason for concern on this score. See p. 783, *infra*.

⁸ Bridenbaugh and Minor, fol. Tr. 27,500, at 1.

⁹ *Id.* at 15. By "maximum rated load," the witnesses apparently had reference both to (1) in the case of TDI generators, the capacity of the generator as determined empirically (in the words of the staff "qualified load"); and (2) in the case of other generators, the capacity of the generator as represented by the manufacturer (i.e., "power rating" or "nameplate rating").

¹⁰ Many such facilities have, of course, more than one reactor (i.e., unit).

pende to their proposed testimony, had been prepared by the witnesses following an asserted survey made of Final Safety Analysis Reports and other documents. According to it, the emergency generators associated with the 27 reactors had capacities that exceeded the loads that they might have to satisfy by margins ranging from approximately three to 100 percent.

With the support of the staff, the applicant moved to strike the proposed testimony and accompanying table on the ground that the capacity/power demand margins at other facilities were irrelevant on the question of the acceptability of the Shoreham TDI generators.¹¹ The motion was granted for a somewhat different, albeit allied, reason. According to the Licensing Board, admission of the testimony and table would lead to the litigation of issues "at least so remotely collateral to the material issues before us as to be digressive without any redeeming usefulness."¹²

As earlier noted, the intervenors' appeal from the June 14 partial initial decision is confined to this Board ruling. According to the intervenors, the testimony and table did provide support for their claim that the staff has consistently interpreted and applied GDC 17 to require that the rated capacity of emergency generators exceed by a substantial margin the anticipated maximum loads associated with a worst case event. This being so, the intervenors maintain, the exclusion of this evidence was improper.

The applicant and the staff urge affirmance of the ruling (and thus the June 14 decision). They insist that the evidence was properly excluded because it both did not demonstrate past agency practice and was "excessively collateral." In addition, we are told that, had it been admitted, the evidence would not have affected the outcome of the proceeding.

B. Contrary to the intervenors' position, we are entirely satisfied that the testimony and table in question were correctly excluded by the Licensing Board. As we have seen, that evidence was proffered for a single purpose: to establish that the staff has uniformly interpreted and applied GDC 17 in a manner consistent with intervenors' own thinking on the subject. It is manifest, however, that neither the testimony nor the table establishes any such thing. More specifically, they do nothing to contradict the staff's insistence on the appeal that "GDC 17 has not

¹¹ See LILCO's Motion to Strike Testimony of Dale G. Bridenbaugh and Gregory C. Minor Regarding Suffolk County's Emergency Diesel Generator Load Contention (February 1, 1985), at 3; NRC Staff Response to LILCO's Motions to Strike Suffolk County's Testimony on Emergency Diesel Generator Load Contention and Cylinder Blocks (February 8, 1985), at 2.

¹² February 11, 1985 Memorandum and Order Ruling on Motions to Strike Portions of Suffolk County and LILCO Testimony (unpublished), at 3.

been construed as requiring a substantial margin, or a margin to accommodate operator error, between a diesel generator's rating or qualified load and the maximum emergency service load."¹³

In the final analysis, all that the table demonstrates is that there are 27 boiling water reactors licensed by this agency that possess emergency generators with widely varying capacity/power demand margins. While each of those margins exceeds to some extent the margin at Shoreham, by no means can all of them be characterized as substantial. As previously noted, the table reflects that one of the margins (that at Millstone 1) was in the neighborhood of three percent. Moreover, several others also were relatively small (i.e., less than ten percent). Still further, the table did not embrace all licensed boiling water reactors and made no mention of any pressurized water reactors.¹⁴ This is a matter of some significance, given the fact that the TDI emergency generators for Unit 1 of the Catawba facility (a pressurized water reactor) have *staff-accepted* capacity/power demand margins that are *less* than those possessed by the Shoreham generators.¹⁵

If anything, then, both the table and the Catawba data bear out the staff's representation to us that it has not construed GDC 17 to have the effect attributed to it by the intervenors. But even had the table reflected that the emergency generators associated with all of the listed reactors possessed large capacity/power demand margins, there still scarcely would have been room to infer that such margins were provided in obedience to a staff mandate, rooted in GDC 17. For utilities and their contractors do many things in the construction and operation of nuclear power reactors that are not in direct response to a staff-imposed requirement.

The short of the matter is that the table, and accordingly the testimony of the witnesses founded thereon, were of so little probative value on the question of the staff's interpretation and application of GDC 17 that the Licensing Board was fully justified in excluding them from the record. In this connection, if interested in obtaining an authoritative

¹³ NRC Staff Response to Suffolk County and State of New York Brief in Support of Appeal of June 14, 1985 ASLB Decision on Emergency Diesel Generators (August 26, 1985), at 12-13 (footnote omitted). The term "maximum emergency service load" (or "MESL") was employed in this proceeding to refer to the load that the generators would have to bear in response to the worst case event for more than a short time period. LBP-85-18, 21 NRC at 1691-92.

¹⁴ Although Shoreham is a boiling water reactor, there is no reasonable, technical basis for distinguishing between it and pressurized water reactors for present purposes. Both types of reactors are equally subject to the requirements of GDC 17 — and fulfill those requirements in the same fashion.

¹⁵ See Supplement No. 4 to the Safety Evaluation Report for Catawba Nuclear Station, Units 1 and 2 (NUREG-0954, December 1984) Appendix G, at 9. At Catawba, the staff-accepted rated capacity for each of its two emergency generators is 5750 kW and the power demand for its worst case event is 5714 kW. The equivalent figures for Shoreham are 3300 and 3253.3, respectively. See LBP-85-18, 21 NRC at 1691-92. Thus, the Catawba margin is 0.6 percent and the Shoreham margin is 1.4 percent.

answer to the interpretation question, the intervenors might well have sought through the discovery process to obtain that answer from members of the staff responsible for the enforcement of GDC 17. It is unclear to us why such a direct approach was eschewed, in favor of an endeavor to have the Licensing Board indulge in assumptions that the proffered indirect evidence simply would not allow.¹⁶

It need be added only that there is no substance to the intervenors' claim at oral argument that the exclusion of this evidence deprived them of hearing rights guaranteed by the Atomic Energy Act of 1954, as amended.¹⁷ The intervenors were accorded a full hearing on the subject of the acceptability of the TDI generators. They had ample opportunity to adduce any evidence of true probative value and to test on cross-examination the evidence presented by other parties. That was the extent of their entitlement. More specifically, their counsel's apparent differing view notwithstanding, the statutory hearing right enjoyed by the intervenors carried with it no license to encumber the record with evidence of little, if any, intrinsic worth on the theory that the examination and cross-examination of other witnesses might establish the proposition for which that evidence had been offered.¹⁸

C. We have reviewed *sua sponte* the evidence on the adequacy of the Shoreham emergency generators and concluded, in common with the Licensing Board, that the generators will suffice at least for the first fuel cycle. Although there is no need to explore this matter in great detail, a few brief observations are appropriate.

To begin with, there is no basis for the belief expressed below by the intervenors that a substantial capacity/power demand margin is required to avoid the consequences of operator error. To be sure, such error might occur and might lead to the loss of the availability of one of the three generators.¹⁹ But GDC 17 requires the emergency power supply to be able to provide sufficient power to perform its safety functions even in the event of such a "single failure."²⁰ Accordingly, the three generators each must and do possess sufficient capacity to enable any two of

¹⁶ The intervenors cited in their brief and at oral argument a portion of the prepared testimony of staff witness John L. Knox, introduced into the record following Tr. 27,735. Mr. Knox did not state directly, however, that the staff interpreted GDC 17 to require substantial capacity/power demand margins. With respect to the intervenors' reliance on Mr. Knox's testimony regarding operator error loads, we discuss the ability of the emergency power supply to accommodate such loads at pp. 782-83, *infra*.

¹⁷ See section 189a., 42 U.S.C. 2239(a).

¹⁸ See *Abernathy v. Superior Hardwoods, Inc.*, 704 F.2d 963, 968 (7th Cir. 1983). See also 10 C.F.R. 2.743(c).

¹⁹ The applicant has ensured that a single operator error cannot cause the loss of more than one emergency generator. *Dawe, et al.*, fol. Tr. 27,153, at 37.

²⁰ See p. 778, *supra*.

them to meet the power demand should the worst case event be accompanied or followed by a loss of the third generator (either because of operator error or otherwise).²¹

Nor is there merit to the other reasons advanced by the intervenors before the Licensing Board in support of their claim that the capacity/power demand margins are insufficient.²² With regard to the power requirements of equipment that might operate intermittently, the record indicates both that (1) such operation would be for no more than a few minutes; and (2) in the unlikely event of the simultaneous occurrence of all of the intermittent loads, the total additional power demand for that relatively short period would be 78.1 kW.²³ Yet the tested generator successfully completed a 220-hour segment at power levels at or above 3500 kW — i.e., 200 kW greater than the 3300 kW capacity accepted as more than sufficient to accommodate the maximum continuous load.²⁴ This consideration also provides an adequate response to the intervenors' concern that the instrument used by the operators to determine the power output of the generators might be crucially inaccurate.²⁵ Although the design accuracy of the instrument is plus or minus 140 kW, the calibrations performed before and after the endurance test showed that it was accurate within 70 kW.²⁶

Apart from the issue regarding the power capacity of the TDI generators, the Licensing Board considered in detail the adequacy of the cylinder blocks and crankshafts of the TDI diesel generators at Shoreham. On our review, we have found that the TDI diesel generators have been subjected to extensive analyses, testing and inspections. In addition, stringent license conditions have been imposed with respect to operating limits, surveillance testing and inspections of the generators.²⁷ As previously noted, the Licensing Board approved the use of the TDI generators for only the first fuel cycle, after which newly purchased diesel generators from a different manufacturer presumably will be available

²¹ Dawe, *et al.*, fol. Tr. 27,153, at 37. The loss of only one emergency generator must be postulated because GDC 17 does not require that the emergency power supply be capable of enduring more than a "single failure."

²² See LBP-85-18, 21 NRC at 1689, 1691.

²³ *Id.* at 1693, 1694; Dawe, *et al.*, fol. Tr. 27,153, at 11-19.

²⁴ LBP-85-18, 21 NRC at 1697.

²⁵ See *id.* at 1691. The intervenors also claimed below that an allowed operating band of 100 kW rendered the capacity/power demand margin insufficient. *Ibid.* This operating band is allowed, however, only during surveillance testing and will not result in the generators being operated at increased power levels during an emergency. Dawe, *et al.*, fol. Tr. 27,153, at 27.

²⁶ *Id.* at 28-29. The extensive testing of one of the emergency generators for 220 hours at or above 3500 kW also satisfies the intervenors' concern that the endurance test did not demonstrate that the generators can provide 3300 kW. See LBP-85-18, 21 NRC at 1691.

²⁷ See *id.* at 1677-79, 1687, 1689-90.

for service.²⁸ Along this line, the Board agreed “with LILCO and the staff that the record supports the approval of continued operation of the Shoreham TDI [diesel generators] for multiple fuel cycles — with appropriate inspections — but consider[ed] it prudent for the NRC to defer a decision on operation past the first fuel cycle until industry experience with TDI diesels up to that time can be reviewed.”²⁹ In our view, there is no reason to disturb any condition or limitation placed on the operation, testing or inspection of the TDI diesel generators by the Licensing Board.

The Licensing Board’s June 14, 1985 partial initial decision is *affirmed*. It is so ORDERED.

FOR THE APPEAL BOARD

C. Jean Shoemaker
Secretary to the
Appeal Board

²⁸ *Id.* at 1677-78. For its part, the applicant has not raised an objection on appeal to any of the license conditions or limitations established by the Licensing Board.

²⁹ *Id.* at 1654.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

Alan S. Rosenthal, Chairman
Thomas S. Moore
Howard A. Wilber

In the Matter of

Docket Nos. 50-413-OL
50-414-OL

DUKE POWER COMPANY, et al.
(Catawba Nuclear Station,
Units 1 and 2)

November 21, 1985

Following up on ALAB-813, 22 NRC 59 (1985), the Appeal Board affirms the remainder of the Licensing Board's authorization of a full power operating license for the Catawba facility — the receipt and storage at Catawba of spent fuel generated at the applicants' Oconee and McGuire facilities.

LICENSING BOARDS: JURISDICTION

Adjudicatory boards do not have plenary subject matter jurisdiction in Commission proceedings. *See Wisconsin Electric Power Co.* (Point Beach Nuclear Plant, Units 1 and 2), ALAB-739, 18 NRC 335, 339 (1983).

LICENSING BOARDS: JURISDICTION

Under the Atomic Energy Act, the Nuclear Regulatory Commission is empowered to administer the licensing provisions of the Act, 42 U.S.C. §§ 2132, 2133, and use licensing boards "to conduct such hearings as the Commission may direct." 42 U.S.C. § 2241. The boards,

therefore, are delegates of the Commission and, as such, they may exercise authority over only those matters that the Commission commits to them. See *Carolina Power and Light Co.* (Shearon Harris Nuclear Power Plant, Units 1, 2, 3, and 4), ALAB-577, 11 NRC 18, 25 (1980); *Northern Indiana Public Service Co.* (Bailly Generating Station, Nuclear-1), ALAB-249, 8 AEC 980, 987 (1974).

LICENSING BOARDS: DELEGATED AUTHORITY

Hearing notices are the means by which the Commission identifies the subject matters of the hearings and delegates to the licensing boards the authority to conduct proceedings. See 10 C.F.R. § 2.700; *Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units Nos. 1 and 2), CLI-76-1, 3 NRC 73, 74 n.1 (1976).

LICENSING BOARDS: JURISDICTION

Licensing boards "can neither enlarge nor contract the jurisdiction conferred by the Commission." *Consumers Power Co.* (Midland Plant, Units 1 and 2), ALAB-235, 8 AEC 645, 647 (1974).

LICENSING BOARDS: JURISDICTION

A licensing board does not have the power to explore matters beyond those which are embraced by the notice of hearing for the particular proceeding. *Portland General Electric Co.* (Trojan Nuclear Plant), ALAB-534, 9 NRC 287, 289 n.6 (1979).

OPERATING LICENSES: DISPOSAL OF SPENT FUEL

Proposals to store spent fuel generated at one facility in the fuel pool of another facility that does not qualify as an independent storage installation under 10 C.F.R. Part 72 should be licensed pursuant to 10 C.F.R. Part 50. 45 Fed. Reg. 74,693, 74,698 (1980).

RULES OF PRACTICE: BRIEFS

Under the Commission's Rules of Practice, an appellant is obligated to clearly identify the errors of fact or law that are the subject of the appeal and, for each issue appealed, must identify the precise portion of the record relied upon in support of the assertion of error. 10 C.F.R. § 2.762(d)(1). See *Wisconsin Electric Power Co.* (Point Beach Nuclear

Plant, Unit 1), ALAB-719, 17 NRC 387, 395 (1983); *Pennsylvania Power and Light Co.* (Susquehanna Steam Electric Station, Units 1 and 2), ALAB-693, 16 NRC 952, 954-56 (1982); *Consumers Power Co.* (Midland Plant, Units 1 and 2), ALAB-270, 1 NRC 473, 476 (1975).

RULEMAKING: EFFECT ON ADJUDICATION

Appeal boards are required to apply the regulations in effect at the time of the appeal to matters before them. ALAB-813, 22 NRC 59, 86 (1985).

APPEARANCES

Robert Guild, Columbia, South Carolina, for the intervenors Palmetto Alliance and Carolina Environmental Study Group.

J. Michael McGarry, III, Washington, D.C. (with whom **Anne W. Cottingham** and **Mark S. Calvert**, Washington, D.C., and **Albert V. Carr, Jr.**, Charlotte, North Carolina, were on the brief), for the applicants Duke Power Company, *et al.*

George E. Johnson for the Nuclear Regulatory Commission staff.

DECISION

In ALAB-813,¹ we decided the consolidated appeals of intervenors Palmetto Alliance and Carolina Environmental Study Group from a series of Licensing Board decisions, the last of which authorized full power operating licenses for the two-unit Catawba Nuclear Station owned by Duke Power Company, North Carolina Municipal Power Agency Number 1, North Carolina Electric Membership Corporation and Saluda River Electric Cooperative. Although we affirmed the major portion of the Licensing Board's license authorization, we deferred all questions pertaining to a small part of the authorization permitting the applicants to receive and store at Catawba spent fuel generated at Duke Power Company's Oconee and McGuire nuclear power facilities.² We

¹ 22 NRC 59 (1985).

² *Id.* at 64, 86-87.

now address those questions and affirm the remainder of the Licensing Board's full power license authorization.

I.

This proceeding was instituted with the publication of the customary notice of opportunity for hearing indicating that the Commission had received an operating license application pursuant to 10 C.F.R. Part 50 "to possess, use and operate" the Catawba Nuclear Station, Units 1 and 2.³ In addition to the conventional information concerning the procedures for intervening in the proceeding, the notice closed with the usual statement that the license application on file in the agency's various public document rooms should be consulted "[f]or further details pertinent to the matters under consideration."⁴ The Commission's published notice said nothing about the possible utilization of the Catawba facility as a repository for spent fuel generated at other nuclear power plants. The application referenced in the notice stated, however, that

[t]he license hereby applied for is a class 103 operating license as defined by 10 CFR 50.22. It is requested for a period of forty (40) years. Applicants further request such additional source, special nuclear, and by-product material licenses as may be necessary or appropriate to the acquisition, construction, possession, and operation of the licensed facilities and for authority to store irradiated fuel from other Duke nuclear facilities. At present, Duke has no specific plans to utilize this storage alternative but, rather, considers it prudent planning to have this storage as one of the alternatives available.⁵

In response to the Commission's notice, both Palmetto Alliance and Carolina Environmental Study Group filed petitions to intervene and proffered contentions aimed at, inter alia, the fuel storage proposal contained in the license application.⁶ The Licensing Board admitted both intervenors as parties to the operating license proceeding, but, in initially considering the admissibility of the intervenors' contentions concerning the fuel storage proposal, the Board questioned whether it had jurisdiction over that subject matter. Asserting that its jurisdiction "is normally

³ 42 Fed. Reg. 32,974 (1981).

⁴ *Id.* at 32,975.

⁵ Duke Power Company, Catawba Nuclear Station License Application (Mar. 31, 1981), Volume 1 at 11-12.

⁶ After the intervenors' petitions to intervene were filed, the Chief Administrative Judge of the Atomic Safety and Licensing Board Panel (acting pursuant to the standing delegation of authority contained in the Commission's Rules of Practice, 10 C.F.R. § 2.714) established a Licensing Board to rule on the petitions and preside over any operating license proceeding. See 46 Fed. Reg. 39,710 (1981). Other than naming the members of the Licensing Board, this notice only referred to the Commission's previous notice of opportunity for hearing.

established by the notice of opportunity for hearing” and that here the notice did not mention the fuel storage proposal, the Licensing Board sought the parties’ views on the issue.⁷ After receiving them, the Board concluded, without elaboration, that it “must consider the environmental impacts associated with [spent fuel] transport to, and storage at Catawba.”⁸ As pertinent to the issues now before us, the Licensing Board then rejected for various reasons most of the intervenors’ contentions regarding the applicants’ spent fuel proposal.

On appeal, the intervenors purport to challenge the Licensing Board’s rejection of certain of their contentions concerning the applicants’ spent fuel proposal. Because they sought to contest the applicants’ plan, the intervenors understandably did not dispute the Licensing Board’s assertion of jurisdiction over the portion of the license application containing the spent fuel proposal. We, on the other hand, raised the issue of the power of the Licensing Board to consider the intervenors’ spent fuel contentions at oral argument of the intervenors’ appeal. Because the issue of subject matter jurisdiction may be raised at any time, we questioned (for much the same reason originally asserted by the Board below) that Board’s naked conclusion that it had authority over the spent fuel portion of the license application. Accordingly, we invited the parties to brief the jurisdictional issue.

In response, the applicants and the NRC staff assert that the Licensing Board properly exercised jurisdiction over the spent fuel proposal. They also argue that the Board properly rejected the intervenors’ related contentions. The intervenors, in effect, now argue alternatively that the applicants’ spent fuel plan was beyond the jurisdiction of the Licensing Board, but that, in any event, the Board erred in rejecting their contentions.

II.

Although it failed to articulate the rationale for its conclusions, the Licensing Board was correct in asserting jurisdiction over the spent fuel proposal contained in the operating license application. This being the case, the Board properly could, as it did, determine whether the intervenors’ spent fuel proposal contentions were admissible.

⁷ LBP-82-16, 15 NRC 566, 580 (1982).

⁸ LBP-82-51, 16 NRC 167, 171 (1982).

Adjudicatory boards do not have plenary subject matter jurisdiction in Commission proceedings.⁹ Under the Atomic Energy Act, the Nuclear Regulatory Commission is empowered to administer the licensing provisions of the Act¹⁰ and use licensing boards “to conduct such hearings as the Commission may direct.”¹¹ The boards, therefore, are delegates of the Commission and, as such, they may exercise authority over only those matters that the Commission commits to them.¹² The various hearing notices¹³ are the means by which the Commission identifies the subject matters of the hearings and delegates to the boards the authority to conduct proceedings.¹⁴

Our decisions make clear that licensing boards generally “can neither enlarge nor contract the jurisdiction conferred by the Commission.”¹⁵ For example, in *Marble Hill*,¹⁶ we faced the question whether a notice of opportunity for hearing on a construction permit application gave the Licensing Board jurisdiction to consider an intervention petition seeking to raise antitrust issues where the Commission previously had issued a notice of hearing on the antitrust aspects of the application. In affirming the Licensing Board’s determination that it lacked jurisdiction, we held that the Board correctly turned to the Commission’s hearing notices to ascertain its subject matter jurisdiction, and that the Board had no discretion to alter this delegated authority absent Commission approval.¹⁷ Thereafter, in *Trojan*,¹⁸ the issue of the Licensing Board’s jurisdiction arose in a special proceeding involving the question of the interim operation of the facility where the notice initiating the hearing spelled out the issues to be heard. We agreed with the Licensing Board’s conclusion that it lacked jurisdiction over certain issues proffered by the intervenors because the “issues manifestly [were] beyond the bounds of the issues

⁹ See *Wisconsin Electric Power Co.* (Point Beach Nuclear Plant, Units 1 and 2), ALAB-739, 18 NRC 335, 339 (1983).

¹⁰ 42 U.S.C. §§ 2132, 2133. The Atomic Energy Commission was abolished and its regulatory functions were transferred to the Nuclear Regulatory Commission by the Energy Reorganization Act of 1974, 42 U.S.C. § 5841(f) & (g).

¹¹ 42 U.S.C. § 2241.

¹² See *Carolina Power and Light Co.* (Shearon Harris Nuclear Power Plant, Units 1, 2, 3, and 4), ALAB-577, 11 NRC 18, 25 (1980); *Northern Indiana Public Service Co.* (Bailly Generating Station, Nuclear-1), ALAB-249, 8 AEC 980, 987 (1974).

¹³ See 10 C.F.R. § 2.700.

¹⁴ See *Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units Nos. 1 and 2), CLI-76-1, 3 NRC 73, 74 n.1 (1976).

¹⁵ *Consumers Power Co.* (Midland Plant, Units 1 and 2), ALAB-235, 8 AEC 645, 647 (1974).

¹⁶ *Public Service Co. of Indiana* (Marble Hill Nuclear Generating Station, Units 1 and 2), ALAB-316, 3 NRC 167 (1976).

¹⁷ *Id.* at 170-71.

¹⁸ *Portland General Electric Co.* (Trojan Nuclear Plant), ALAB-534, 9 NRC 287 (1979).

identified in the notice of hearing which triggered this special proceeding.”¹⁹ In so holding, we relied upon *Marble Hill* as a precedent of general applicability and characterized that decision as “squarely hold[ing] that a licensing board does not have the power to explore matters beyond those which are embraced by the notice of hearing for the particular proceeding.”²⁰ Finally, in *Zion*,²¹ we had occasion in an operating license amendment proceeding concerning the modification of a spent fuel pool to state, in a somewhat different context, that the Licensing Board’s “jurisdiction was limited by the Commission’s notice of hearing” and that its “jurisdiction extended only to issues fairly raised by the application to modify the spent fuel pool, the sole matter which the Commission had placed before it.”²²

Unlike the hearing notice in the special *Trojan* proceeding that specified the issues for hearing, the notice of opportunity for hearing on the Catawba operating license application followed the Commission’s customary practice for such notices and was very general. As pertinent here, the notice referenced only the application to possess, use and operate the two Catawba units and stated that the application should be consulted for further details. By employing a broad announcement without specifying any limitations, the Commission delegated to the Catawba Licensing Board authority over all portions of the license application in the event of an operating license proceeding; the application itself therefore set the bounds of the Licensing Board’s jurisdiction. The fact that the hearing notice did not specifically identify the applicants’ spent fuel proposal, or any other particular feature of the application, is irrelevant to the question of the Licensing Board’s subject matter jurisdiction because the Commission’s delegation of authority to the Licensing Board in the hearing notice necessarily covered the entire operating license application.²³ All matters properly included as part of an operating license

¹⁹ *Id.* at 289 n.6.

²⁰ *Id.*

²¹ *Commonwealth Edison Co. (Zion Station, Units 1 and 2)*, ALAB-616, 12 NRC 419 (1980).

²² *Id.* at 426. See also *Point Beach*, 18 NRC at 339.

²³ Because the intervenors sought to challenge the applicants’ spent fuel proposal in their proffered contentions (and on appeal did not raise any questions concerning the notice) and we raised only the question of the Licensing Board’s jurisdiction to consider the spent fuel portion of the license application, we leave for another day any questions concerning the adequacy of the Commission’s hearing notice under the Atomic Energy Act, 42 U.S.C. § 2239, the Administrative Procedure Act, 5 U.S.C. § 554, and the Commission’s regulations, 10 C.F.R. § 2.105. For example, 10 C.F.R. § 2.105(b)(1) states, *inter alia*, that the notice of opportunity for hearing on an operating license application set forth the “nature of the action proposed.” One substantial question is whether that section requires something more in a notice than a simple statement to consult the license application for further information when the noticed application, in addition to seeking authority “to possess, use and operate” a nuclear power plant, also seeks authority for a second activity that is clearly nonintegral and coincidental to the operation of the plant

(Continued)

application pursuant to the Commission's regulations thus fell within the jurisdiction of the Licensing Board.

Moreover, the Commission's regulations, 10 C.F.R. Part 50, do not prohibit the type of spent fuel proposal contained in the applicants' application. Indeed, in the statement of basis and purpose accompanying the Commission's rule setting forth requirements for the storage of spent fuel in an independent spent fuel storage installation, 10 C.F.R. Part 72, the Commission indicated that proposals such as that contained in the Catawba application that do not qualify as independent storage installations should be licensed pursuant to 10 C.F.R. Part 50.²⁴ Consequently, the applicants' spent fuel proposal was properly included within their operating license application, and the Licensing Board's jurisdiction encompassed that proposal as well as the intervenors' contentions directly challenging the applicants' spent fuel plan.

III.

On appeal, the intervenors claim that the Licensing Board erred in rejecting their "environmental contentions which sought to require thorough environmental impact analys[e]s of the costs and benefits, as well as the consideration of more environmentally-sound alternatives" to the applicants' transshipment proposal.²⁵ They assert that the lower Board incorrectly relied upon the Commission's generic determination of insignificant environmental impacts contained in Table S-4, "Environmental Impact of Transportation of Fuel and Waste To and From One Light-Water-Cooled Nuclear Power Reactor," 10 C.F.R. § 51.20 (1984). They argue that the S-4 Table applies only to the shipment of irradiated fuel from a reactor to a reprocessing plant, not from one reactor to another.

But the intervenors have failed to identify which specific contention was wrongly rejected and which Licensing Board ruling was incorrect. Over the course of the operating license proceeding, they filed a number of similar contentions all aimed at the applicants' spent fuel proposal.²⁶

(such as receiving and storing spent fuel generated at other facilities). Regardless of what 10 C.F.R. § 2.105(b)(1) requires, however, explicit mention in the notice of opportunity for hearing of such non-integral activities clearly would be advisable in the future so that the notice may fully serve its intended purpose.

²⁴ 45 Fed. Reg. 74,693, 74,698 (1980).

²⁵ Brief of Appellants Palmetto Alliance and Carolina Environmental Study Group (Jan. 9, 1985) at 69.

²⁶ See CESG's Contentions (Dec. 9, 1981); Palmetto Alliance Supplement to Petition to Intervene (Dec. 9, 1981); Palmetto Alliance and Carolina Environmental Study Group Supplement to Petitions to Intervene Regarding Draft Environmental Statement (Sept. 22, 1982).

Moreover, the Licensing Board dealt with all of them in a number of different rulings.²⁷ Consequently, like so many of the intervenors' arguments in ALAB-813 their argument here suffers from a lack of proper briefing.²⁸ Once again the intervenors have not fulfilled their obligation under the Rules of Practice "clearly [to] identify the errors of fact or law that are the subject of the appeal" and, "[f]or each issue appealed, [to identify] the precise portion of the record relied upon in support of the assertion of error."²⁹ For this reason their argument fails. Nevertheless, as best we can determine, it appears that the intervenors intend to challenge the Licensing Board's rejection of combined contention 19.³⁰ If that is the case, their protest is without substance.

One part of the intervenors' contention 19 questioned the environmental costs and benefits of the applicants' transshipment proposal and sought an examination of the alternatives to it. In rejecting the contention, the Licensing Board found that the intervenors' challenge was an impermissible attack on the Commission's regulations, specifically Table S-4.³¹ That ruling and the Board's supporting reasoning is generally correct. We need only add that the intervenors' sole argument before us (i.e., Table S-4 is inapplicable to the transport of spent fuel from one reactor to another because 10 C.F.R. § 51.20(g)(1) (1984) speaks of the spent fuel being shipped to a reprocessing plant) is unavailing. As the Licensing Board indicated in rejecting another of the intervenors' contentions, the Commission's generic determination of transportation impacts in the regulation is equally applicable to the transshipment of spent fuel between reactors as well as to a hypothetical reprocessing facility because it is the same fuel regardless of destination.³²

Even if the intervenors' literal reading of the regulation were accepted, however, the Licensing Board's result would not change. First, the intervenors have not challenged the Board's alternative determination that the contention lacked specificity.³³ More important, subsequent to the Licensing Board's decision, the Commission's regulation was amended to delete all reference to a reprocessing facility.³⁴ Hence, there no longer

²⁷ See LBP-82-16, 15 NRC at 578-81; LBP-82-51, 16 NRC at 171-72; LBP-83-8B, 17 NRC 291 (1983).

²⁸ See ALAB-813, 22 NRC at 66 n.16, 71, 84 n.128.

²⁹ 10 C.F.R. § 2.762(d)(1). See *Wisconsin Electric Power Co.* (Point Beach Nuclear Plant, Unit 1), ALAB-719, 17 NRC 387, 395 (1983); *Pennsylvania Power and Light Co.* (Susquehanna Steam Electric Station, Units 1 and 2), ALAB-693, 16 NRC 952, 954-56 (1982); *Consumers Power Co.* (Midland Plant, Units 1 and 2), ALAB-270, 1 NRC 473, 476 (1975).

³⁰ See LBP-83-8B, 17 NRC 291 (1983).

³¹ *Id.* at 294.

³² LBP-82-16, 15 NRC at 579.

³³ See LBP-83-8B, 17 NRC at 295.

³⁴ See 49 Fed. Reg. 9352, 9389-90 (1984). The substance of 10 C.F.R. § 51.20(g)(1) is now codified in 10 C.F.R. § 50.52 (1985).

can be any basis for arguing that Table S-4 does not apply to the transshipment of spent fuel from one reactor to another. Because we are required to apply the regulations in effect at the time of the appeal,³⁵ the amended regulation is controlling and the intervenors' semantic argument is now moot.

For the foregoing reasons, therefore, we affirm the remaining part of the Licensing Board's operating license authorization that permits the applicants to receive and store at Catawba spent fuel generated at Duke Power Company's Oconee and McGuire nuclear power facilities.

It is so ORDERED.

FOR THE APPEAL BOARD

C. Jean Shoemaker
Secretary to the
Appeal Board

³⁵ ALAB-813, 22 NRC at 86.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

**Charles Bechhoefer, Chairman
Dr. James C. Lamb
Frederick J. Shon**

In the Matter of

**Docket Nos. STN 50-498-OL
STN 50-499-OL
(ASLBP No. 79-421-07-OL)**

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

November 5, 1985

The Licensing Board explains its earlier summary ruling which granted in part and denied in part an intervenor's motion to reopen the record. The Board permitted incorporation into the record of a document which inadvertently had not been supplied to the intervenor through discovery but declined to reopen the record to include another document which the Board determined was not material to the issues under consideration.

RULES OF PRACTICE: REOPENING OF PROCEEDINGS

Where a record is closed and at least some proposed findings have been filed, but where a decision has not yet been rendered on a question, a motion to reopen the record must satisfy three criteria: (a) the motion must be timely filed; (b) it must address a significant safety (or environmental) issue; and (c) the additional information must potentially be susceptible of altering the result which would be reached in its absence.

RULES OF PRACTICE: REOPENING OF PROCEEDINGS

Where a party seeks to reopen a record to include a new contention, it must demonstrate not only that the criteria for reopening a record are satisfied but also that the factors for late-filed contentions in 10 C.F.R. § 2.714(a) have been satisfied.

RULES OF PRACTICE: REOPENING OF PROCEEDINGS

In evaluating the significance of newly proffered information for purposes of reopening a closed record, a Licensing Board may consider whether the information is new factual information. Differing analyses of experts of factual information already in the record do not normally constitute the type of information for which reopening of the record would be warranted.

RULES OF PRACTICE: NONTIMELY SUBMISSION OF CONTENTIONS

Where a motion to reopen the record to consider a late-filed contention fails to discuss the factors bearing upon such contentions set forth in 10 C.F.R. § 2.714(a), the motion could be dismissed on that basis alone.

RULES OF PRACTICE: RESPONSIBILITIES OF PARTIES

The *McGuire* doctrine requires advice to a Licensing Board of matters "relevant and material" to issues pending before that Board. LBP-85-6, 21 NRC 447, 461 (1985), and cases cited.

RULES OF PRACTICE: REOPENING OF PROCEEDINGS

The stringent standards for reopening a record need not be applied with full force in a situation where (1) the proponent of reopening the record to include a newly discovered document was prevented from offering the document earlier, and (2) the new evidence can be received with little or no burden upon the parties.

MEMORANDUM AND ORDER
(Explanation of Rulings on CCANP Motion of 9/30/85)

On September 30, 1985, Citizens Concerned About Nuclear Power, Inc. (CCANP), an intervenor in this operating license proceeding, filed a "Motion for Board Ordered Production of Documents, to Reopen the Record, for New Contention, for Discovery, and for Extensions of Time" ("Motion"). By our Order (Rulings on CCANP 9/30/85 Motion), dated October 16, 1985 (unpublished), we announced summary rulings on the Motion, stating that we would provide our reasons in a forthcoming Memorandum and Order. We are doing so here.

1. Background

The Motion in effect seeks to reopen the Phase II evidentiary record to incorporate therein two documents: (a) a report prepared by S. Levy, Inc., on Brown & Root Engineering on the South Texas Project, dated October 1, 1984 ("SLI Report"); and (b) a handwritten chronology of events from June 26, 1981, to December 16, 1981, prepared by Mr. Don D. Jordan, Chairman of the Board of Directors of Houston Lighting & Power Co. (HL&P), the lead Applicant ("Jordan Chronology"). The Motion also seeks related relief: (a) that we order the Applicants to provide the Board and parties with copies of the SLI Report; (b) that we admit a new contention premised upon the SLI Report; (c) that we permit discovery on two matters — the Applicants' handling of the SLI Report, and the origin, supporting documentation and handling of the Jordan Chronology; and (4) that we grant CCANP a 2-week extension of time within which it might file its proposed findings of fact and conclusions of law for the recently completed Phase II hearings.

By our Memorandum and Order dated October 4, 1985 (unpublished), we granted CCANP's request for an extension of time. Furthermore, in their response to the Motion, the Applicants provided the Board and parties with copies of the SLI Report, making moot CCANP's request for Board-ordered production of that document.

With respect to the remainder of CCANP's Motion, the Applicants, on October 10, 1985, filed a response which offered no objection to the incorporation of the Jordan Chronology into the record but opposed reopening the record for the SLI Report. The Applicants also opposed the new contention and the discovery requested by CCANP (although, as noted above, they provided the Board and parties with copies of the SLI Report). By its response dated October 15, 1985, the NRC Staff opposed reopening the record for either document, as well as the other

relief requested by CCANP (excluding that on which we had already ruled or which had become moot by virtue of the Applicants' response).

In our summary October 16, 1985 Order, we ruled that we would admit into the Phase II record the Jordan Chronology¹ but would deny admission of the SLI Report. (We issued the Order at an early date to accommodate the date we had established for CCANP to file its Phase II proposed findings, which now could reference the Jordan Chronology.) We also denied CCANP's proposed new contention, and the additional discovery which CCANP had requested.

2. *Standards*

The Commission's standards for reopening the record of a proceeding are well recognized. As we have recently pointed out, a proponent of a motion to reopen a record bears a heavy burden. Under normal circumstances, such a motion must satisfy three criteria:

- (a) The motion must be timely filed;
- (b) It must address a significant safety (or environmental) issue; and
- (c) It must demonstrate that the information sought to be added to the record might alter a result previously reached.

LBP-85-19, 21 NRC 1707, 1720 (1985) and cases cited; *see also* our Phase I Partial Initial Decision, LBP-84-13, 19 NRC 659, 716 (1984), *aff'd*, ALAB-799, 21 NRC 360, 381 (1985). Furthermore, when a party seeks to reopen a record to consider a new contention, it must also demonstrate that the factors in 10 C.F.R. § 2.714(a) relating to late-filed contentions have been satisfied. *Louisiana Power & Light Co.* (Waterford Steam Electric Station, Unit 3), ALAB-812, 22 NRC 5, 14 (1985).²

CCANP raises no question as to the first two of the reopening-the-record criteria but claims the third not to be applicable where, as here, no decision has yet been rendered. The Applicants and Staff disagree as to the third criterion, finding it applicable with respect to the current motion.

¹ We denominated the Jordan Chronology as CCANP Exhibit 148 and requested the Applicants to provide copies to the NRC's Docketing and Services Branch. By their letter dated October 17, 1985, they promptly complied with our request.

² These factors are

- (i) Good cause, if any, for failure to file on time.
- (ii) The availability of other means whereby the petitioner's interest will be protected.
- (iii) The extent to which the petitioner's participation may reasonably be expected to assist in developing a sound record.
- (iv) The extent to which the petitioner's interest will be represented by existing parties.
- (v) The extent to which the petitioner's participation will broaden the issues or delay the proceeding.

CCANP is technically correct in its claim that, before a decision on a question has been reached, a motion to reopen the record need not — indeed, cannot — demonstrate that a different result would have been reached. That is so since no result has in fact yet been reached. See *Consumers Power Co.* (Midland Plant, Units 1 and 2), LBP-83-50, 18 NRC 242, 248 (1983). Nonetheless, as we observed in LBP-84-13, *supra*, 19 NRC at 716 n.43, with the record closed on the portion of the proceeding with respect to which new information is being proffered, it is appropriate for us to consider (in the context of the materiality or significance of the information in question) whether the additional information might potentially alter the result we would reach in its absence.³ We have done so here.

In evaluating the significance of newly proffered information, we may consider whether the information is new factual information. Differing analyses of experts of factual information already in the record do not normally constitute the type of information for which reopening of the record would be warranted. *Id.* at 718-19; *Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-644, 13 NRC 903, 994-95 (1981).

We turn now to the application of these standards to the two documents for which CCANP seeks to reopen the record.

3. *SLI Report*

By letter dated October 9, 1984, the Licensing Board and parties were advised of the SLI Report, dated October 1, 1984. That report had been prepared by a technical consultant of the Applicants in conjunction with the Applicants' lawsuit in Matagorda County, Texas, against Brown & Root, Inc. (B&R), the former architect-engineer, construction manager and constructor of the South Texas Project (STP). The SLI Report was subject to a protective order of the Texas court, which was dissolved on May 30, 1985.

The SLI Report is a two-volume, 541-page⁴ evaluation of B&R's engineering activities on the STP. In that respect, it is similar to the Quadrex

³ In LBP-84-13, the motion to reopen the record was filed prior to our ruling on the issue in question but subsequent to the submission of proposed findings by all parties. To the same effect, see *Public Service Co. of Oklahoma* (Black Fox Station, Units 1 and 2), ALAB-573, 10 NRC 775, 804 (1979), *vacated in part on other grounds*, CLI-80-8, 11 NRC 433 (1980). Here, the motion was filed subsequent to (but on the same day as) the filing of the Applicants' proposed findings and prior to the filing of proposed findings by other parties. In this context, we find no compelling reason for not considering the effect of the information on the result we would otherwise reach.

⁴ Our page count differs from the "650-page" description included in CCANP's Motion and the Staff's response.

Report which was the subject of Phase II litigation. In addition, the SLI Report was an overview of the review of Quadrex Report findings previously performed by Bechtel Corp. (Applicants' Exhibit 63) together with a review of some of Bechtel's redesign activities. As set forth in the SLI Report (at ii):

The specific findings in this report on Brown & Root's engineering work reflect an historical review of certain areas of B&R engineering and its management, SLI's evaluation of data in the Bechtel work packages, and a review of some Bechtel redesign work.

According to the Applicants, the SLI Report represents an expert consultant's analysis of information obtained through lawsuit discovery from 1982-84.

None of the issues admitted for litigation in Phase II questions the adequacy of B&R's engineering, or the adequacy of engineering at STP following the replacement of B&R by Bechtel. As we understand it, the issue as to which CCANP seeks to reopen the record to include the SLI Report is CCANP Contention 9, which questions the adequacy of HL&P's reporting of the Quadrex Report to NRC pursuant to 10 C.F.R. § 50.55(e).

CCANP asserts that the SLI Report is relevant to the reportability of the Quadrex Report and of particular Quadrex findings. It asserts that this issue is significant — a point with which no party disagrees. But it fails to explain the significance of the information in the SLI Report to Contention 9, either in terms of its effect on the result to be reached or in the manner in which the SLI Report would bear on information already in the record (*see* Motion at 17-19). All that CCANP does in this regard is to set forth certain SLI Report excerpts bearing upon Quadrex Report findings which Contention 9 claimed to be reportable. CCANP also references certain SLI Report excerpts which, it claims, support its position that the Quadrex Report as a whole should have been reported to NRC as a QA breakdown pursuant to 10 C.F.R. § 50.55(e).

Applying the reopening criteria, we agree that the issue to which the SLI Report is said by CCANP to relate is significant. We decline to rule on questions of the timeliness of CCANP's Motion, although we believe the Applicants and Staff have raised valid questions as to why CCANP could not have obtained the SLI Report and filed its motion earlier. (In particular, we understand that CCANP never sought this report from the Applicants.)

Dispositive of CCANP's Motion insofar as it seeks to reopen the record to include the SLI Report, however, is the lack of materiality of this report to CCANP Contention 9. In our view, the SLI Report appears

to be no more than a further expert opinion on facts already in the record. This is not the type of information for which reopening a record is generally warranted. *Diablo Canyon*, ALAB-644, *supra*. In this case, it is the information available to HL&P in 1981 that determines the reportability of the Quadrex Report, not a subsequent evaluation of that information in the light of later-acquired information. Indeed, earlier in this proceeding, at the behest of CCANP, we declined to admit into evidence a 1982 Bechtel review of Quadrex findings offered by the Applicants (Work Package EN-619, Applicants' proposed Exhibit 64) to demonstrate (in part) that some of the Quadrex findings were not as serious as they appeared to be when the Quadrex Report was issued and hence did not represent reportable "deficiencies" (see Tr. 13,464-70). For reasons similar to those causing our rejection of Applicants' Exhibit 64, we here decline to accept into evidence the SLI Report. Accordingly, we decline to reopen the record for that purpose.

4. *SLI Report (New Contention)*

CCANP also seeks to introduce a new contention which asserts that the Applicants violated their obligations under the *McGuire* doctrine by not providing copies of the SLI Report to the Board and parties during the Phase II hearings. This proposed contention is by definition late-filed, since it was not (indeed, could not have been) submitted in 1978, during the period when contentions were initially required to be filed. For that reason this contention is subject to a balancing of the five factors bearing upon late-filed contentions set forth in 10 C.F.R. § 2.714(a).

CCANP fails to address these factors. Its proposed new contention could be dismissed on that basis alone. *Cf. Waterford*, ALAB-812, *supra*, 22 NRC at 16. But its motion for a new contention must be denied for a more fundamental reason: it fails to meet the materiality standards for reopening the record.

The *McGuire* doctrine requires advice to a Licensing Board of matters "relevant and material" to issues pending before that Board. LBP-85-6, 21 NRC 447, 461 (1985), and cases cited. As we have explained, the SLI Report is not material to CCANP Contention 9, the only contention as to which CCANP claims any relevance. CCANP has made no real effort to demonstrate the materiality of the SLI Report to any issue accepted for litigation in Phase II. Absent such a connection to a Phase II issue, the Applicants would not have been obligated by the *McGuire* doctrine to supply copies of the report to us and the parties.

Furthermore, the Applicants kept us informed in a timely fashion about the existence of the report. Their October 9, 1984 letter advising

of the report was sent little more than a week following the issuance of the report on October 1, 1984. The report's nature was discussed in the letter and briefly at the October 16, 1984 prehearing conference (Tr. 10,859-62), where we concluded that it probably was not relevant to Phase II issues. We discussed the report again at the outset of the Phase II hearings, when we were advised that the protective order imposed by the Matagorda County Court had been lifted. We advised CCANP that it could bring to our attention anything in the report it believed to be "specifically relevant" to Phase II issues (Tr. 11,268-70). Prior to its current Motion, CCANP made no attempt to do so.

Our present examination of the SLI Report convinces us that it is not material to the Phase II issues before us. We stress again that, at the time the SLI Report was released from the protective order of the Matagorda County Court, the issues open for litigation in Phase II (insofar as they might be affected by the SLI Report) concerned only the reportability of the Quadrex Report and not the adequacy of B&R's engineering efforts. That being so, there was no *McGuire* violation in the Applicants' failure to provide the SLI Report to us. For that reason, CCANP has not satisfied the standards for reopening the record to include its proposed new *McGuire* contention.⁵

5. *Jordan Chronology*

The second document as to which CCANP seeks to reopen the record is a handwritten diary or chronology of events prepared by Don D. Jordan, Chairman of the Board of Directors of HL&P, covering the period June 26, 1981, through December 15, 1981. Mr. Jordan testified during the Phase II hearings, and certain of the entries in the chronology are clearly relevant to that testimony. CCANP claims, and the other parties acknowledge, that the Jordan Chronology should have been provided to the Board and parties by virtue of the direction included in LBP-85-19, *supra*, 21 NRC at 1730-31. The Applicants explained, and apologized for, their failure to supply it (along with other documents which they provided on July 2, 1985), as an inadvertent error by counsel.

The Applicants and Staff claim that the matters set forth in the Jordan Chronology, to the extent relevant to Phase II issues, are cumulative of matters already in the record. The Staff would accordingly deny reopening the record to include this document. The Applicants also assert that

⁵ Given this ruling, we need not undertake a balancing of the five factors of 10 C.F.R. § 2.714(a) governing late-filed contentions.

the document does not satisfy the standards for reopening the record; but, inasmuch as their error prevented CCANP from introducing it earlier, they do not object to its admission into evidence.

In our view, the Jordan Chronology clearly would have been admissible if CCANP had offered it during the hearings. We also believe that the stringent standards for reopening a record need not always be applied with full force, particularly where, as here, the proponent of reopening the record was prevented by the inadvertent error of another party from offering the document earlier. *See also Carolina Power & Light Co.* (Shearon Harris Nuclear Power Plant, Units 1, 2, 3, and 4), LBP-78-2, 7 NRC 83, 85 (1978) (lower threshold of significance where new evidence can be received with little or no burden upon the parties). Finally, reopening the record to include the Jordan Chronology will not result in any delay in the proceeding; we specifically announced our ruling early to avoid any such delay.

In view of the above considerations, we have reopened the record to include the Jordan Chronology, which is to be designated as CCANP Exhibit 148.

6. *Discovery*

CCANP has asked for discovery concerning two matters: (a) the handling of the SLI Report as it relates to CCANP's proposed new contention, and (2) the origin, supporting documentation, and handling of the Jordan Chronology.

With respect to the first of these requests, discovery would not be appropriate since we have denied admission of the proposed contention (*see* § 4, *supra*). 10 C.F.R. § 2.740(b)(1) (discovery shall relate only to matters in controversy); LBP-85-19, *supra*, 21 NRC at 1729; *Duke Power Co.* (Catawba Nuclear Station, Units 1 and 2), ALAB-687, 16 NRC 460, 467 n.12 (1982).

As for the Jordan Chronology, the document is being offered by CCANP primarily on a collateral issue — the role of Applicants' lead counsel in the decision to replace B&R. While the answer to that question may have some bearing on the honesty and candor which we accord to the testimony of certain of Applicants' Phase II witnesses, we do not view that circumstance as sufficient, at this late date, for reopening discovery. Furthermore, one of the bases for our reopening the record to admit the Jordan Chronology (CCANP Exhibit 148) was the absence of significant burden on the parties by virtue of doing so. Discovery would

undermine that basis. For these reasons, we are denying the request for discovery on the Jordan Chronology.

For the reasons set forth above, and confirming our Order dated October 16, 1985, it is, this 5th day of November 1985,

ORDERED

1. That CCANP's Motion dated September 30, 1985, to reopen the record to admit the Jordan Chronology is *granted*; the Jordan Chronology is admitted into evidence as CCANP Exhibit 148;

2. That CCANP's Motion for Board-ordered production of the SLI Report is *dismissed* as moot;

3. That in all other respects (and except as ruled upon by our Memorandum and Order dated October 4, 1985, granting CCANP an extension of time within which to file its proposed findings of fact and conclusions of law) CCANP's September 30, 1985 Motion is *denied*.

**FOR THE ATOMIC SAFETY AND
LICENSING BOARD**

**Charles Bechhoefer, Chairman
ADMINISTRATIVE JUDGE**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

**Lawrence Brenner, Chairman
Dr. A. Dixon Callihan
Dr. Richard F. Cole**

In the Matter of

**Docket Nos. 50-456
50-457**

**COMMONWEALTH EDISON COMPANY
(Braidwood Nuclear Power Station,
Units 1 and 2)**

November 7, 1985

In this Memorandum and Order the Licensing Board rules that the National Environmental Policy Act (NEPA) does not entitle the intervenor to litigate the possible effects of a proposed transmission line to transport electricity from the Braidwood facility. The Board imposes an operating license condition requiring notice in the event Applicant decides to build and operate a 765-kV transmission line on rights-of-way to and from the Braidwood site.

NEPA: SEGMENTATION

There is no requirement to assess the effects of an overall transmission grid system long-range plan when considering a presently proposed part of the transmission system. *Sierra Club v. Hodel*, 544 F.2d 1036, 1040-41 (9th Cir. 1976); *see also Indian Lookout Alliance v. Volpe*, 484 F.2d 11, 19 (8th Cir. 1973) (same reasoning applied in the analogous factual setting of an independently useful highway).

NEPA: SEGMENTATION

The three-prong test to determine whether an agency may confine its environmental analysis under NEPA to the portion of the plan for which approval is being sought is: (1) whether the proposed portion has substantial independent utility; (2) whether approval of the proposed portion either forecloses the agency from later withholding approval of subsequent portions of the overall plan, or forecloses alternatives to subsequent portions of the plan, and; (3) if the proposed portion is part of a larger plan, whether that plan has become sufficiently definite such that there is a high probability that the entire plan will be implemented in the near future. *Swain v. Brinegar*, 542 F.2d 364, 369 (7th Cir. 1976) (en banc); see also *Duke Power Co.* (Amendment to SNM-1773 — Transportation of Spent Fuel from Oconee Nuclear Station for Storage at McGuire Nuclear Station), ALAB-651, 14 NRC 307, 313 (1981).

MEMORANDUM OF RATIONALE FOR SUMMARY DISPOSITION OF NEINER FARMS CONTENTION 1

MATERIAL FACTS

By unpublished order dated August 12, 1985, this Licensing Board granted Applicant Commonwealth Edison's motion, which had been supported by the NRC Staff, for summary disposition of Neiner Farms Contention 1. This memorandum gives the reasons for our ruling and determines that an operating license condition providing for notice in the future is appropriate to assure the integrity of the hearing process and Neiner Farms' rights to due process. We do not adopt more extensive license conditions sought by Neiner Farms.

Neiner Farms Contention 1 alleged that there would be specified adverse operational effects from a 765-kV transmission line which was being proposed to transport electricity from the two-unit Braidwood nuclear power plant.

Applicant's June 11, 1985 motion for summary disposition, as supported by affidavit of its System Planning Manager, Alfred H. Getty, establishes the following material facts as to which there is no genuine issue to be heard (see 10 C.F.R. § 2.749):

1. Applicant does not now plan to build a 765-kV transmission line to transmit power from Braidwood, Units 1 and 2. Getty Affidavit, at 1.

2. Applicant might in the future build and operate a 765-kV transmission line connected to the Braidwood Station or elsewhere on the existing rights-of-way running to and from Braidwood only if additional generating plants (beyond those now being constructed) were constructed and operated at Braidwood or at other nearby sites such as the LaSalle site (located west of Braidwood), or at other locations which could require a 765-kV line on the existing rights-of-way east of Braidwood. *Id.* at 1-2, 4. See Applicant's Environmental Report (ER) Fig. 3.9-1.
3. Based on present load projections, Applicant does not now foresee the need for such additional electrical generating capacity for at least 25 years. Therefore, Applicant does not now plan to install a 765-kV transmission line connected to Braidwood or elsewhere on the existing rights-of-way running to and from Braidwood for at least 25 years. Getty Affidavit at 4-5.

Material facts 1 and 2 are clear, unambiguous commitments by Applicant. These commitments are sufficient to establish that any future 765-kV transmission line which may be connected to Braidwood Units 1 and 2, or otherwise installed on the existing Braidwood rights-of-way, would be attributable to a future generating unit and not sufficiently attributable to the present subject of the application for operating licenses — Braidwood, Units 1 and 2 — to be considered under the National Environmental Policy Act (NEPA) as part of this operating license hearing. This lack of attribution, which we will discuss below, includes elements of lack of reasonable certainty of future plans, lack of foreclosure of future transmission line alternatives by the proposed action before us, and the substantial independent utility of Braidwood Units 1 and 2 and its associated transmission lines.

In light of material fact 2, material fact 3 is not truly material to our determination. Applicant has promised under oath that any 765-kV transmission lines associated with the Braidwood site or rights-of-way would be built only if future generating plants were built. Material fact 2. If Applicant had not made this commitment, then the long period of time before any such 765-kV lines might be built could have been sufficient by itself to find that such a future possibility should not now be considered under NEPA in this operating license hearing. However, given material fact 2, our decision to grant summary disposition does not depend directly or strongly on material fact 3. We view material fact 3 as a supporting "makeweight" fact which establishes that Applicant has no nefarious scheme, vaguely alluded to by Neiner Farms, of putting

a 765-kV line on the Braidwood rights-of-way in the near future for purposes of serving Braidwood Units 1 and 2, under the subterfuge of asserted need for such a transmission line by another generating unit which would be built in that near-future time frame.

Given our limited, contextual reliance on material fact 3, we place no importance on high accuracy for the prediction that it will be at least 25 years before any additional generating capacity might be needed at or sufficiently near the Braidwood site so as to require 765-kV transmission lines in the Braidwood region of the Applicant's transmission grid system. It is sufficient for our purposes to rely on the fact that it will be many years before such future generating capacity will be needed. Moreover, as set forth below, we establish a notice requirement for the Applicant which will protect Neiner Farms' opportunity to argue that it should be entitled to litigate its contention before the NRC if Applicant materially changes its commitments in material facts 1 and 2 as we have them set forth above, or in material fact 3 to the extent we have relied on it.

FACTUAL BACKGROUND

Neiner Farms is concerned with a transmission line right-of-way which runs through its property. This right-of-way extends from the Braidwood Station site, generally east for about 23 miles to the Davis Creek Transmission Substation, and then north for about 7½ miles to the Wilton Center Transmission Substation (apparently point "J" on ER Fig. 3.9-2), for a total distance of about 30½ miles. ER § 3.9.1 and Fig. 3.9-2.¹ The Neiner Farms' properties are located in Manteno, Illinois, which is in Kankakee County on the portion of the right-of-way in question between Davis Creek and Wilton.

Mr. Getty states that Applicant has never planned to build a 765-kV transmission line to transmit power from Braidwood Units 1 and 2. Getty Affidavit at 1. However, the Applicant deemed it prudent to plan for the ultimate development of the rights-of-way between LaSalle and Braidwood (running west from Braidwood) and those running to Wilton to include a future 765-kV line which would parallel the two-circuit,

¹ It is not a material difference, but Mr. Getty's affidavit, at page 1, reports that the distance from Braidwood to Wilton is about 38.3 miles. From Wilton, new rights-of-way were acquired to the east and then north to the Crete Substation, for transmission lines of 345 kV and lower voltage. Part of these rights-of-way involved the widening of an existing 765-kV transmission line right-of-way. ER § 3.9.1 and Fig. 3.9-2.

345-kV lines associated with Braidwood, Units 1 and 2. *Id.* at 1-2.² Applicant believed, at the time those long-range planning studies were performed in the early to mid-1970's, that a 765-kV line would be needed if additional generating units were added at the Braidwood site, or at other nearby sites, such as LaSalle. Given the estimated electrical load growth at the time of those planning studies, Applicant believed such additional generating capacity, and therefore a new 765-kV transmission line system in the vicinity of Braidwood, would be needed in six or seven years after the Braidwood 345-kV lines were needed. *Id.* at 2.

Therefore, at least along the Braidwood to Wilton route, Applicant sought to acquire a right-of-way wide enough for both the 345- and 765-kV sets of lines. All of the rights-of-way necessary for the 345-kV circuits needed for Braidwood Units 1 and 2 have been acquired. Applicant has also acquired adequate width for the possible future 765-kV circuit for more than 97% of the route to Wilton. *Id.* at 2-3.³ The right-of-way easement through the Neiner Farms' property had to be obtained by eminent domain. Since only the 345-kV circuits were immediately required, this easement awarded by the Illinois Commerce Commission does not permit installation of a 765-kV line. Applicant would have to obtain a Certificate of Convenience and Necessity from the Illinois Commerce Commission before a 765-kV line could be built. *Id.* at 3.

As set forth above, the three material facts show that Applicant might build and operate 765-kV transmission lines on the route from Braidwood to Wilton, or on other rights-of-way running to and from Braidwood, only if additional generating plants were built and operated at Braidwood or other nearby sites. Moreover, it will be many years before such future generating capacity will be needed.⁴

² Neither Mr. Getty's affidavit, nor the ER, discloses whether Applicant's long-range planning also included the possible addition of a 765-kV line on the Braidwood to East Frankfort Substation 345-kV line right-of-way, which runs in a general northeast direction from Braidwood. See ER Fig. 3.9-1.

³ On the Davis to Wilton portion of the route, the 345-kV circuits require a right-of-way about 145 feet wide. A future 765-kV circuit would require additional width of about 170 feet, for a total of about 315 feet. Getty Affidavit at 3; ER Fig. 3.9-2. Other sections of the Braidwood to Wilton right-of-way acquired by Applicant range as wide as 330 to 405 feet. ER Fig. 3.9-2. Possibly because almost all of the transmission line route crosses nearly flat cleared farmland, no issue has been raised before us regarding clearing of the right-of-way to the width required for the possible future 765-kV line. ER § 3.9.1. Cf. *Virginia Electric and Power Co.* (North Anna Power Station, Units 1 and 2), LBP-75-70, 2 NRC 879, 891 (1975), and LBP-76-1, 3 NRC 37 (1976). We do not know whether clearing is necessary to accommodate the wider rights-of-way for a possible 765-kV line. If it is, we do not know whether clearing has or will be done before the Applicant seeks and obtains the Certificate of Convenience and Necessity from the Illinois Commerce Commission which is prerequisite to building any future 765-kV line. Getty Affidavit at 3. Given the absence of any such issue raised before us, we do not pursue it. This is probably a matter also within the domain of the Illinois Commerce Commission.

⁴ As discussed above, Applicant represents its present plan will not require additional capacity which would require 765-kV circuits on rights-of-way running to and from Braidwood for at least 25 years. This is supported by the Getty Affidavit (at 4-5). The Getty Affidavit (at 4) also states that there are tenta-

(Continued)

We have set forth the factual circumstances at some length, because when combined with the applicable law, there springs directly from the facts a clearly mandated result: Applicant's possible future construction and operation of 765-kV transmission lines are not part of the proper scope of a NEPA evaluation of the proposed action of operating Braidwood, Units 1 and 2.

APPLICATION OF THE LAW

Along with another Licensing Board's determination, we recognize that "[c]aution is necessary in dividing a project into segments for NEPA purposes in order to avoid arbitrary divisions which may hide significant total impacts." *Philadelphia Electric Co.* (Limerick Generating Station, Units 1 and 2), LBP-82-43A, 15 NRC 1423, 1473 (1982). The test for whether an agency may confine its environmental analysis to the portion of the plan for which approval is being sought is: (1) whether the proposed portion has substantial independent utility; (2) whether approval of the proposed portion either forecloses the agency from later withholding approval of subsequent portions of the overall plan or forecloses alternatives to subsequent portions of the plan; and (3) if the proposed portion is part of a larger plan, whether that plan has become sufficiently definite such that there is high probability that the entire plan will be carried out in the near future. *Swain v. Brinegar*, 542 F.2d 364, 369 (7th Cir. 1976) (en banc). See, e.g., *Piedmont Heights Civic Club, Inc. v. Moreland*, 637 F.2d 430, 439 (5th Cir. 1981); *Sierra Club v. Froehlke*, 534 F.2d 1289, 1297-98 (8th Cir. 1976); *Trout Unlimited v. Morton*, 509 F.2d 1276, 1285 (9th Cir. 1974). See also *Duke Power Co.* (Amendment to SNM-1773 — Transportation of Spent Fuel from Oconee Nuclear Station for Storage at McGuire Nuclear Station), ALAB-651, 14 NRC 307, 313 (1981).

Clearly, the generation and delivery of electricity by the Braidwood Station, Units 1 and 2, over its 345-kV (and lower voltage) transmission circuits has substantial independent utility. This is decidedly not a situation like those of a highway segment with no logical termini unless and until an additional connecting segment is added (*cf. Swain, supra*, 542 F.2d at 370), or of an electrical generating plant without the transmission

tive plans for new generating capacity in about 12 years at Applicant's Langham site. These statements in the affidavit would be consistent if additional plants at Langham would not require new 765-kV transmission lines on rights-of-way running to and from Braidwood. We do not know if this is the case. However, it does not matter, because: (1) a new 765-kV line associated with a plant at Langham would not be attributable to Braidwood Units 1 and 2 for NEPA purposes; and (2) 12 years easily fits under a label of "many years," which is the material time period used for our limited reliance on material fact 3.

lines necessary to make the plant useful by the delivery of its electricity. *Detroit Edison Co.* (Greenwood Energy Center, Units 2 and 3), ALAB-247, 8 AEC 936, 939 (1974). Cases which have found a lack of sufficient independent utility of a proposed project have found that the project was dependent on subsequent phases "such that it would be irrational, or at least unwise, to undertake the first phase if subsequent phases were not also undertaken [footnote omitted]." *Trout Unlimited, supra*, 509 F.2d at 1285. This is not the case here.

Approval of the proposed project does not preordain that 765-kV transmission lines will be constructed in the future or otherwise foreclose future alternatives. Neiner Farms argues that because Applicant is maintaining the option of installing 765-kV lines on the rights-of-way to and from Braidwood within the lengthy period of time that Braidwood Units 1 and 2 would still be operating, the issue of effects of such possible future 765-kV lines is now ripe for litigation. Intervenor's Answer, July 10, 1985, at 2. We disagree. If and when approval to build such future 765-kV lines is actually sought, its impacts can then be evaluated by the governmental authority with jurisdiction (which could vary or overlap depending on the type of generating plant or plants with which the lines would be associated). For example, if operational effects of 765-kV lines are found unacceptable even with mitigation, the lines could be disapproved, and lower-voltage lines approved instead.

The particular routing was not in issue in Neiner Farms' contention although we imagine that Neiner Farms would prefer that any 765-kV lines which might be approved in the future not traverse its property. Sensibly, future routing decisions would take into account existing rights-of-way and the location of the new and existing generating plants on the Applicant's electrical transmission system. However, this does not foreclose alternatives to any future proposals. The fact that future projects may be correlated with past projects and the project pending before us does not bring such future projects within the scope of environmental review of the present proposal. *See Sierra Club v. Callaway*, 499 F.2d 982, 987 (5th Cir. 1974). Thus, there is no requirement to assess the impacts of an overall transmission grid system long-range plan when considering a presently proposed part of the transmission system. *Sierra Club v. Hodel*, 544 F.2d 1036, 1040-41 (9th Cir. 1976); *Columbia Basin Land Protection Ass'n v. Kleppe*, 417 F. Supp. 46, 52 (E.D. Wash. 1976), *aff'd in part, rev'd in part on other grounds, sub nom. Columbia Basin Land Protection Ass'n v. Schlesinger*, 643 F.2d 585 (9th Cir. 1981). The same reasoning has been applied in the analogous factual setting of an independently useful highway, which may be built without the need for an environmental evaluation of:

a network of highway routes comprising a statewide highway plan, . . . [S]uch plans must of necessity be projected over a relatively long span of time and be flexible in order to allow modifications to meet unforeseen and untoward developments[.] [W]e do not think the overall project is subject at the outset to the requirements of NEPA. Such plans usually are and should be visionary, subject to extensive modification and dependent to a large degree upon [future circumstances].

* * *

[A]s a practical matter it is necessary to permit the division of a state highway plan into segments for the purpose of environmental considerations.

Indian Lookout Alliance v. Volpe, 484 F.2d 11, 19 (8th Cir. 1973), cited by *Sierra Club v. Callaway*, *supra*, 499 F.2d at 987.

The third prong of the *Swain* test, *supra*, 542 F.2d at 369, is not explicitly set forth in the string of cases we have cited above after *Swain*, or by the Appeal Board in *Duke Power Co.*, *supra*. It appears to us that the fact that a future larger plan is definite would not necessarily bar segmented consideration of a smaller portion of the plan if the first two prongs of the test, discussed above, are met. However, the facts pertinent to the future prospects of a larger plan could also be viewed as relevant indicia in applying the first two prongs of the test. In any event, our decision that a possible future 765-kV line on rights-of-way to and from Braidwood need not be evaluated as part of the decision regarding the operation of Braidwood Units 1 and 2 easily satisfies the third prong of *Swain*.

In the first place, it is arguable whether there even is a sufficiently formed larger "overall plan" in existence so as to come within the prerequisite conditional clause of the third prong — "if the proposed action is part of a larger plan" (emphasis added). See *Kleppe v. Sierra Club*, 427 U.S. 390, 400-06 (1976); *Sierra Club v. Hodel*, *supra*, 544 F.2d at 1040-41. Moreover, as is clear from the factual context discussed above and set forth in the material facts, Applicant is engaged in long-range planning for the future expansion of its electrical capacity and associated transmission system. It is not definite that 765-kV lines will be needed on rights-of-way running to and from Braidwood. It is definite that additional electrical units, which possibly might have 765-kV transmission lines associated with them, will not be needed for many years (perhaps about 12, perhaps about 25). Moreover, the routes and voltages of such future transmission lines will depend on the location of future generating plants, and probably on other future circumstances such as the location and distribution of electrical demand by customers on the Applicant's system.

For the first time, and with no explanation, Neiner Farms in its July 10, 1985 opposition to summary disposition of its contention, at page 2, states "there is a possible nexus between a 345 kV line and an already

existing 765-kV line." An existing 765-kV line runs east-west for about 17 miles between the Wilton Substation and a point in Washington Township. ER § 3.9.1 and Fig. 3.9-2. See note 1, above. The new 345-kV circuits running between Braidwood Units 1 and 2 and the Crete Substation parallel this existing 765-kV line along this 17-mile portion of the 55-mile route to Crete. Neiner Farms' contention, and its stated basis, focuses on 765-kV lines which would transport power from Braidwood Units 1 and 2 and which would be placed in the new rights-of-way acquisitions testified to before the Illinois Commerce Commission and discussed by us above. Indeed, the Neiner Farms' contention appears to be limited to the Braidwood to Wilton right-of-way given its stated basis in the second paragraph, although we have assumed in this Memorandum that it would be broad enough to include any new 765-kV lines transmitting power from Braidwood Units 1 and 2.⁵

An already operational 765-kV line transmitting other power over the grid would not be attributable to Braidwood Units 1 and 2. Although not referred to in Neiner Farms' July 10, 1985 answer, if the reference to the existing line meant to allege cumulative or synergistic operational impacts caused by adding the Braidwood Units 1 and 2, 345-kV lines parallel to the existing 765-kV line, Neiner Farms has never raised any such contention, let alone a timely one with reasonable specificity and basis.

CONDITION

To protect Neiner Farms' ability to pursue whatever legal action it deems appropriate before forums with jurisdiction, if and when Applicant does seek to build additional 765-kV transmission lines on rights-of-way to and from the Braidwood site, we direct that a notice condition be made part of any operating licenses which may be issued for Braidwood

⁵ The contention states:

Intervenors contend that the 765kV transmission lines that will be used to transport the electrical output from the Braidwood Station create an unacceptable, hazardous and dangerous condition to persons living or working on a daily basis within 600 feet from the closest line, and that the 765kV transmission lines should not be placed closer than 600 feet from any structure or area in which people can be expected to be present six or more hours per day. The hazardous and dangerous conditions include: audible noise impairing hearing, increasing tension, interfering with sleep, interfering with speech, interference with the operation of cardiac pacemakers; biological effects on humans because of exposure to electric fields excluding the use of nearby areas for working, living or recreation, and the danger of shock to persons and animals.

The basis for this contention is that Commonwealth Edison testified before the Illinois Commerce Commission that as of March 3, 1978, approximately 60% of all transmission right-of-way acquisitions included right-of-way for 345kV and 765kV transmissions lines. Opinion No. 78-13, involving Case No. 26529, issued by the Public Service Commission of New York discusses the hazards associated with 765kV lines.

Units 1 and 2. The notice condition could also serve to protect the integrity of the hearing process in the event future actions by Applicant provide the basis for arguing that material facts 1 and 2, and 3 to the extent relied upon by us, have changed materially. Therefore, we include the NRC Staff as a recipient of the notice required by the condition. Neiner Farms would in any event receive notice if Applicant were to seek an easement for a 765-kV line on Neiner Farms' property since, as noted above, the present easement does not include permission to erect 765-kV lines. However, the condition we impose is not limited to the particular right-of-way which passes through Neiner Farms' property, or for that matter, to existing rights-of-way. The condition is:

Commonwealth Edison Company will give notice to Bob Neiner Farms, Inc. and the NRC Staff of any application to construct, or of other firm action in advance of construction if an application to construct is not required, 765-kV transmission lines on present or future rights-of-way routed to or from the site of the Braidwood Station.

APPEALABILITY

As discussed in our unpublished Order of August 14, 1985, today's memorandum completes our action dismissing Neiner Farms Contention 1. Dismissal of Contention 1 has the effect of terminating Neiner Farms' participation as a party in this case. Therefore, Neiner Farms may now appeal our summary disposition of its Contention 1. Neiner Farms may also appeal any earlier rulings against it in this case. The nature of our action does not neatly fit under the initial decision category of decisions for which appellate procedures and schedules are provided for in 10 C.F.R. § 2.762 of the Commission's Rules of Practice, or under the category of appeals of rulings on petitions to intervene and requests for hearing governed by 10 C.F.R. § 2.714a. In the circumstances that: (1) Neiner Farms can now appeal all prior rulings against it; (2) we desire to resolve doubt in favor of giving Neiner Farms and other parties the longer time period of § 2.762 if they so desire; and (3) the fact that we referenced § 2.762 in our August 14, 1985 Order, we presently advise, subject to change by the Atomic Safety and Licensing Appeal Board, that § 2.762 shall govern.

As before, we offer no opinion on whether any appeal of this Memorandum by the Applicant or NRC Staff would be ripe, since their participation in the case has not been terminated. It seems the better course that these parties should appeal now, if they desire to do so. The Appeal

Board could always hold their appeal in abeyance if it so desires. If a party desires to wait for the issuance of the next appealable initial decision by the Licensing Board before deciding whether to appeal, that party promptly should seek such permission from the Appeal Board. Finally, courtesy would suggest, in the peculiar circumstances at hand, that a party which does not wish to file an appeal should so inform the Appeal Board within the 10-day period of service of this Memorandum specified in § 2.762 for a Notice of Appeal.

Therefore, pursuant to 10 C.F.R. § 2.762, any party may take an appeal from this grant of summary disposition by filing a Notice of Appeal within ten (10) days after service of this Memorandum. Each appellant must file a brief supporting its position on appeal within thirty (30) days after filing its Notice of Appeal (forty (40) days if the Staff is the appellant). Within thirty (30) days after the period has expired for the filing and service of the briefs of all appellants (forty (40) days in the case of the Staff), a party who is not an appellant may file a brief in support of or in opposition to the appeal of any other party. A responding party shall file a single responsive brief, regardless of the number of appellants' briefs filed.

IT IS SO ORDERED.

**FOR THE ATOMIC SAFETY AND
LICENSING BOARD**

**Lawrence Brenner, Chairman
ADMINISTRATIVE JUDGE**

Bethesda, Maryland
November 7, 1985

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

**Sheldon J. Wolfe, Chairman
Oscar H. Paris
Frederick J. Shon**

In the Matter of

**Docket No. 50-320-OLA
(ASLBP No. 80-442-04-LA)**

**METROPOLITAN EDISON COMPANY,
et al.
(Three Mile Island Nuclear Station,
Unit 2)**

November 8, 1985

The Board's Order grants the parties' joint motion to approve a stipulation, dismisses the Intervenor and dismisses the proceeding involving proposed technical specifications for this plant.

RULES OF PRACTICE: STIPULATIONS

A stipulation is approved to further the principles of settlement and compromise of NRC litigation.

ORDER

(Granting Joint Motion to Approve Stipulation, Dismissing ECNP and Dismissing Proceeding)

On October 22, 1985, the Atomic Safety and Licensing Board was served with a Joint Motion, filed by all parties to the captioned proceeding, requesting Board approval of the "Joint Stipulation Regarding Settlement of ECNP Proposed Contentions," a copy of which was attached thereto. According to the Joint Stipulation, the subject Stipulation was entered into by the Environmental Coalition on Nuclear Power, the NRC Staff, and Licensee for the purpose of resolving the remaining proposed contentions advanced by ECNP in this proceeding.¹ The Stipulation memorializes Licensee's commitment to leave in place and to operate its real-time monitoring system until shipment from TMI has been completed of all TMI-2 core material the recovery of which is practicable (whether located in or external to the pressure vessel), as evidenced by a final accounting of the TMI-2 core which accounting has been received and accepted by the Nuclear Regulatory Commission. In addition, ECNP will continue to be sent all documents currently being sent (including formal correspondence to Licensee management, Weekly Status Reports, safety evaluations, exemptions, environmental review documents and changes to the Recovery Operations Plan) pertaining to TMI-2 for the duration of cleanup and recovery activities or until ECNP notifies Licensee and the NRC Staff to the contrary.

The Board regards the Joint Motion and subject Stipulation as furthering the principles of settlement and compromise of NRC litigation. Accordingly, the Joint Motion is hereby GRANTED and it is hereby ORDERED that:

¹ ECNP is the only petitioner remaining in this proceeding.

1. The Stipulation is approved;
2. ECNP is dismissed from the proceeding; and
3. The proceeding is dismissed.

**THE ATOMIC SAFETY AND
LICENSING BOARD**

**Sheldon J. Wolfe, Chairman
ADMINISTRATIVE JUDGE**

**Oscar H. Paris
ADMINISTRATIVE JUDGE**

**Frederick J. Shon
ADMINISTRATIVE JUDGE**

**Dated at Bethesda, Maryland,
this 8th day of November 1985.**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

**Charles Bechhoefer, Chairman
Dr. James C. Lamb
Frederick J. Shon**

In the Matter of

**Docket Nos. STN 50-498-OL
STN 50-499-OL
(ASLBP No. 79-421-07-OL)**

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

November 14, 1985

The Licensing Board grants (in part) a motion to reopen the record, and permits withdrawal of another such motion.

RULES OF PRACTICE: REOPENING OF PROCEEDINGS

A motion to reopen the record filed prior to decision but subsequent to the filing of certain parties' proposed findings must satisfy the following criteria: (1) the motion must be timely filed; (2) it must address a significant issue; and (3) it must demonstrate that the information sought to be added to the record might potentially alter the result which would be reached in its absence.

RULES OF PRACTICE: REOPENING OF PROCEEDINGS

Even if untimely, a motion to reopen a closed record may present a matter of such gravity that the motion should be granted.

RULES OF PRACTICE: RESPONSIBILITIES OF COUNSEL

A party that attacks the integrity and professional responsibility of an opposing party's counsel has an obligation to assure that the charges have a basis and are accurately documented. Lack of resources is no excuse for baseless charges.

RULES OF PRACTICE: MOTION TO STRIKE

Licensing boards have authority to strike pleadings which do not live up to the high standards of practice expected before the Commission.

MEMORANDUM AND ORDER (CCANP Motions II and III to Reopen Record)

On October 16, 1985, Citizens Concerned About Nuclear Power, Inc. (CCANP), an intervenor in this operating license proceeding, filed two motions (Motion II and Motion III) to reopen the record of Phase II of this proceeding.¹ Thereafter, CCANP moved to withdraw Motion III (Withdrawal Motion). For reasons set forth herein, we are granting (in part) Motion II, as well as the Withdrawal Motion.

A. Background

Hearings in Phase II of this proceeding were conducted during the Summer of 1985, and the record has been closed. Proposed findings of fact and conclusions of law have been submitted by the Applicants and CCANP, and are due in the near future from the NRC Staff. The issues included several which raise questions on a very sensitive subject — the openness and candor of the Applicants in their dealings with the NRC, including this Board, and the effect of the Applicants' performance in this area on their character to manage construction and operation of the South Texas Project (STP). In particular, CCANP Contention 10 claims that HL&P's failure to advise this Board in a timely fashion of, *inter alia*, the Quadrex Report pursuant to the so-called *McGuire* doctrine reflects

¹ CCANP earlier filed another motion to reopen the Phase II record (Motion I). We granted in part and denied in part that motion. See Memorandum and Order, LBP-85-42, 22 NRC 795 (1985).

adversely on the Applicants' character. See LBP-85-6, 21 NRC 447, 460-63 (1985).

Motions II and III each seek to introduce into the Phase II record documents which, according to CCANP, indicate that certain testimony presented by the Applicants was not wholly truthful. Although filed on the same date, the two motions were kept separate because of the differing circumstances surrounding CCANP's discovery of the particular documents. In particular, CCANP claimed in Motion III that the document for which it there sought to reopen the record should have been — but was not — provided to CCANP prior to the Phase II hearings. Shortly after filing Motion III, however, CCANP realized (through the advice of the Staff) that the document in question had in fact been provided to it prior to the hearings. CCANP thus advised the Board and parties by telephone of this circumstance; and on November 1, it filed its Withdrawal Motion.

By response dated October 31, 1985, the Applicants opposed Motion II. On November 4, 1985, the Applicants filed a response to the Withdrawal Motion which did not object to the withdrawal of Motion III but sought certain sanctions against CCANP because of language included both in Motion III and the Withdrawal Motion. The Staff's response, dated November 5, 1985, opposed reopening the record through Motion II but offered no objection to the withdrawal of Motion III.

We will treat each of these motions *seriatim*.

B. Motion II

1. Positions of Parties and Applicable Standards

Motion II seeks to have the record reopened for the purpose of admitting four documents. These documents (hereinafter referred to as Documents 1-4)² consist of the typed version of notes taken by Mr. Thrash, Secretary of the STP Management Committee, of four meetings of that Committee (or, in the case of Document 3, a meeting of that Committee with the Chief Executive Officers of the applicant utilities). The meetings were held on December 4, 1980 (Document 1), February 19, 1981 (Document 2), February 20, 1981 (meeting with CEOs, Document 3), and March 19, 1981 (Document 4). The official minutes of three of the meetings in question are in evidence as CCANP Exhibit 108 (meetings of February 19 and 20, 1981) and CCANP Exhibit 109 (meeting of

²The documents were designated by CCANP as Exhibits 1-4; but, to avoid confusion with exhibits offered or entered into evidence in the proceeding, we will refer to these documents as Documents 1-4.

March 19, 1981). The notes of the meetings recorded by Documents 1-3 refer in part to the reasons for HL&P's commissioning of the Quadrex Report and the relationship of the report to the then-forthcoming Phase I hearings. Document 4, in relevant part, includes only a hypothetical discussion of possible outcomes of the Quadrex review.

CCANP claims that these documents undercut the position taken by the Applicants that they did not regard the Quadrex Report as relevant and material to the Phase I issues and hence were not required to provide it to the Board shortly after its issuance, pursuant to *McGuire* obligations. See LBP-85-6, *supra*, 21 NRC at 461 and cases cited. CCANP claims that Documents 1, 2 and 3 show that HL&P had intended the Quadrex Report to assist it at the Phase I hearings, and that Document 4 demonstrates the potential significance of that report and its import to the "licenseability" of the STP. Further, CCANP asserts that these documents demonstrate "that there was a direct link *in the minds of HL&P senior management* between the commissioning of the Quadrex Report, the Phase I operating license hearings, and the ultimate licenseability of the plant" (Motion II at 5-6, emphasis in original). CCANP concludes that testimony of HL&P officials during Phase II was inconsistent with these documents, and that HL&P did not turn the Quadrex Report over to us early in Phase I because it would threaten the licenseability of STP.

In determining whether to reopen the record, we are bound by the well-known standards which we recently described in LBP-85-42, *supra*, 22 NRC at 798-99. See also our earlier ruling in LBP-85-19, 21 NRC 1707, 1720-21 (1985). Suffice it to say that, given the timing of Motion II, three criteria must be satisfied:

1. The motion must be timely filed;
2. It must address a significant issue; and
3. It must demonstrate that the information sought to be added to the record might potentially alter the result we would reach in its absence.

CCANP concedes that Motion II was not timely submitted, since CCANP could have obtained Documents 1-4 through discovery but failed to attempt to do so. CCANP relies (Motion II at 7) on one of our earlier rulings which cites authority to the effect that "a matter may be of such gravity that the motion to reopen should be granted notwithstanding that it might have been presented earlier." LBP-85-19, *supra*, 21 NRC at 1720-21, citing *Vermont Yankee Nuclear Power Corp.* (Vermont Yankee Nuclear Power Station), ALAB-138, 6 AEC 520, 523 (1973); to the same effect, see *Public Service Co. of Oklahoma* (Black

Fox Station, Units 1 and 2), ALAB-573, 10 NRC 775, 804 (1979), *vacated in part on other grounds*, CLI-80-8, 11 NRC 433 (1980).

In opposing Motion II, the Applicants claim that CCANP's charges are totally without merit and are supported only by its own mischaracterization of the Phase II record and of Documents 1-4. They further claim that the information in Documents 1-4, to the extent relevant to Phase II issues, is at best cumulative and would not modify the result which we otherwise would reach. Finally, the Applicants point to the untimeliness of Motion II as another reason for dismissing or summarily denying it.

The Staff offers somewhat different reasons for denying Motion II. It stresses the untimeliness of the motion and the ambiguity in the statements in Documents 1-4 upon which CCANP relies. The Staff acknowledges the seriousness of the safety issue to which the documents pertain. But it asserts that the documents are susceptible to many interpretations, "none of which are entitled to conclusive (or indeed much, if any) weight"; and accordingly, that admission of the "documents standing alone" (as sought by CCANP) would provide no probative evidence which would be likely to affect our decision (Staff Response at 4). The Staff notes that CCANP's failure to have offered the documents in a timely fashion prevented the possibility of introducing them into the record at the hearing and "deprived the parties of the opportunity to adduce evidence concerning the meaning and import of the documents" (*id.* at 3).

2. *Ruling on Motion II*

No party questions the significance of the issue to which Motion II is directed. Nor do we. The real question before us is whether the information in Documents 1-4 would have a tendency to modify the result on Contention 10 which we would reach absent such information. As the Staff observes, there is some ambiguity as to the meaning of certain terms in Documents 1-4. But we nonetheless conclude that the new information could potentially alter the result we would otherwise reach on Contention 10. In particular, the documents appear to raise legitimate questions about the veracity or completeness of certain evidence now before us for decision and hence of the integrity of the Phase II record on Contention 10.

The crucial fact which these documents could establish is that one of the major reasons for HL&P's having commissioned the Quadrex review was to provide information for use in the Phase I hearings. If proved, such fact would undercut the Applicants' position on Contention

10. The Applicants assert that CCANP's claim is not supported by either the Phase II record or Documents 1-4. The first of these assertions is obvious — if CCANP's claim were clearly established by the Phase II record, CCANP would not have filed Motion II. Contrary to the Applicants' claim, however, the proffered documents do support a connection between the Quadrex Report and Phase I issues beyond that to which the Applicants' witnesses have testified and contrary to the position taken by the Applicants on Contention 10.

In our view, the following scenario could be created by adding Documents 1-3 to the record:

- a. The second prehearing conference was held on November 19, 1980. At that conference, the issues for Phase I were approved. The most important question discussed at that conference was whether Phase I issues should include consideration of corrective actions adopted by the Applicants following the April 30, 1980 Order to Show Cause or (alternatively) whether Phase I should be limited to an exploration of the deficiencies leading up to the Show-Cause Order. *See* Second Prehearing Conference Order, dated December 2, 1980, at 3-5 (unpublished). We ruled in favor of considering corrective actions during Phase I.
- b. The broader aspects of corrective actions involved consideration of whether the Applicants had abdicated (and were continuing to abdicate) responsibility for the project. Abdication of responsibility was one of the indicia of lack of character to which the Commission had referred in CLI-80-32, 12 NRC 281 (1980), the Order which gave rise to the broad Phase I issues.
- c. The Phase I issues were discussed at the Management Committee meeting on December 4, 1980 (slightly more than two weeks following announcement of the Phase I issues at the November 19, 1980 prehearing conference). At that meeting, there was discussed a third-party review of engineering as a method for demonstrating at the OL hearing that HL&P was in charge of the entire operation, was competently discharging its responsibilities for overseeing design engineering, and accordingly had not improperly abdicated its responsibilities in this area (Document 1).
- d. Accordingly, there was a direct relationship between the commissioning of the Quadrex Report and the Phase I issues (Documents 1, 2 and 3).

- e. Further discussion at the February 1981 Management Committee meetings reflects a difference of opinion as to the relevance of the Quadrex review to the OL hearings. Mr. Goldberg determined it to be relevant, but Mr. Oprea found it not relevant (Document 2). The view of Mr. Oprea, the senior of these two officials, prevailed at the hearing, notwithstanding Mr. Oprea's acknowledgment (in a somewhat different context) that he had, less experience to determine reportability than did Mr. Goldberg (Tr. 14,170, 14,390).
- f. A likely reason for the Applicants' adoption of Mr. Oprea's view was the strong negative character of the Quadrex Report and the potential adverse effects on the abdication of responsibility issue to be litigated in Phase I.

To be sure, the Applicants offer explanations for statements in the various documents. They refer to testimony by Mr. Goldberg indicating only a peripheral and incidental use of the results of the Quadrex review at the hearings. Goldberg, ff. Tr. 11,491, at 4-5; Tr. 11,582-84 (Goldberg). They also assert that the discussion at the December 4, 1980 Management Committee meeting came up only "incidentally" (Applicants' Response at 5). They attribute the discussion to persons unfamiliar with the particular issues to be litigated in Phase I but familiar with the broad scope of NRC licensing proceedings — pointing specifically to the circumstance that the December 2, 1980 Order which "delineat[ed] Issues A-F" was issued only 2 days prior to the December 4 Management Committee meeting (*id.* at 6 n.10). That latter claim, however, is misleading: Issues A-F were approved at the prehearing conference on November 19, 1980 (Tr. 306-07) and the approved text (at the suggestion of the Applicants, Tr. 307) was bound into the transcript of that conference (ff. Tr. 307). Absent further information, we must presume that many attendees at the December 4, 1980 Management Committee meeting were familiar with the precise issues to be litigated in Phase I. Furthermore, the Applicants failed to explain the apparent inconsistency between Document 1 (which indicates Mr. Oprea's presence at the December 4, 1980 Management Committee meeting) and Mr. Oprea's testimony in which he indicated that his best recollection was that the Management Committee was first informed of the Quadrex review in March 1981 (later amended to February 1981) (Tr. 14,103-06).

Because Documents 1-3 can be construed as seriously undercutting the position adopted by the Applicants, and hence as adversely impacting our evaluation of their character, we do not believe that we could render a fair or meaningful decision on Contention 10 without reopening the record to include those documents. Given the potential differences in

how these documents may be construed, however, we would not adopt CCANP's proposal merely to incorporate the documents into the record. We believe that testimony of various individuals concerning the meetings in question is necessary to create an adequate record on Contention 10.

On the other hand, we agree with the Applicants that the portions of Document 4 (and to some extent, Document 2) on which CCANP relies, bearing on the seriousness of the Quadrex Report, are largely speculative, as well as *cumulative of some testimony in the record*. We do not believe that the record should be reopened to include Document 4. As for Document 2, it is significant not for the seriousness of the Quadrex Report but rather for the relationship of the Quadrex review to the forthcoming hearings, and the apparently differing views within HL&P on that question.

As for the timeliness criterion, we agree with all parties that Motion II should have been submitted earlier — indeed, the material should have been offered prior to the Phase II hearings. But the information in Documents 1-3 is so basic to the Applicants' position on Contention 10 that, as CCANP claims, the record should be reopened to include that information notwithstanding its untimely submittal. We are therefore reopening the Phase II record to include Documents 1-3 and testimony concerning the relationship of the Quadrex review to the Phase I hearings.

The Board envisages the reopening of the record which we find warranted to entail a relatively short evidentiary hearing. To enable us to complete the Phase II record and issue a decision in a timely fashion, we propose a hearing in the Houston, Texas area for December 5 and (if necessary) December 6, 1985. Appropriate witnesses would include Messrs. Goldberg, Oprea and Barker, but possibly would also include Messrs. Jordan and Thrash. We expect to discuss hearing arrangements in the conference call we previously scheduled (for other purposes) for November 15, 1985.

Motion II does not seek discovery. Although we envisage that discovery would possibly be useful, we are not authorizing discovery in view of the time constraints necessary for us to issue our Phase II decision in a timely fashion. We request the Applicants, however, to produce the following documents (to the extent that they may reflect *either* the reason(s) for HL&P's commissioning of the Quadrex review *or* a relationship of the Quadrex review to the Phase I hearings):

1. Notes of the meeting of the Management Committee with executive officers (if such meeting took place) on or about December 4-5, 1980.

2. Notes of the Management Committee meetings (including the meeting with executive officers) on January 22 and 23, 1981 (see CCANP Exh. 113, at 5 (p. 4603)).
3. Notes of the meeting of the Management Committee with executive officers on March 20, 1981 (the minutes of which are included in CCANP Exh. 109).

These documents should be provided to the Board and parties by Wednesday, November 27, 1985 (filing date) or Monday, December 2, 1985 (delivery date).

C. Withdrawal of Motion III

In seeking to withdraw Motion III, CCANP acknowledged that it had erred in accusing the Applicants' counsel of withholding important documents from it. CCANP also apologized for its accusations against counsel. Motion III additionally accused HL&P management officials of presenting perjured testimony during Phase II. The Withdrawal Motion does not retract those allegations but, instead, reiterates them.

The Applicants would permit CCANP to withdraw Motion III, but they ask us to impose sanctions against CCANP for its "baseless and scandalous charges." Specifically, the Applicants would have us strike both Motion III and the Withdrawal Motion "since they contain charges that defame HL&P management and Applicants' counsel." They also would have us admonish CCANP's representative that further unwarranted accusations regarding the integrity of Applicants' counsel or management officials will result in additional sanctions.

Absent objection, we are granting the motion to withdraw Motion III. Although we are not striking from the record either Motion III or the Withdrawal Motion, we wish to put parties on notice of our displeasure at the unfounded and reckless allegations which CCANP has made against Applicants' counsel. Since the allegations of perjury against HL&P management officials are in part closely related to the position taken by CCANP on substantive Phase II issues, we defer any ruling on such allegations pending issuance of our Phase II Partial Initial Decision on those issues. Finally, we note that one of the positions taken by the Applicants in connection with Motion II was based on an erroneous statement of facts, most likely through carelessness, and hence was misleading at best. That, too, warrants our disapproval.

The most serious — partly because of its lack of any basis — is CCANP's attack on the integrity and professional responsibility of Applicants' counsel. As the Applicants point out, this is at least the second instance in which CCANP has made baseless charges against Applicants'

counsel concerning the Applicants' response to Board-ordered discovery. (The other example appears at Tr. 12,660-63, 14,186-89.) CCANP explained its charges against counsel in Motion III on the basis of its own lack of organization of the material which it previously had received. Most significant, however, is the listing of the allegedly withheld document in the July 2, 1985 transmittal letter to the Board and parties on which CCANP relied in part in its Motion III; in its Withdrawal Motion, CCANP conceded that it had not actually looked at the transmittal letter it had cited (Withdrawal Motion at 4).

In its Withdrawal Motion, CCANP admitted it had been "careless" and it apologized for its carelessness. Similarly, CCANP had apologized for its earlier erroneous charges concerning the Applicants' response to discovery (Tr. 14,193-96). Nonetheless, CCANP failed to take appropriate steps to assure the validity of the serious charges it was making. As the Applicants point out, CCANP failed to inquire of Applicants' counsel (or Staff counsel) whether the document in question had been produced; failed to review the documents which were produced; and failed to consult the list of produced documents in the Applicants' July 2, 1985 transmittal. When charges as serious as those against Applicants' counsel are proffered, a party has an obligation to take greater care than did CCANP in asserting those charges.

We recognize, of course, the paucity of resources available to CCANP. Nonetheless, when charges as serious as those in Motion III are made, lack of resources is no excuse. If charges of this type cannot be accurately documented, they should not be made.

Although intrinsically less serious, the erroneous claims advanced by the Applicants in responding to Motion II (*see supra* p. 825) are also inexcusable — particularly in light of the far greater resources available to the Applicants. The Second Prehearing Conference Order, dated December 2, 1980, indicated that the issues set forth in the attachment to that Order had been accepted at the Prehearing Conference. A perusal of the transcript of the November 19, 1980 prehearing conference would have revealed that, at the suggestion of the Applicants themselves, the text of the accepted issues was bound into the transcript. That being so, it is inconceivable to us that the precise issues to be heard in Phase I were not known by at least some of those who attended the December 4, 1980 Management Committee meeting. One of the Applicants' primary responses to Motion II was, therefore, upset by the facts.

We have authority, of course, to strike pleadings which do not live up to the high standards of practice expected before the Commission. 10 C.F.R. §§ 2.708(c), 2.713(a), 2.718(e); *see also Texas Utilities Electric Co.* (Comanche Peak Steam Electric Station, Units 1 and 2), Docket

Nos. 50-445-OL-2 & 50-446-OL-2, Memorandum dated September 17, 1985 (unpublished). However, given the totality of circumstances, including the differing evaluations by CCANP and the Applicants of the completeness and accuracy of testimony of HL&P officials during Phase II (all of which bear on the substance of Phase II issues), we decline to strike Motion III or the Withdrawal Motion from the record. We warn all parties, however, that we expect more care in the preparation of pleadings than has been demonstrated by either CCANP or the Applicants in the instances described herein.

For the reasons stated, it is, this 14th day of November 1985,
ORDERED

1. That CCANP's Motion II is *granted in part*, the record of Phase II is *reopened* to the extent indicated in § B.2 of this Memorandum and Order;
2. That CCANP's Motion to Withdraw Motion III is *granted*;
3. That the Applicants' request to strike Motion III and the Withdrawal Motion is *denied*.

FOR THE ATOMIC SAFETY AND
LICENSING BOARD

Charles Bechhoefer, Chairman
ADMINISTRATIVE JUDGE

Bethesda, Maryland

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

**John H Frye, III, Chairman
Dr. James H. Carpenter
Dr. Peter A. Morris**

In the Matter of

**Docket No. 40-2061-ML
(ASLBP No. 83-495-01-ML)**

**KERR-McGEE CHEMICAL
CORPORATION
(West Chicago Rare Earths
Facility)**

November 14, 1985

The Licensing Board rules on intervenor's motion to stay the proceeding.

RULES OF PRACTICE: INTERVENTION

When a party intervenes in an NRC proceeding, that party assumes all of the responsibilities attendant to intervention. The pressures of other professional responsibilities are not a basis for alleviating that burden. *See Statement of Policy on Conduct of Licensing Proceedings*, CLI-81-8, 13 NRC 452, 454 (1981); *Commonwealth Edison Co.* (Byron Nuclear Power Station, Units 1 and 2), ALAB-678, 15 NRC 1400, 1416 n.33 (1982).

RULES OF PRACTICE: LICENSING BOARDS

The existence of State Court litigation between the same parties as those before the NRC does not prevent the Licensing Board from carry-

ing out its responsibilities under Federal law. See *Philadelphia Electric Co.* (Limerick Generating Station, Units 1 and 2), ALAB-785, 20 NRC 848, 884-85 (1984).

MEMORANDUM AND ORDER

(Ruling on the People's Motion to Stay the Proceeding)

On September 11, 1985, a prehearing conference was held to discuss discovery disputes pending between Kerr-McGee and the People. Various scheduling matters were also addressed. In this connection, counsel for the People expressed the view that activity in this case should be held in abeyance until the related action pending in the Illinois Circuit Court for DuPage County¹ is completed. Tr. 403-04. Subsequent to the prehearing conference, we issued a Memorandum and Order ruling on the discovery disputes which, while noting the People's interest in deferring further proceedings,² required that further discovery responses required by the Order, and requests for admissions, be made within 30 days of service. Further, we required motions for summary disposition to be made within 60 days of service.³

On October 15, 1985, the People filed a Motion to Stay the *West Chicago* proceeding. Kerr-McGee and the Staff responded in opposition.⁴ Kerr-McGee's response also included a motion urging the Board to impose sanctions on the People due to their noncompliance with the Board's order.⁵

The People's motion alleges that they are unable to comply with the discovery schedule because of the necessity to prepare for the upcoming State Court trial. The Staff response⁶ points out that, as a procedural

¹ *People of the State of Illinois v. Kerr-McGee Chemical Corp.*, No. 80-CH-298 (Cir. Ct. DuPage County). In this litigation, the People seek, *inter alia*, an injunction requiring Kerr-McGee to move the mill tailings which are the subject of this proceeding elsewhere for disposal. The People rely on State water quality standards in support of their position. This litigation has implications for this proceeding in that here we are considering Kerr-McGee's application to dispose of those mill tailings on site.

² Memorandum and Order (Ruling on Discovery Disputes), dated September 26, 1985, LBP-85-38, 22 NRC 604, 631.

³ *Id.*

⁴ Kerr-McGee Chemical Corporation's Motion for Sanctions and Opposition to State's Motion to Stay Proceedings, dated October 28, 1985, NRC Staff Response to People of the State of Illinois' Motion to Stay the Proceedings dated November 6, 1985 ("Staff Response").

⁵ The Board has considered the arguments propounded by Kerr-McGee in its motion for sanctions. We do not feel sanctions would be appropriately imposed at this time, and therefore we deny the motion. Our denial is without prejudice, however, and the motion may be renewed if the People are again derelict in upholding their responsibilities as an intervenor in this proceeding.

⁶ Staff Response at 3-4.

matter, the People failed to comply with the deadline for filing objections to a Prehearing Conference Order prescribed under 10 C.F.R. § 2.752(c). While we agree with Staff that § 2.752(c) is applicable, we nonetheless address the merits of the motion.

In so doing, we note that this proceeding was instituted at the behest of the People.⁷ While we recognize that this proceeding may impose a heavy burden, the People assumed all the responsibilities attendant to intervention in NRC hearings by initiating this proceeding. The pressures of other professional responsibilities are not a basis for alleviating that burden.⁸ We cannot allow the People to abdicate responsibilities which are required of even pro se intervenors who lack many of the resources presumably available to the People. *Vermont Yankee Nuclear Power Corp. v. Natural Resources Defense Council, Inc.*, 435 U.S. 519, 553 (1978); *Northern States Power Co.* (Tyrone Energy Park, Unit 1), LBP-77-37, 5 NRC 1298 (1977); *Offshore Power Systems* (Manufacturing License for Floating Nuclear Power Plants), LBP-75-67, 2 NRC 813 (1975). Discovery has been ongoing in this proceeding for many months. The existence of related litigation in the State Court furnishes no good reason why this discovery should not be completed now.

Furthermore, we reject the People's argument that we are restricted from requiring progress in this proceeding by the existence of the State Court litigation.⁹ While in theory the People's success in the State proceeding could result in an injunction requiring Kerr-McGee to move the mill tailings in question, we question whether any such injunction would be upheld. *Brown v. Kerr-McGee*, 767 F.2d 1234 (7th Cir. 1985). More importantly, however, even absent the question of Federal preemption, the existence of the State litigation furnishes no basis on which to abdicate our responsibilities under Federal law. We will not permit the NRC proceeding to be held hostage to the State Court action. The People have raised serious issues with regard to the application of Federal law in this proceeding. It is our intent to give these issues full consideration. However, the People's neglect of their responsibilities creates difficulties in this regard. We call upon the People to fulfill these responsibilities.

⁷ One other request for a hearing was filed by the Chamber of Commerce of West Chicago, but was subsequently withdrawn.

⁸ *Statement of Policy on Conduct of Licensing Proceedings*, CLI-81-8, 13 NRC 452, 454 (1981); *Commonwealth Edison Co.* (Byron Nuclear Power Station, Units 1 and 2), ALAB-678, 15 NRC 1400, 1416 n.33 (1982).

⁹ As Staff noted in its Response at 7 n.7, in *Philadelphia Electric Co.* (Limerick Generating Station, Units 1 and 2), ALAB-785, 20 NRC 848, 884-85 (1984) the Appeal Board took the position that an NRC adjudication is independent from that of other administrative or judicial entities "with differing concerns and responsibilities." For this proposition, the Appeal Board cites the NRC Commissioners' decision in the *West Chicago* proceeding and its subsequent affirmance in the 7th Circuit. 20 NRC at 885 n.164.

At the same time, the People must be aware that we will not hesitate to impose sanctions if their neglect continues.¹⁰

Thus, while we deny the People's Motion to Stay, we will provide a period of 3 weeks from service of this Order for the People to comply with our September 26 rulings on discovery. Further, we vacate the deadline for summary disposition motions provided in that order, as well as the deadline for filing requests for admissions.¹¹ As noted, Kerr-McGee has moved to impose sanctions for the People's neglect of their responsibilities. We deny this motion without prejudice to its resubmission if compliance with our Order is still not forthcoming.

Order

In consideration of the foregoing, it is hereby ORDERED:

1. The People's motion for a stay is denied. The People are to comply with our discovery orders contained in our September 26 Memorandum and Order no later than 3 weeks following the date of service of this Memorandum and Order.

2. Kerr-McGee's motion for sanctions is denied without prejudice to its resubmission if the People do not comply with ¶ 1, above.

¹⁰ The Statement on Conduct of a Licensing Proceeding Policy issued by the Commission in 1981 suggests various sanctions a board may impose when a participant in a licensing proceeding fails to meet its obligations. These include, in severe cases, the dismissal of a party from the proceeding. *Statement of Policy on Conduct of Licensing Proceedings*, CLI-81-8, *supra*, 13 NRC at 454.

¹¹ Our decision not to proceed to hearing on the basis of the draft supplement to the FES alleviates the need for early consideration of any arguments that Staff's alternate site analysis is inadequate as a matter of law. This was the argument which, if it were to be raised, we wished raised early.

The schedule for admissions was set because counsel for the People had suggested at the prehearing conference that this might be appropriate, and no objections were voiced (Tr. 402). It now appears that all parties object to filing such requests prior to the completion of depositions. People's Motion to Stay Proceeding, dated October 15, 1985, at 2. Kerr-McGee Chemical Corp. Motion for Extension of Time to File Requests for Admissions, dated October 30, 1985, at 2 n.1. Staff Response at 5 n.4.

3. The deadlines for filing requests for admissions and motions for summary disposition contained in our September 26 Memorandum and Order are vacated.

**FOR THE ATOMIC SAFETY AND
LICENSING BOARD**

Dr. James H. Carpenter*
ADMINISTRATIVE JUDGE

Dr. Peter A. Morris
ADMINISTRATIVE JUDGE

John H Frye, III, Chairman
ADMINISTRATIVE JUDGE

Bethesda, Maryland

*Judge Carpenter concurs but was unavailable to review and sign this Memorandum and Order.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Peter B. Bloch, Chairman
Dr. Kenneth A. McCollom
Dr. Walter H. Jordan

In the Matter of

Docket Nos. 50-445-OL
50-446-OL
(ASLBP No. 79-430-06-OL)

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

November 25, 1985

The Licensing Board denies Applicants' motion for reconsideration of an earlier Board order.

MEMORANDUM AND ORDER
(Reconsideration of Misrepresentation Memorandum)

Memorandum

The principal purpose of this Memorandum is to act on TEXAS UTILITIES ELECTRIC COMPANY, *et al.*'s (Applicants') "Motion for Reconsideration of Licensing Board's Memorandum (Reopening Discov-

ery; Misleading Statement),” January 7, 1985.¹ In response to the Applicants’ motion we have decided to leave our initial order in effect but to clarify it somewhat.

We hold Applicants to a very high standard concerning the completeness and persuasiveness of proof. Litigation of technical issues can be difficult. Simplification is feasible if a party attains mastery of the technical issues and communicates them so clearly that the outcome becomes evident.

In licensing cases, applicants are expected to master the technical issues affecting their plant. Their mastery flows from:

- the availability of the sophisticated technical staff needed to build a sound nuclear plant and to defend it before the Nuclear Regulatory Commission (NRC), and
- the seriousness of their commitment to understand their plant in sufficient depth to be able to assure themselves, the public and their stockholders of the soundness and safety of their plant.

If an applicant masters technical issues, implements its knowledge during design and construction, and describes its knowledge in detail, the case can become simple. If mastery of technical issues is not attained or if the presentation is lacking in thoroughness or clarity, then the work of the Licensing Board becomes far more difficult and the outcome may be clouded by doubt.

Because Comanche Peak is built under a complex regulatory scheme, an applicant also must demonstrate the use of a reasoned approach to what is required by regulations, regulatory materials (Regulatory Guides, etc.), codes and commitments (FSAR). A full, logical description of the resolution of a safety problem must include a clear discussion of the relationship between the problem and the regulatory context.

With respect to the clear presentation of technical issues, it is instructive to consider the following argument in Applicants’ motion for reconsideration, at page 16:

The Board . . . should recognize the inherent impracticality in Applicants being held to a standard that requires it to anticipate the inquiries of others and to provide every shred of evidence that others may deem important, regardless of its significance, related to a particular subject.

Contrary to the thrust of this argument, we find that anticipating the inquiries of others is important. Although “providing every shred of evi-

¹ Applicants completed their filing with a supplementary statement on this motion on November 12, 1985. See Tr. (January 9, 1985) at 3-5.

dence” is not required, effective communication requires anticipation of the inquiries of others. After all, the purpose of communication is to persuade someone of the truth of an assertion. Understanding the questions they may ask is essential to communicating in a way that persuades.

In addition, one must seek to understand the inferences others are likely to draw. Inferences that are intended to be evoked should be supportable. If a favorable inference is incorrectly evoked, then our integrity as communicators is placed squarely on the line and we have an obligation to revise our language so the incorrect inference will no longer be evoked.

In licensing cases, it is necessary to set forth technical findings persuasively. The filing should describe how the problem is resolved by the approach, including a description of the problem, the legal setting in which it arises, the reasoning applied to the problem and how the approach was implemented. The reader must be informed of how the problem was logically and fully resolved. If new problems were encountered during implementation or if the resolution is uncertain, the problems or uncertainties should be described. Disclosure of difficulties encountered during resolution of the problem can add to confidence that the problem was resolved in a thoughtful way and that the presentation to the licensing board is an honest description of a real-world process rather than just a presentation designed to persuade.

Within this general framework, there is substantial freedom. What is not permitted is a simplification of the process that creates an appearance or gives rise to honest inferences that are different from reality.

For example, it may be acceptable to determine — for certain purposes — what the torque on U-bolts was in Unit 1 by testing the torque on U-bolts in Unit 2. However, acceptance of the appropriateness of that procedure requires acceptance of a number of assumptions concerning why Unit 2 is “representative” of Unit 1. Furthermore, for certain limited purposes, it may be acceptable for a person to wander around in the field choosing U-bolts the person happens upon. Necessarily, this will exclude certain U-bolts from the sample (such as hard-to-reach U-bolts or ones that happen to be in a different part of the plant than where the person started selecting U-bolts).

Selecting a “sample” in the imprecise manner just discussed may be appropriate for some purposes. However, describing the sample thus obtained as a “representative sample” or as a “randomly selected representative sample”² without any discussion of the way the “sample” was in fact selected is to oversimplify and mislead.

² Memorandum (Reopening Discovery; Misleading Statement), LBP-84-56, 20 NRC 1696, 1697 (1984).

It was appropriate for Applicants to file a motion for reconsideration, challenging the Board's conclusion. Then, before we acted on the motion, the Applicants stated that they were changing their legal team and examining anew their position in the case. We were hopeful that Applicants would revisit what they had written, what the Board had said and what the Applicants had replied. However, Applicants have not withdrawn their motion for reconsideration and their new affidavits fail to resolve the concerns that led us to issue our Misrepresentation order.

The problem with Applicants' brief on the Motion for Reconsideration is that Applicants argue that they do not need to use a random or representative sample. This may be true. Applicants have not been *required* to use a random or representative sample for what they did.

The problem with Applicants' brief was that they *said* they had used such a sample. They voluntarily stated, without compulsion, that they had done that. This suggested to us precisely what Applicants discuss on page 10 of their Motion for Reconsideration. We thought that when Applicants used the words "samples," "representative" and "random" that the words bore their natural reference to sampling theory, which governs how samples of voters, families, airplanes, etc., would be drawn. That Applicants also would refer to that kind of sample in their Motion for Reconsideration indicates to us that the misrepresentation that occurred may have grown from ignorance rather than intention. Otherwise, it would make little sense to make such a direct reference to samples that follow laws other than what Applicants followed.

Our knowledge of sampling theory is derived from basic principles that are broadly accepted and widely known. Randomness requires some method of assuring the operation of chance. Random samples are not drawn by someone voluntarily choosing from the universe based on personal choice. Sometimes random number tables are used. Sometimes structured samples may be appropriate, where a known decision rule is utilized to assure a structured, unbiased sample. What is never done is to permit a person to draw names (or U-bolts) from a telephone book (or a nuclear plant) by personal choice, for there is no assurance that some personal factor will not bias the sample.

We know nothing of the knowledge or bias of the people who chose the bolts for Applicants' sample. We know nothing of the psychological process governing how particular U-bolts or areas of the plant were selected for sampling. There might, for all we know, be some knowledge, belief, habit or superstition that caused certain areas or U-bolts to be excluded or included in such a sample. Without an objective method of choosing the sample, those biases could result in an unrepresentative sample.

So we continue to conclude that we were misled. Did it matter in this particular case? Probably not. Although Applicants' entire technique for qualifying U-bolts is still up in the air, the impact of this error on the technique that was used appears to be marginal.

Did the statement matter? Yes. Assuredly it did. The only way the Board can trust the Applicants is if their filings communicate clearly and are trustworthy.³ That requires care. Otherwise, each word or phrase must be parsed and distrusted. We would be driven to examine closely how we might be misled if we accepted the obvious meaning of the words Applicants used. Unless Applicants' language is careful, precise and trustworthy, we would need to approach their filings with suspicion.

We expect Applicants to be forthright about what they do, the problems that remain, the regulatory context, the areas of uncertainty. By living up to that ideal, Applicants will facilitate timely Board action. If that ideal remains elusive, we will have to be suspicious, and action on our part will be delayed or will be unfavorable.

Licensing cases before the NRC are not ordinary litigations. They are not games of persuasion. Facile, simplified arguments do not show an awareness of the seriousness required for building and running a safe plant. Clear, careful arguments (and admissions of error when error is pointed out or detected) inspire trust and confidence. In this proceeding, where time means money and carefulness protects lives, we urge Applicants to consider the importance of assuring that we can place trust in their filings. Careful filings are the key to the efficient conduct of this hearing from this time on.

³ As to Mr. Reedy's testimony, we note that he stated that the ASME Code does not provide a formula for every situation but refers to good engineering practice or standard practice. Tr. 6915. He also said that "the whole industry . . . does it the same way" (Tr. 6917) and that a "consensus of the field of engineering in the United States helps establish good engineering practice" (Tr. 6920). The implication that Mr. Reedy was apparently seeking to convey was that Comanche Peak was complying, in its methods of analysis, with methods used elsewhere.

He was then challenged by Mr. Walsh, who stated that at a previous hearing Mr. Reedy said he had not seen anywhere else a particular pipe support configuration used at Comanche Peak. To that, Mr. Reedy responded that he had now seen the type of configuration (Tr. 6921) but that he had no knowledge of whether the particular kind of analysis suggested by Mr. Doyle would be done elsewhere in the industry. Tr. 6922. Until this point in the cross-examination, Mr. Reedy created the impression with the Board that it was not industry practice to do the kind of analysis suggested. After the question by Mr. Walsh, we concluded that Mr. Reedy's testimony rested on general philosophical analysis but that he had no specific basis for applying that analysis to the particular configuration used by NPSI at Comanche Peak.

The Board felt misled by Mr. Reedy's testimony. Upon rereading the pertinent transcript passages, however, it now appears that Mr. Reedy was not intentionally misleading the Board. On the other hand, the situation serves as an example of the Board's concern that testimony be adequate to specify the relationship between the arguments being made and the specific problems being addressed.

Applicants have not persuaded us to revise any of our other findings in the challenged Order.

I. APPLICANTS' SUPPLEMENTARY FILING

The Affidavits of Robert C. Iotti and John C. Finneran, Jr., filed on November 12, 1985, did not persuade us to reconsider our earlier order. Indeed, this new filing leaves us with some preliminary concerns that we will discuss for the purpose of informing the parties.

Although we are pleased at the candor involved in revising the earlier summary disposition motions, the imprecise use of language in the earlier filings is apparent from a careful examination of this new filing. Furthermore, the discussion of the U-bolt tests and analyses remains confusing. On page 2 of the U-bolt filing, the affidavit states:

[A]pplicants' program of tests and analyses assured that results of *both* [emphasis added] the tests and finite element analyses . . . may be applied to supports in the field.

Then, on page 3, Applicants appear to use the following language to disclaim the direct applicability of the tests that were performed:

It is important to understand that Applicants' approach in utilizing U-bolt tests was not a simple empirical one of performing selected tests and employing the test results directly for evaluating field conditions. Rather, the tests were utilized for the purpose of deriving, then confirming, a general theoretical model. . . .

This confusion relates to an important point. If Applicants conducted a test program, then they are required by 10 C.F.R. Part 50, Appendix B, to "include suitable qualifications testing of a prototype unit under the most adverse design conditions." Unless we accept Applicants' argument that the tests were utilized *solely* for the purpose of deriving, then confirming, a general theoretical model, then the tests were used for verifying the adequacy of a specific design feature and were covered by Appendix B requirements.

It is not entirely clear to what extent these tests were used to verify a design feature, but the tests were used at least in part for that purpose. In Applicants' Motion for Summary Disposition of CASE's Allegations Regarding Cinching Down of U-Bolts (June 29, 1984), page 44 states:

[T]o unequivocally answer the Board's concern with pipe stresses and how they are influenced by cinching the U-bolt and related stresses, *a mix of information derived from test and analyses is required* [emphasis added]. . . . [T]here are concerns which can only be answered by test. Examples of these concerns are the relaxation characteristics of the assembly under long term vibration, thermal cycling, and preload. The thermal cycling, creep and accelerated vibration tests have provided answers to these concerns. No analytical tool could have done it.

To the extent that tests were used to verify a design feature, the tests had to cover the most adverse design conditions. However, they did not. Generally speaking, the test value for U-bolt parameters was near the middle of the range of variables for lever arm, pipe thickness, U-bolt diameter, cross-piece width and cross-piece thickness. There was no effort made to pick adverse design conditions.⁴

To the extent that the tests were used to confirm "a general theoretical model," the filings are confusing as to what that model is (the model itself does not seem to have been presented), the extent to which it has been confirmed, the range of values over which it may be valid, and its precision (standard error).⁵ It is not clear whether the general model was applied, at the time of the initial filing, to the range of parameters present in the plant. Additionally, there is the legal question of where this "general theoretical model" is contemplated in the scheme of regulation and of the ASME Code.

In conclusion, we do not see any reason for the supplementary filing to influence our order concerning the scope of discovery.

II. DISCOVERY IMPLICATIONS OF THE MISREPRESENTATION ORDER

Applicants have sought to withdraw the filings by which they initially implemented their Plan to respond to our order of December 1983. The Board has expressed its interest in examining the extent to which those filings represent a failure on the part of management to understand the design problems confronting the plant. Under the circumstances, discovery about the validity of any of these motions and of Applicants' knowledge about the validity of these motions is in order. Applicants therefore should respond promptly to the outstanding interrogatories related to their first Plan and their filings under that Plan.

In addition, we are not persuaded to revise any portion of our Memorandum of December 18, 1984. Consequently, the Order issued that day remains in effect. The discovery period shall run for 50 days from the issuance of this Memorandum. Discovery may of course cover the supple-

⁴ Iotti-Finneran U-Bolt Affidavit at Attachment B (last page of filing).

⁵ For example, there are other conclusions on page 14 of the June 29 Iotti-Finneran affidavit that might be affected by the parameters set forth in Appendix B of the November 12 memorandum; and there are other tests, such as the friction test discussed on page 15 of that affidavit, that could be affected by those same parameters. We note also that the finite element analyses reported by Westinghouse were analyses of the precise U-bolt assemblies that were sent to them and did not include variations in parameters present at the plant. "Comanche Peak Steam Electric Station U-Bolt Finite Element Analysis," Westinghouse Electric Corp. (June 12, 1984) at 10 (Attachment 3 to the June 29 Affidavit).

mentary filing. Applicants' answers may, where appropriate, reference appropriate sections of the supplementary filing.

Given the status of this issue, we deny CASE's motion to make BN 85-077's conclusions about "material false statement" a separate issue in this case at this time. We have already announced our conclusions concerning this particular false statement and see no point to further proceedings about it. We will consider the implications of our finding when it can be placed in the context of the larger picture of this vast project.

III. APPLICANTS' MOTION FOR CLARIFICATION OF AUGUST 28, 1985

This motion is now moot, in light of the Board's determination of Applicants' earlier motion for reconsideration.

Order

For all the foregoing reasons and based on consideration of the entire record in this matter, it is, this 25th day of November 1985,

ORDERED:

1. Texas Utilities Electric Company, *et al.*'s Motion for Reconsideration of Licensing Board's Memorandum (Reopening Discovery; Misleading Statement), January 7, 1985, is denied.
2. Applicants' Motion for Clarification of August 28, 1985, is moot.
3. The discovery period shall run for 50 days from the issuance of this Memorandum. Interrogatories previously served shall be responded to promptly.
4. We deny CASE's motion to make BN 85-077's conclusions an issue in this case.

FOR THE ATOMIC SAFETY AND
LICENSING BOARD

Peter B. Bloch, Chairman.
ADMINISTRATIVE JUDGE

Bethesda, Maryland

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

**John H Frye, III, Chairman
Dr. James H. Carpenter
Dr. Peter A. Morris**

In the Matter of

**Docket No. 40-2061-SC
(ASLBP No. 84-502-01-SC)**

**KERR-McGEE CHEMICAL
CORPORATION
(Kress Creek Decontamination)**

November 29, 1985

In this Memorandum and Order the Board denies Kerr-McGee's request to postpone further proceedings until completion of related State Court litigation between it and the People of the State of Illinois (People). The Board also dismisses the People's Contentions 1 and 6 for failure to comply with Board-ordered discovery.

RULES OF PRACTICE: MOTION TO DEFER PROCEEDING

An inability to complete prehearing preparation because of demands of intensive discovery in related State Court litigation is not adequate justification for postponement of the proceeding. Counsel's failure to ascertain that the People's contentions did not add anything to the proceeding and that the People's discovery responses were not a precondition to proceeding under the established schedule created a delay, and the Board will not grant relief from the consequences of a delay caused by counsel's own factual error.

RULES OF PRACTICE: SANCTION FOR FAILURE TO COMPLY WITH DISCOVERY ORDER

Where the People failed to respond to a discovery order and failed to file an appropriate motion seeking relief from filing dates, the Board dismissed the People's contentions after considering "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." *Commonwealth Edison Co.* (Byron Nuclear Power Station, Units 1 and 2), ALAB-678, 15 NRC 1400, 1416-20 (1982), quoting *Statement of Policy on Conduct of Licensing Proceedings*, CLI-81-8, 13 NRC 452, 454 (1981).

MEMORANDUM AND ORDER

This proceeding has been pending for 18 months.¹ There has been ample time for the parties to complete discovery, prepare for, and complete a hearing which should last no more than 2 weeks.

Nonetheless, we are now confronted with a request from Kerr-McGee to postpone further proceedings until completion of related litigation between it and the People of the State of Illinois (People) in the Circuit Court for DuPage County, Illinois, and a failure of the People to comply with our discovery orders.

Our review of the history of this proceeding leads us to conclude that there is no good reason why the hearing in this proceeding should not take place in January 1986. Further, we conclude that sanctions are appropriate against the People for failure to comply with our discovery orders.

In our September 7, 1984 Memorandum and Order (unpublished), issued following the first prehearing conference held August 22, we adopted a schedule for this proceeding which the parties had proposed. The parties' schedule called for discovery to take place between November 12, 1984, and February 15, 1985. It anticipated that this proceeding would be ready for hearing in March 1985.

Our Memorandum and Order of February 7, 1985 (unpublished), issued following the second prehearing conference held January 25,

¹ See unpublished Commission Order of June 28, 1984.

noted that the parties contemplated completion of discovery on May 1. We required a status report on March 1.

Following receipt of that report, we approved a schedule agreed to by the parties which called for the filing of an agreed schedule for depositions on July 31. We also set a schedule for filing of motions to compel and suggested that a prehearing conference to consider discovery disputes be held on July 9, 10, or 11.² That schedule was subsequently amended in a telephone conference. The prehearing conference was put off until September 11 to accommodate the schedules of counsel.³

No discovery disputes arose between Kerr-McGee and Staff. However, the People raised five matters with respect to Kerr-McGee's discovery responses (we granted their motion with respect to one of these), and Kerr-McGee raised eleven matters with respect to the People's responses (we granted its motion with respect to nine of these and withheld a ruling on one other). *See* LBP-85-38, 22 NRC 604 (1985). Kerr-McGee has responded pursuant to our Order in LBP-85-38, but the People have not. As a result, on November 6 we issued an Order to the People to show cause why their Contentions 1 and 6 should not be dismissed. We deal with the People's response to that Order below.

In LBP-85-38, we required further discovery responses by November 4. In our unpublished Memorandum and Order denying Staff's motion to hold this proceeding in abeyance, we required that witness lists be exchanged on November 8, depositions taken between November 8 and 29, written testimony to be filed by December 13 and 20, and set the hearing to begin on January 6.

In our Order to Show Cause directed to the People referred to above, we noted that we were considering dismissing Contentions 1 and 6 because the People's failure to comply with LBP-85-38 requiring additional discovery responses threatened this schedule. This Order was prompted

² *See* unpublished Memorandum and Order of May 1.

³ One day prior to the September 11 conference, Staff filed a motion to hold this proceeding in abeyance pending a decision from EPA as to whether action should be taken under the Comprehensive Environmental Response, Compensation, and Liability Act (Superfund) with respect to Kress Creek. Staff's reasons were that:

First, action under Superfund could result in a more expeditious resolution of the Kress Creek situation; and

Second, holding this proceeding in abeyance would conserve the parties' resources pending a decision by EPA.

Staff's motion indicated that it had initiated discussions with EPA on this subject. The People supported the motion and Kerr-McGee opposed. In an unpublished Memorandum and Order of September 26, 1985, we denied Staff's motion and set a schedule leading to hearing in January 1986. We took this step in order to provide for an early resolution of the question whether Kerr-McGee must prepare the cleanup plan which Staff seeks. Until the filing of Staff's motion, no indication had been given to us that Staff was concerned that resolution of the matters raised in its Order to Show Cause could not be expeditiously achieved before us.

by a motion filed by Kerr-McGee which requested that the schedule which we had established be deferred pending the People's compliance with LBP-85-38. We agreed with Kerr-McGee that it could not proceed with the identification of witnesses and the scheduling of depositions in the absence of the People's discovery responses.

Our Order to Show Cause was issued on November 6. On that day, Staff counsel requested a telephone conference because of the impending deadline (November 8) for the exchange of witness lists. We advised Staff counsel that, in light of the People's failure thus far to comply with LBP-85-38 and our issuance of the Order to Show Cause, witness lists need not be exchanged on November 8 and that we would address the schedule with the parties following receipt of the People's response due to be filed November 15.

To that end we held a telephone conference with the parties on November 19 at which time we set a deadline of November 27 for the parties to exchange witness lists on their affirmative cases together with a synopsis of each witness' testimony and defined the scope of the hearing for this initial phase. (See unpublished Memorandum and Order of November 20.)

During that telephone conference, Kerr-McGee's counsel reiterated the motion to defer the schedule. This time counsel did not base the motion on the People's failure to comply with LBP-85-38. Rather counsel cited the intensive discovery taking place in the related State Court litigation, a matter which counsel also raised in his written motion. Counsel asserted that it was not possible to complete prehearing preparations in this proceeding because of the demands of the State Court litigation. Counsel now sought to defer further proceedings until completion of the State Court litigation, rather than until compliance by the People with our discovery orders. Thus, if the motion were granted, no further proceedings would take place until next Spring.

During the telephone conference, counsel for the People and the Staff agreed, and counsel for Kerr-McGee did not contest, that Contention 1, which raises the possibility that chemical pollutants may exist in Kress Creek which would need to be considered in a cleanup plan, was not involved in the subject matter to be addressed in this hearing.⁴ Similarly, counsel for the People and the Staff agreed that Contention 6 is duplicative of the Staff's Order to Show Cause and would not add anything new to the hearing. No other contentions have been admitted.

⁴ Presumably, this contention would come into play in connection with litigation of the content of any cleanup plan Kerr-McGee might be ordered to prepare.

Counsel for Kerr-McGee has vigorously opposed any suggestion from the People that the related *West Chicago* disposal proceeding be deferred because of intensive activity in the State Court litigation. Counsel lacks credibility when he asserts that that activity demands that this proceeding be deferred. We have been unwilling to entertain this argument from counsel for the People. We are no more inclined to entertain it from counsel for Kerr-McGee. In LBP-85-46, 22 NRC 830, we denied a similar motion filed by the People in *West Chicago*. Just as we refused to allow the *West Chicago* proceeding to be held hostage to the State Court litigation, we refuse to allow this proceeding to be held hostage to that litigation.

Of more concern is the fact that counsel's motion to defer this proceeding was based on an incorrect factual premise. Counsel could have readily ascertained this prior to filing the motion. Phone calls to counsel for the People and the Staff would have revealed that the People's contentions did not add anything to the hearing and that therefore the People's discovery responses were not a precondition to proceeding under the schedule which we had established. When making factual representations, counsel may not make errors. Cf. *Regents of the University of California* (UCLA Research Reactor), LBP-84-22 and attachment, 19 NRC 1383 (1984). By failing to verify the accuracy of his factual argument, counsel has created a delay. We will not grant him relief from the consequences of that delay.

It is clear from these circumstances that there has been ample time to complete prehearing discovery in this proceeding. Nonetheless, we will permit depositions by all parties to be taken until December 31. We take this step because Staff has advised that it needs to take the deposition of William A. Nixon, the current Staff Project Manager, who will retire prior to the hearing, and because Staff counsel has indicated that Staff needs depositions in order to discover the facts underlying Kerr-McGee's averments.

In his November 27 letter identifying witnesses, counsel for Kerr-McGee has elaborated Kerr-McGee's legal position with respect to the averments stated in the answer to the Order to Show Cause. A review of this letter and Staff counsel's letter of the same date also identifying witnesses indicates that the issue posed by averment 10 — no order may be issued to Kerr-McGee without a complete analysis of the health risks of such an order — will be addressed by both Staff and Kerr-McGee. This is in accord with our Memorandum and Order of March 22, 1985 (unpublished). However, we are unable to determine at this point whether testimony on the remaining averments is appropriate at this phase of the

hearing. Consequently, we will entertain a motion to exclude some or all of Kerr-McGee's testimony on the remaining averments.

We set January 6 as the deadline for filing written direct testimony on each party's affirmative case. Motions to exclude testimony are to be filed by January 13. Answers to such motions are to be delivered to the Board on January 20.

We will hear limited appearances the afternoon and early evening of January 20 at a location in or near West Chicago. The evidentiary hearing will commence on January 21 at a location in the Chicago area to be announced.

The People have addressed the Board's Order to Show Cause in a response filed November 18, 1985.⁵ The People's motion focuses on their position that their failure to comply with the Board-ordered discovery has not prejudiced Kerr-McGee. The People base their argument that Kerr-McGee endured no prejudice on the People's claim that the responses sought would not have substantially added to Kerr-McGee's knowledge of factual matters at issue in the proceeding. The People correctly conclude that their conduct has not impinged upon the Company's ability to prepare its admission requests and witness lists necessary for the upcoming hearing.

Nonetheless, the People's arguments to rebut the Show Cause order are wholly inadequate. The Board issued the Show Cause order because the People did not comply with LBP-85-38. To avoid a default the People could easily have filed an appropriate motion seeking relief from the filing dates. This is especially important if there were early indications that it was not going to be possible to meet the Board's deadlines. The People instead chose to do nothing. We cannot permit our orders to be ignored. Were we to do so, we would fail to discharge our responsibility to properly manage this proceeding. Consequently, we now impose the sanction proposed in our Order to Show Cause.

There is no question that the Board is vested with the authority and the obligation to mete out a sanction commensurate with the misconduct in a particular situation.⁶ Indeed, another Board has aptly stated that "a licensing board is not expected to sit idly by when parties refuse to comply with its orders." *Long Island Lighting Co.* (Shoreham Nuclear Power Station, Unit 1), LBP-82-115, 16 NRC 1923, 1928 (1982). However, the appeal board has directed licensing boards imposing sanctions to provide an explication of their reasons for doing so pursuant to the

⁵ People's Response to Board's Show Cause Order and Kerr-McGee's Motion to Extend Schedule, dated November 18, 1985.

⁶ *Statement of Policy on Conduct of Licensing Proceedings*, CLI-81-8, 13 NRC 452, 454 (1981). Although this is not a licensing proceeding, we find the guidance contained in the Policy Statement applicable.

factors enunciated by the Commission in its 1981 Policy Statement. *Commonwealth Edison Co.* (Byron Nuclear Power Station, Units 1 and 2), ALAB-678, 15 NRC 1400, 1416-20 (1982). The pertinent portion of the policy statement is as follows:

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.

CLI-81-8, *supra*, 13 NRC at 454. We take these seriatim.

As stated earlier, the Board's sanction arises from the People's failure to comply with our order compelling them to answer the disputed interrogatories. We were not whimsical when we required the People to respond. We acted after giving careful consideration to Kerr-McGee's assertions of the nature and importance of the interrogatories as well as the People's bases for not responding. The People have an obligation to properly flesh out their contentions and to respect the Board's orders. These obligations are to be taken seriously. No party may be selective in meeting them. Had the People simply provided responses to the interrogatories (which, because they do not require complicated answers, undoubtedly could have been answered with less effort than has been expended on the objections), discovery could have concluded and the hearing held several months ago. The schedule of the proceeding has been impacted by the People's resistance to providing answers. Moreover, while we are not convinced that the People's actions could properly be characterized as part of a pattern, the incident is the most egregious example of the People's reluctance to adhere to schedules and to comply with our Orders.

The People's failure to provide answers to these relatively simple interrogatories leads us to conclude that they do not have any substantial basis for Contention 1 and are engaged in a "fishing expedition." Thus we weigh the factor citing the importance of the safety and environmental concerns raised by Contention 1 in favor of imposing the sanction. Contention 6 is duplicative of the Staff's Show Cause Order which precipitated the Kress Creek proceeding initially. Thus the issues contained in Contention 6 will be addressed through the Staff's efforts at hearing.

In considering all the circumstances, we find the sanction of dismissal of the People's Contentions 1 and 6 to be justified. Although we are cognizant of the seriousness of imposing such a sanction, the factual situation before us warrants such action.

Order

In consideration of the foregoing, it is, this 29th day of November 1985, ORDERED:

1. Kerr-McGee's motion to hold this proceeding in abeyance is denied;
2. Depositions may be taken until December 31;
3. Prepared testimony on each party's affirmative case is to be filed by January 6, 1986;
4. Motions to exclude testimony are to be filed by January 13, and answers to such motions are to be delivered to the Board on January 20, 1986;
5. Limited appearances will be heard at a location to be announced in the vicinity of West Chicago the afternoon and early evening of January 20, 1986;
6. The hearing will commence at a location to be announced in the Chicago area on January 21, 1986, and conclude by January 31, 1986; and
7. The People's Contentions 1 and 6 are dismissed.

THE ATOMIC SAFETY AND
LICENSING BOARD

Dr. James H. Carpenter
ADMINISTRATIVE JUDGE

Dr. Peter A. Morris
ADMINISTRATIVE JUDGE

John H Frye, III, Chairman
ADMINISTRATIVE JUDGE

Bethesda, Maryland
November 29, 1985

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS

John G. Davis, Director

In the Matter of

Docket Nos. 70-1308
72-1-SP
(10 C.F.R. § 2.206)

GENERAL ELECTRIC COMPANY
(GE Morris Operation Spent
Fuel Storage Facility)

November 4, 1985

The Director of the Office of Nuclear Material Safety and Safeguards denies the Petition submitted by Catherine Thiel Quigg on behalf of the Illinois Safe Energy Alliance. The Petition requested that the Director of Nuclear Material Safety and Safeguards prepare an environmental impact statement for the General Electric Morris Operation and that the Commission reconsider a decision by the Licensing Board which authorized the Director to renew the license of the General Electric Company to store spent (irradiated) fuel at the facility without requiring a Federal environmental impact statement.

NEPA: ENVIRONMENTAL IMPACT STATEMENT

NEPA does not require that an environmental impact statement be prepared when an action does not directly or indirectly bring about any change in the environmental status quo.

RULES OF PRACTICE: § 2.206 PETITIONS

Section 2.206 procedures are not to be used as a vehicle for reconsideration of issues previously decided.

NRC: RESPONSIBILITIES UNDER NEPA

NEPA does not require the Commission to reconsider environmental decisions whenever new information developed subsequent to the action becomes available. Rather, it is unnecessary for an agency to reopen the NEPA record unless the new information would clearly mandate a change in result.

NEPA: ENVIRONMENTAL IMPACT APPRAISAL

The function of an environmental impact appraisal is to supply reasons why an action with potentially significant environmental impacts does not require a detailed environmental impact statement. Thus, to pass muster, the appraisal must simply reflect that a hard look was taken at the problem, identify the relevant areas of concern, and make a convincing case that the impact is insignificant.

DIRECTOR'S DECISION UNDER 10 C.F.R. § 2.206

I.

On August 29, 1985, Catherine Thiel Quigg, on behalf of the Illinois Safe Energy Alliance, filed a Petition pursuant to 10 C.F.R. § 2.206 requesting that the Director of the Office of Nuclear Material Safety and Safeguards (NMSS) prepare a Federal environmental impact statement for the General Electric Morris Operation (GEMO). The Petition also requested that the Nuclear Regulatory Commission reconsider a decision by the Licensing Board which authorized the Director of NMSS to renew the license of the General Electric Company (GE) to store spent (irradiated) fuel at the facility without requiring a Federal environmental impact statement (EIS). *See* LBP-82-14, 15 NRC 530 (1982). The Petitioner asserts as a basis for this request that the granting of a license to GEMO to store 750 tons of spent fuel until the year 2002 constituted a major Federal action significantly affecting the quality of the human environment which requires a detailed environmental impact statement pursuant to the National Environmental Policy Act (NEPA), 42 U.S.C. § 4332. According to the Petitioner, there have been substantial changes from the original proposed use of the GEMO facility, and environmental assessments supporting the use of GEMO as a nuclear waste depository are seriously deficient.

For the reasons given below, I have concluded that the Petitioner's request should be denied.

II.

A brief historical review is helpful at this point to place the Petitioner's assertions in proper perspective. GEMO was originally constructed as a pilot irradiated fuel reprocessing operation, known as the Midwest Fuel Reprocessing Plant, pursuant to a construction permit issued by the Atomic Energy Commission (AEC) on December 28, 1967. Following construction, the facility was tested during a period of attempted cold operation using unirradiated uranium. The testing was not successful in establishing routine operation, and GE subsequently notified the AEC that it was suspending efforts to operate the reprocessing facility. However, before completion of the cold testing, an application was submitted by GE for the receipt and storage of irradiated light-water reactor fuel, and Materials License SNM-1265 was issued to permit such activities on December 27, 1971.¹ Following termination of the construction permit, a spent fuel storage license was reissued for a term of 5 years on August 23, 1974.² An amendment to the license was issued on December 3, 1975, that permitted an increase in the storage capacity of the facility from 100 metric tons uranium (100 MTU) to 750 MTU of spent nuclear fuel. An Environmental Impact Appraisal (EIA) was issued on December 3, 1975, that considered this change.

By letter dated February 27, 1979, GE applied for renewal of Materials License No. SNM-1265 for a license term of 20 years. The Licensee submitted a "Consolidated Safety Analysis Report for Morris Operation," NEDO-21326C (CSAR) dated January 1979, in support of the application. The Staff assessed the environmental aspects of the proposed license renewal in an EIA issued in June 1980. See NUREG-0695, "Environmental Impact Appraisal Related to the Renewal of Material License SNM-1265 for the Receipt, Storage and Transfer of Spent Fuel."

On December 12, 1980, the Commission put into effect a new part to its regulations, 10 C.F.R. Part 72, which covered the specific licensing requirements for the storage of spent fuel in an independent spent fuel storage installation, and stated that the licensing action related to the renewal of the license for the Morris Operation was to proceed in accordance with that part. 45 Fed. Reg. 74,693 (Nov. 12, 1980), *corrected at* 45 Fed. Reg. 78,623 (Nov. 26, 1980). Accordingly, on January 12,

¹ A "Final Environmental Impact Statement Related to the Operation of the Midwest Fuel Recovery Plant by General Electric Co." (Docket No. 50-268) was issued in December 1972 that, among other things, addressed storage of fuel at the facility.

² The license was issued pursuant to 10 C.F.R. Part 70. Part 72, which now covers the specific licensing requirements for the storage of spent fuel in an independent spent fuel storage installation, was not at that time a part of the Commission's regulations.

1981, GE submitted an amendment to its application under 10 C.F.R. Part 72. A Safety Evaluation Report (SER) was issued in July 1981, documenting the Staff's review and evaluation of the safety of the continued receipt, storage and transfer of spent nuclear fuel at the Morris Operation. See NUREG-0709, "Safety Evaluation Report Related to the Renewal of Materials License SNM-1265 for the Receipt, Storage and Transfer of Spent Fuel Pursuant to 10 CFR Part 72."

The State of Illinois and others intervened in the license renewal proceeding, and the matter was referred to the Licensing Board for hearing. Following the conclusion of discovery, GE filed a motion for summary disposition of all contentions of the only remaining intervenor, the State of Illinois. On March 2, 1982, the Licensing Board granted GE's motion for summary disposition, and authorized the Director of NMSS to issue the license renewal. LBP-82-14, *supra*, 15 NRC at 530. A license was issued on May 4, 1982.

III.

The Petitioner contends that the decision permitting GE to store 750 tons of spent fuel at GEMO was a "major federal action significantly affecting the quality of the human environment," which, under NEPA, requires "a detailed environmental impact statement by the responsible government officials." In support of this contention, the Petitioner cites numerous examples of purported "environmental impacts" of GEMO on the human and physical environment and "deficiencies" in previous GEMO environmental assessments. Broadly characterized, these include: (1) concerns about hydrologic and geologic conditions at GEMO, including effects from potential leaks from radwaste tanks, flooding and earthquakes; (2) the assertion that existing environmental assessments are not in compliance with NEPA; (3) an assertion that the environmental impact of dry storage at GEMO has never been evaluated; (4) assertions that the effects of storing spent fuel with high burnup for long term at GEMO have not been and should be evaluated; (5) claims that the consequences of "clandestine acts" against high-burnup spent fuel and sabotage prevention technologies have not been but should be evaluated; and (6) an assertion that GE has evaded NEPA by going beyond its original contractual obligations to acquire new spent fuel storage customers.

In its 1982 decision, the Licensing Board considered and specifically rejected the claim that an EIS should be prepared. The State of Illinois had maintained, in Contention 7, that NRC "has an obligation under the National Environmental Policy Act (NEPA) 42 U.S.C. § 4332

(1969) to issue an environmental impact statement which will account for environmental impact of normal operation of the Morris facility." In holding that this contention presented no genuine triable issue of material fact, the Board noted that the Staff had concluded that the proposed licensing action would not significantly affect the quality of the human environment and that there would be no significant environmental impact from the proposed action. It held that GE proposed only to continue, without change, the activities that it had carried on, which were licensed subsequent to NEPA and after environmental review under that law. Citing *Consumers Power Co. (Big Rock Point Plant)*, ALAB-636, 13 NRC 312 (1981), the Board stated that NEPA does not require that an EIS be prepared when an action does not directly or indirectly bring about any change in the environmental status quo. LBP-82-14, *supra*, 15 NRC at 549-50.

Although the Petitioner makes numerous claims of purported "impacts" on the environment necessitating the preparation of an EIS, none of these claims presents any new information. All of these alleged "impacts" were considered by the Licensing Board either explicitly, or implicitly, as the Board had before it the EIA, CSAR and SER which analyzed each of these issues.³ The Commission has cautioned before that § 2.206 procedures are not to be used as a vehicle for reconsideration of issues previously decided. *General Public Utilities Nuclear Corp. (Three Mile Island Nuclear Station, Units 1 and 2)*, CLI-85-4, 21 NRC 561, 563 (1985), citing *Consolidated Edison Co. of New York (Indian Point, Units 1, 2, and 3)*, CLI-75-8, 2 NRC 173, 177 (1975); *Pacific Gas and Electric Co. (Diablo Canyon Nuclear Power Plant, Units 1 and 2)*, CLI-81-6, 13 NRC 443, 444 (1981); *Rockford League of Women Voters v. NRC*, 679 F.2d 1218 (7th Cir. 1982). Furthermore, NEPA does not require the Commission to reconsider environmental decisions whenever new information developed subsequent to the action becomes available. Rather, it is unnecessary for an agency to reopen the NEPA record unless the new information would clearly mandate a change in result. See, e.g., *Public Service Co. of Indiana (Marble Hill Nuclear Generating Station, Units 1 and 2)*, DD-79-17, 10 NRC 613, 621 (1979); *Georgia Power Co. (Alvin W. Vogtle Nuclear Plant, Units 1 and 2)*, DD-79-4, 9 NRC 582, 584-85 (1979); see also *Greene County Planning Board v. FPC*, 559 F.2d 1227 (2d Cir. 1976), *cert. denied*, 434 U.S. 1086 (1978). For this reason, the Petitioner's argument that an EIS must be prepared must fail.

³ These issues are briefly treated in § IV, *infra*.

IV.

The remainder of this Decision briefly describes the prior evaluations of the six general areas described above which the Petitioner raises.

1. The Petitioner asserts that hydrologic and geologic conditions are unfavorable for high-level radioactive waste storage, that potential leaks from radwaste tanks could threaten the underlying drinking water aquifers and should be evaluated, that GEMO lies between flood plains and should be evaluated for the probability and effects of flooding, and that the potential for damage from earthquakes should be evaluated.

NRC Response: Sections 6.3 of the EIA and 7.3 of the SER discussed the hydrological monitoring program at GEMO, and methods to control potential leaks. The Licensing Board considered risks of radiation from loss of fuel basin cooling and leakage from fuel basins in dismissing Contention 1(b)(ii). LBP-82-14, *supra*, 15 NRC at 537. Sections 2.6, 2.7 and 7.4 of the SER considered geologic conditions, including seismology and the effects of potential earthquakes. The Licensing Board considered the ability of the Morris Operation to withstand earthquakes in dismissing Contention 1(b)(iii). LBP-82-14, *supra*, 15 NRC at 537. The potential for flooding was evaluated in § 2.8 of the SER.

2. The Petitioner asserts that environmental assessments are not in compliance with NEPA because they do not contain necessary geological and ecological data for determining potential adverse consequences from the operation of GEMO.

NRC Response: The Licensing Board had before it the existing environmental assessments, and did not indicate that it found these assessments inadequate. The detailed listing and examination of data that the Petitioner asserts should have been included in the environmental assessments for GEMO need not be included in an environmental impact appraisal. An environmental impact appraisal (or environmental assessment) is intended to be a concise document that briefly provides sufficient evidence and analysis to establish a basis for determining whether to prepare an EIS or to make a finding of no significant impact. *See* 10 C.F.R. § 51.14(a). The function of an environmental impact appraisal is to supply reasons why an action with potentially significant environmental impacts does not require a detailed environmental impact statement. Thus, to pass muster, the appraisal must simply reflect that a hard look was taken at the problem, identify the relevant areas of concern, and make a convincing case that the impact is insignificant. *Duke Power Co.* (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, 317 (1981). The more detailed discussion which the Petitioner asserts should have been included in the GEMO environmental assessments might be included in an environmental impact statement, if one were required, because an environmental impact statement must weigh all potential environmental effects and alternatives, as its purpose is to assure that the agency has fully considered environmental effects and alternatives to the proposed action and has incorporated all practical means to avoid or mitigate possible adverse environmental effects of the action. However, as noted before, the Licensing Board explicitly found that such a detailed environmental impact statement did not need to be prepared in this instance.

3. The Petitioner contends that the environmental impact of dry storage at GEMO has never been evaluated.

NRC Response: The Licensing Board stated that dry storage would not be permitted under the license renewal. LBP-82-14, *supra*, 15 NRC at 540.⁴

4. The Petitioner contends that the long-term storage of spent fuel with high burnup at GEMO has not been evaluated, and should be evaluated, including impact on local water supplies and potential for increased occupational radiation exposure.

NRC Response: The SER explicitly considers spent fuel with burnup of 44,000 megawatt-days per metric ton of uranium (MWd/MTU). NUREG-0709 at 3-1, § 3.2. GE's license for the Morris Operation explicitly prohibits storing spent fuel with a burnup higher than this. Water use for this fuel was specifically considered in the EIA in §-3.3. The Licensing Board specifically considered the effects of occupational exposure to radiation in dismissing Contention 3. LBP-82-14, *supra*, 15 NRC at 539-42.

5. The Petitioner contends that sabotage prevention technologies for GEMO need to be evaluated, and the consequences of terrorist attack against high-burnup spent fuel have not been evaluated.

NRC Response: The Licensee is required to comply with applicable requirements in 10 C.F.R. Parts 72 and 73 and implement a security plan to provide physical protection of the facility and licensed material.

⁴ The Petitioner complains that the Department of Energy, in cooperation with the Tennessee Valley Authority, conducted a dry storage cask experiment at GEMO: The Licensing Board's statement that dry storage would not be permitted does not mean that GEMO is prohibited from conducting tests such as this under conditions routinely encountered at GEMO in the receipt and shipment of spent fuel in dry shipping casks. This test was conducted pursuant to 10 C.F.R. § 72.35, which does not require a formal NRC review and approval. Nonetheless, NRC Staff met with the GE staff in August 1984, examined the REA-2023 cask used in testing, and determined that GE was acting in accordance with the conditions of its license and NRC regulations.

The Licensee has in place a physical security plan which meets these requirements. GE's license for the Morris Operation does not allow storage of spent fuel with a higher burnup than 44,000 MWd/MTU, and the Staff considered and found adequate GE's physical protection program for the Morris Operation for spent fuel up to this level of burnup in § 11 of the SER. The Licensing Board considered the Staff's assessment of GE's physical protection program in dismissing Contentions 1(b)(iv) and 2. LBP-82-14, *supra*, 15 NRC at 538-39.

6. The Petitioner contends that GE has evaded NEPA by going beyond its original contractual obligations as the Midwest Fuel Reprocessing Plant to acquire new spent fuel storage customers for the long term. According to the Petitioner, the EIA states that GE was not committed to future acceptance of spent fuel beyond 350 tons, so that the 400 tons now being shipped to GEMO go beyond the original GE reprocessing contracts and constitute a change in the nature and scope of the GEMO operation requiring an environmental impact statement.

NRC Response: GEMO is licensed to receive 750 megawatt-tons of uranium (MTU), and the EIA was prepared on the basis of that capacity. Therefore, regardless of whether or not it has gone beyond its original contractual obligations, it is operating within its licensed capacity and the scope of the operation has not changed.

V.

For the reasons stated above, the Petitioner's request has been denied. The Petitioner has presented no new information which was not considered at the time of the renewal of the license. Accordingly, initiation of further proceedings is not appropriate.

As provided by 10 C.F.R. § 2.206(c), a copy of this Decision will be filed with the Secretary for the Commission's review.

Original signed by
Donald B. Mausshardt for
John G. Davis, Director
Office of Nuclear Material Safety
and Safeguards

Dated at Silver Spring, Maryland,
this 4th day of November 1985.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

OFFICE OF NUCLEAR REACTOR REGULATION

Darrell G. Eisenhower, Acting Director

In the Matter of

Docket No. 50-309
(10 C.F.R. § 2.206)

MAINE YANKEE ATOMIC POWER
COMPANY
(Maine Yankee Atomic Power
Station)

November 12, 1985

The Acting Director of the Office of Nuclear Reactor Regulation denies the petition of the State of Maine asserting that there were a number of alleged deficiencies at the Maine Yankee Atomic Power Station of the Maine Yankee Atomic Power Company associated with environmental qualification of electrical equipment that represented a hazard to continued safe operation of the facility.

**TECHNICAL ISSUE DISCUSSED: ENVIRONMENTAL
QUALIFICATION OF ELECTRICAL EQUIPMENT**

The Licensee's program for environmental qualification of electrical equipment complies with the requirements of 10 C.F.R. § 50.49. Proposed resolutions for each of the environmental deficiencies identified are acceptable. Continued operation of the facility until implementation of the program is complete will not result in undue risk to the public health and safety.

DIRECTOR'S DECISION UNDER 10 C.F.R. § 2.206

INTRODUCTION

On November 19, 1984, the Nuclear Regulatory Commission (NRC) promulgated its final rule on environmental qualification of electrical equipment (49 Fed. Reg. 45,571). The rule requires licensees of operating power plants to meet the schedule for environmental qualification set out in the rule, specifically in 10 C.F.R. § 50.49(g). In adopting the final rule, the Commission directed the Director of the Office of Nuclear Reactor Regulation to consider, pursuant to 10 C.F.R. § 2.206, four comments filed in response to the Notice of Proposed Rulemaking issued on March 7, 1984 (49 Fed. Reg. 8445). Each of the four comments alleged equipment qualification deficiencies at specific plants. The Commission's action had the effect of requiring the Director of the Office of Nuclear Reactor Regulation to issue a formal decision pursuant to § 2.206 considering the plant-specific comments filed in the rulemaking noted above. The comments filed by the State of Maine through its Attorney General (hereinafter referred to as Petitioner) dated June 26, 1984, were among those identified by the Commission for consideration. On January 4, 1985, I advised the Petitioner by letter that I would issue a formal decision regarding the Petitioner's comments concerning the Maine Yankee Atomic Power Station in the reasonably near future. My decision in this matter follows.

DISCUSSION

Petitioner's comments mainly relate to alleged inadequacies in a number of equipment qualification items identified by the Franklin Research Center (FRC) and set out in its Technical Evaluation Report (TER) for the Maine Yankee Atomic Power Station of the Maine Yankee Atomic Power Company (Licensee). It is important to recognize that the FRC study to which the Petitioner refers was one initiated by the Nuclear Regulatory Commission itself to assist it in assessing the adequacy of the Licensee's equipment qualification program for the Maine Yankee Station. The TER provided by FRC has been available to the

NRC Staff since February 23, 1983, and has been specifically addressed by both the Licensee and the NRC Staff.¹

On February 8, 1979, the NRC Office of Inspection and Enforcement issued IE Bulletin 79-01, "Environmental Qualification of Class IE Equipment." This Bulletin, together with IE Circular 78-08 (issued on May 31, 1978) requested affected licensees to perform reviews to assess the adequacy of their environmental qualification programs. The NRC Staff's review of this area is discussed in a Safety Evaluation (SE) dated June 1, 1981, and resulted in further requests for information from the Licensee. Following submittal by the Licensee of additional information on September 2, 1981, March 5, 1982, February 11, 1982, June 24, 1982, and October 18, 1982, the NRC Staff asked FRC to evaluate that information in order to: (1) identify all cases where the Licensee's response did not resolve the significant qualification issues, (2) evaluate the Licensee's qualification documentation in accordance with established criteria to determine which equipment had adequate documentation and which did not, and (3) evaluate the Licensee's qualification documentation for safety-related electrical equipment located in harsh environments consistent with TMI "Lessons Learned" implementation. A TER was issued by FRC on February 23, 1983, to document its evaluation. It is this document to which the Petitioner makes reference. A second SE was subsequently prepared by the NRC Staff and issued to the Licensee April 8, 1983, with the FRC TER as an attachment.² This TER identified a number of electrical equipment environmental qualification deficiencies and the SE concurred with the bases and findings of the TER. Based on these findings, the Staff requested the Licensee to provide its plans for qualification or replacement of certain items and justification for continued operation in the near term.

A meeting was held with the Licensee on April 4, 1984, in order to discuss the Licensee's proposed method of resolving the environmental qualification deficiencies identified in the 1983 SE and FRC TER. During this meeting with the Licensee, a proposed resolution for each of these deficiencies was discussed and the NRC Staff found the Licensee's approach for resolving them acceptable. The approach described by

¹ The background associated with the NRC Staff's review of the Licensee's equipment qualification program for the Maine Yankee Station is provided in Attachment 1, Safety Evaluation by the Office of Nuclear Reactor Regulation, Maine Yankee Atomic Power Company, Maine Yankee Atomic Power Station, Docket No. 50-309, issued December 13, 1984 (hereinafter referred to as the Maine Yankee SE).

² Safety Evaluation for Environmental Qualification of Safety-Related Electrical Equipment, Docket No. 50-309, April 8, 1983, with Technical Evaluation Report entitled "Review of Licensee's Resolution of Outstanding Issues from NRC Equipment Environmental Qualification Safety Evaluation Reports (F-11 and B-60), Maine Yankee Atomic Power Company, Maine Yankee Atomic Power Station," Franklin Research Center, February 23, 1983.

the Licensee for addressing and resolving the identified deficiencies included replacing equipment, performing additional analyses, utilizing additional qualification documentation beyond that reviewed by FRC, obtaining additional qualification documentation, or determining that some equipment was outside the scope of 10 C.F.R. § 50.49 and therefore not required to be environmentally qualified. The discussions also included the Licensee's general methodology for compliance with § 50.49 and justification for continued operation with those equipment items for which environmental qualification was not yet complete.³

Subsequent to the April 4, 1984 meeting, the Licensee provided further information for resolution of the identified deficiencies by its letter dated May 31, 1984. With its review of this submittal, the NRC Staff completed its evaluation of the acceptability of the Licensee's electrical equipment environmental qualification program, including the type of documentation the Licensee indicated it has retained. The Staff's findings are found in the attached Maine Yankee SE dated December 13, 1984 (Attachment 1).

The resolution of Petitioner's comments for specific items of equipment identified by FRC and discussed in the TER is contained in Attachment 2. Resolution is complete for all items identified in the FRC TER; therefore, justifications for continued operation are not required.

In addition to specific items raised in the TER prepared by FRC, Petitioner identifies two other general concerns regarding environmental qualification of equipment at the Maine Yankee Station. First, the Petitioner asserts that information in the record was incomplete and cursory, thereby making it extremely difficult to conduct any meaningful analyses. Petitioner argues that this failing made it difficult to comment on the adequacy of the qualification review. The Petitioner further claims that the Licensee's responses to the TER are inadequate, unsubstantiated, or nonexistent and, consequently, neither the Petitioner nor the NRC is in a position to ascertain whether the concerns raised in the TER have been adequately addressed. The Petitioner was not present at the meetings at which the Licensee and the NRC Staff discussed resolutions of the items identified in the TER and also apparently did not have

³ A final rule on environmental qualification of electrical equipment important to safety became effective on February 22, 1983 (48 Fed. Reg. 2729). This rule, 10 C.F.R. § 50.49, specifies the requirements of electrical equipment important to safety located in a harsh environment. Effective November 19, 1984, this rule was amended to remove the June 30, 1982 deadline for environmental qualification of electrical equipment imposed by previous Commission order and established a new date for final environmental qualification of electrical equipment (49 Fed. Reg. 45,571). Accordingly, March 31, 1985, was established as the new deadline for the Maine Yankee Atomic Power Station. All open items were resolved by the Licensee prior to March 31, 1985.

Maine Yankee's letter to the NRC of May 31, 1984, wherein the Licensee responded to each concern raised in the TER. Thus, in fact, adequate information was available to the Staff to permit it to assess the adequacy of the resolutions proposed for items identified in the TER.

Second, Petitioner claims that the scope of review by the NRC was limited. Specifically, the Petitioner alleges that there was no independent NRC analysis or determination that the Licensee's responses to the TER warrant a finding of environmental qualification. The approaches described by the Licensee for addressing and resolving the identified deficiencies included replacing equipment, performing additional analyses, utilizing additional qualification documentation beyond that reviewed by FRC, and determining that some equipment is outside the scope of § 50.49 and therefore is not required to be environmentally qualified. Equipment located in a mild environment is an example of this latter category. The NRC Staff discussed the proposed resolutions in detail on an item-by-item basis with the Licensee during the meeting of April 4, 1984. Replacing or exempting equipment, for an acceptable reason, is clearly an acceptable method for resolving environmental qualification deficiencies. The more lengthy discussions with the Licensee concerned the use of additional analyses or documentation. In the attached Maine Yankee SE, the NRC Staff has documented its review and evaluation of the Licensee's electrical equipment environmental qualification program. The result of that evaluation was that the Staff found the Licensee's qualification program acceptable.

Clearly, the Staff has conducted an independent view of the Licensee's environmental qualification program and has documented that review. Prior to reaching such a conclusion with respect to the environmental qualification programs at several other plants, the Staff has performed audits of the Licensee's documentation. This action was taken because the Staff had concerns regarding the acceptability of the programs being implemented by the associated licensees. However, the Staff does not have a similar concern for the Maine Yankee facility and believes it is reasonable to conclude that the considerable efforts expended by the Maine Yankee Atomic Power Company have substantially enhanced the status of environmental qualification of the electrical equipment at the Maine Yankee Atomic Power Station.

Nonetheless, a follow-on implementation review will be performed by personnel in NRC Region I as part of the Staff's overall effort to monitor implementation of all licensees' environmental qualification programs. A schedule has not yet been established for the Maine Yankee implementation review. The primary objective of this review will be to verify that the Licensee's files contain the appropriate analyses and other

necessary documentation to support the Licensee's conclusion that the equipment is properly qualified. The inspections will also provide reasonable assurance that the Licensee's program for surveillance and maintenance of environmentally qualified equipment is adequate to assure that this equipment is maintained in the as-analyzed or as-tested condition. The method used for tracking periodic replacement parts, and implementation of the Licensee's commitments and actions, e.g., regarding replacement of equipment, will also be verified.

CONCLUSION

In summary, the NRC Staff has reviewed each of the items relied upon by the Petitioner. The FRC TER dated February 23, 1983, and NRC's letter to the Licensee dated April 8, 1983, do indicate various environmental qualification deficiencies. Those deficiencies were identified by the FRC and the NRC Staff in reviewing the information available at that time. Thus, the Petitioner has not raised any environmental qualification issues of which the Staff was unaware.

Since the TER was issued, the Licensee has provided considerable additional information regarding the identified electrical equipment deficiencies and has proposed a resolution of each of them that has been found acceptable by the Staff. The attached Maine Yankee SE dated December 13, 1984, documents the Staff's review which concludes that the Licensee's electrical equipment qualification program complies with the requirements of § 50.49, and that the proposed resolutions for each of the environmental qualification deficiencies identified in the FRC TER are acceptable. The Staff will continue to monitor the Licensee's progress in implementing its environmental qualification program. Consequently, I conclude that the overall state of equipment qualification of the Maine Yankee facility is adequate to assure the public health and safety.

Darrell G. Eisenhut, Acting
Director
Office of Nuclear Reactor
Regulation

Dated at Bethesda, Maryland,
this 12th day of November 1985.

[Attachment 1 has been omitted from this publication but may be found in the NRC Public Document Room, 1717 H Street, NW, Washington, DC 20555.]

ATTACHMENT 2

RESOLUTION OF PETITIONER'S COMMENTS REGARDING THE FRANKLIN RESEARCH CENTER'S TECHNICAL EVALUATION REPORT

Petitioner's specific comments regarding items identified in the February 23, 1983 FRC TER and Maine Yankee's resolutions for each of those items are listed below. Those resolutions have been reviewed by the Staff and found to be acceptable.

1. Item 3: FRC found that Maine Yankee had not adequately evaluated the aging degradation of a limit switch in the primary auxiliary building. In its May 20, 1983 response to the April 8, 1983 SE, Maine Yankee still listed the limit switch as unqualified.

In its resolution of the TER items, Maine Yankee, by letter dated May 31, 1984, stated that the limit switch had been replaced with a qualified limit switch, with appropriate documentation on file.

2. Item 6: FRC found that Maine Yankee had not established that the terminal block located in the primary auxiliary building at elevation 11'0" was environmentally qualified.

In its resolution of TER items, Maine Yankee, in its May 31, 1984 letter, stated that qualification documentation, not previously available, had been obtained and was on file at Maine Yankee to establish qualification for this item.

3. Item 8: FRC found that Maine Yankee had not established that electrical cable for power located in the containment spray pump area had been qualified for steam exposure.

Maine Yankee stated, in its May 31, 1984 letter, that qualified documentation not previously available had been obtained and was on file at Maine Yankee to support qualification of this equipment.

4. Item 9: FRC found that Maine Yankee had not provided sufficient information to establish that installed cables located in the containment spray pump area were identical to the tested cables.

Maine Yankee stated, in its May 31, 1984 letter, that the cable used at Maine Yankee has insulation of a sufficiently similar type as that qualified by Okonite Report No. NQRN-3. Thus, applicable portions of that report had been used to qualify the cable used at Maine Yankee.

5. Item 12: FRC found that Maine Yankee had not established that certain power cables located in the reactor containment were sufficiently similar to those used in qualification tests.

Maine Yankee stated, in its May 31, 1984 letter, that the original documentation reviewed by FRC had been superseded by documentation traceable to IEEE 383-1974 testing of the above-mentioned cables, thus establishing qualification.

6. Item 14: FRC found that Maine Yankee had not established that electrical cables installed in the reactor containment at elevation 3'0" which provides electrical power to control valves were sufficiently similar to those used in qualification tests.

Maine Yankee stated, in its May 31, 1984 letter, that the cable manufacturer had verified, by letter dated March 16, 1984, that the cable tested is identical to the purchased cable.

7. Item 15: FRC found for electrical cable for instruments at elevation 20'0" of the reactor containment that, although Maine Yankee had provided results for tests enveloping the accident conditions of the Surry plant, the testing did not envelope the Maine Yankee accident profile, or radiation requirements. Thus, qualification had not been established.

Maine Yankee, in its May 31, 1984 letter, stated that additional qualification documentation not previously available to FRC was obtained and is on file at Maine Yankee. The new documentation establishes qualification.

8. Item 16: FRC found that Maine Yankee had not provided a schedule for the replacement of an unqualified motorized valve actuator located in the primary auxiliary building.

Maine Yankee has replaced the actuator and, in its May 31, 1984 letter, stated that its Documentation Review Package is now adequate to show full qualification for the new piece of equipment.

9. Item 18: FRC found that, for a motorized valve actuator located in the containment, the aging degradation had not been evaluated adequately and the criteria regarding duration had not been adequately established.

Maine Yankee stated, in its May 31, 1984 letter, that the equipment reviewed by FRC has been replaced by new equipment for which it has adequate equipment qualification documentation on file.

10. Item 23: FRC found that Maine Yankee had not provided a schedule for the replacement of an environmentally unqualified motorized valve actuator located in the containment.

Maine Yankee has replaced the actuator and, in its May 31, 1984 letter, stated that its Documentation Review Package is now adequate to show full qualification for the new piece of equipment.

11. Item 37: FRC found that Maine Yankee had not established qualification for electrical penetration located in the reactor containment elevation 46'0".

In its May 31, 1984 letter, Maine Yankee stated that its Qualification Documentation Review Package now contains sufficient new documentation to establish environmental qualification for the electrical penetration.

12. Item 38: FRC found that electrical cable installed at elevation 46'0" of the reactor containment was not properly qualified.

This equipment is not in the scope of 10 C.F.R. § 50.49 and has been deleted from the Master List because it has no required Design Basis Accident usage. The distribution cabinets are used for power distribution to pressurizer heaters which are not required for accident mitigation.

13. Item 39: FRC found that qualification had not been established for the hydrogen analyzer located at elevation 11'0" in the primary auxiliary building.

Maine Yankee stated, in its May 31, 1984 letter, that this equipment is not in the scope of § 50.49 because it has been relocated to a mild environment. This hydrogen analyzer has been relocated to an area in the Primary Auxiliary Building which is removed from the radiation levels due to the charging pumps and recirculation piping and is accessible to personnel. A qualified hydrogen analyzer (Item 43) has been installed and is available as an alternate indication. Also, in its May 31, 1984 letter, Maine Yankee stated the following concerning qualification of the backup hydrogen analyzer (Item 43):

Qualification of this installed equipment has been demonstrated by type testing. The qualification documentation has been obtained and is on file at MYAPCo (QDR-5436-038-1816).

14. Item 44: FRC found that qualification had not been established for a motor control center located at elevation 30'0" in the containment spray pump area.

Maine Yankee, in its May 31, 1984 letter, stated that this equipment is not in the scope of § 50.49 and has been deleted from the Master List because it is located in a mild environment. Since the submittal of the documentation for the TER, a calculation of the post-accident radiation dose has been performed for the specific location of the motor control center. The revised calculation demonstrates that the actual radiation dose is less than 1×10^4 R. This is not considered to be a harsh environment.

15. Item 45: FRC found that Maine Yankee had not established qualification for a radiation detector located in the reactor containment at the top of the crane wall.

In its May 31, 1984 letter, Maine Yankee stated that sufficient documentation which addresses similarity, aging and radiation criteria is now on file to demonstrate qualification for this equipment.

16. Item 47: FRC found that qualification had not been established for a solenoid valve located in the reactor containment at elevation 51'7".

Maine Yankee, in its May 31, 1984 letter, stated that a more comprehensive test report has been obtained which establishes qualification.

17. Item 51: FRC found that qualification had not been established for a solenoid valve located at elevation 11'0" in the primary auxiliary building.

Maine Yankee, in its May 31, 1984 letter, stated, as in Item 47, that a more comprehensive report has been obtained which demonstrates qualification for the specified Maine Yankee normal service and accident environment.

18. Item 64: FRC found that qualification had not been established for an electric motor located in the containment spray pumps area at elevation 20'0" because qualification documentation was not adequate.

Maine Yankee, in its May 31, 1984 letter, stated the following:

Additional qualification documentation, not previously available to FRC, has been obtained and is on file at MYAPCo (QDR-5436-038-0303). The qualification has been established by engineering evaluation of the data provided in: 1) Siemens-Allis Test Report No. NQ7304852, "Equipment Qualification for Class 1E Safety-Related Service in Power Generation Station", dated February 13, 1981 (FRC Reference: PGR #19), and 2) Acton Test Report No. 15564-22, "Analysis of

Class 1E Qualification of Siemens-Allis Form Wound Containment Spray Pump Motors for Maine Yankee Atomic Power Station", dated April 7, 1981.

The qualification documentation provides parameter by parameter analysis to demonstrate that the equipment is qualified for the specified Maine Yankee normal service and accident environmental conditions.

19. **Items 65 and 66:** FRC found that equipment qualification had not been established for an electric motor located in the primary auxiliary building at elevation 21'0" and another electric motor located in containment spray pump area at elevation 14'6" because similarity had not been established between the tested insulation systems and the installed equipment insulation systems.

Maine Yankee, in its May 31, 1984 letter, stated the following:

The motors at Maine Yankee are manufactured by the Westinghouse Large Motor Division for Class 1E applications as specified by the NSSS vendor Combustion Engineering. The qualification is based on Westinghouse Report, WCAP-8754, "Environmental Qualification of Class 1E Motors for Nuclear Out-of-Containment Use" (FRC Reference: PGR #604). This report and Revision 1 to the report clearly demonstrate traceability to Maine Yankee plant. Section 2 of the WCAP Report states the following: "The same insulating system (Thermalastic Epoxy) and only two different types of bearing are used on all nuclear Class 1E motors manufactured by Westinghouse Large Motor Division. Therefore, a generic qualification can be done to qualify all such motors to the requirements of IEEE 323-1974." Therefore, the Maine Yankee equipment is traceable to the WCAP Report.

20. **Item 67:** FRC found that, for an electric motor located in the reactor containment at elevation 24'0", qualification had not been established because similarity between installed equipment and test specimens had not been adequately established.

In its May 31, 1984 letter, Maine Yankee stated the following:

Similarity between Maine Yankee and tested equipment has been established in Qualification Documentation Review package QDR-5436-038-0341. The QDR groups all the previous data reviewed by FRC into a concise and auditable package that demonstrates qualification. In addition to the previously submitted data, the QDR provides traceability between materials of construction of the motor (nomex, kapton, ML polyimide enamel magnet wires, DC997 silicone varnish) to motors tested to IEEE 334-1974, IEEE 323-1974. The vendor (Reliance) has certified that the Maine Yankee motors are of the same construction as the tested motor.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

OFFICE OF NUCLEAR REACTOR REGULATION

James Knight, Acting Director

In the Matter of

Docket Nos. 50-352
50-353
(10 C.F.R. § 2.206)

PHILADELPHIA ELECTRIC COMPANY
(Limerick Generating Station,
Units 1 and 2)

November 12, 1985

The Acting Director of Nuclear Reactor Regulation denies a petition under 10 C.F.R. § 2.206 which requested that the NRC stay the activities of the Delaware River Basin Commission until the Licensee complied with certain environmental license conditions.

NRC: JURISDICTION

The NRC has no authority over the Delaware River Basin Commission (DRBC) and, consequently, may not stay any of its activities or cause any applications before the DRBC to be withdrawn.

LICENSE CONDITIONS

Licensees are expected to adhere to all NRC requirements and license conditions. However, NRC action is inappropriate in the absence of any present violation of a regulation or license condition.

DIRECTOR'S DECISION UNDER 10 C.F.R. § 2.206

On October 1, 1985, Robert L. Anthony (Petitioner) filed a petition with the Nuclear Regulatory Commission (NRC) asking the NRC to take certain actions with respect to applications filed by the Philadelphia Electric Company (Licensee) with the Delaware River Basin Commission (DRBC) related to the operation of its Limerick Nuclear Generating Station, Unit 1 (the facility). Principally, Petitioner requested that the NRC stay DRBC consideration of the Licensee's applications and require that the applications be withdrawn until Licensee complies with certain environmental license conditions imposed by the NRC. The Commission has referred this matter to the Office of Nuclear Reactor Regulation for its consideration pursuant to 10 C.F.R. § 2.206. For the reasons stated in this Decision, the Petitioner's request is denied.

On September 20, 1985, the Licensee filed with the DRBC applications to modify current restraints established by the DRBC upon the Licensee regarding the withdrawal of water from the Schuylkill River associated with the operation of the Limerick facility. Petitioner seeks to have the NRC stay consideration by the DRBC of the Licensee's applications to the DRBC. The DRBC is a regional agency created by an inter-governmental compact and given Federal ratification by a joint resolution of Congress.¹ The NRC has no authority over the activities of the DRBC and consequently may not stay any of its activities or cause any applications before the DRBC to be withdrawn. The NRC is thus not in a position to grant the relief sought by Petitioner regarding this aspect of its petition.² See *Wabash Valley Power Association* (Marble Hill Nuclear Generating Station, Units 1 and 2), DD-81-18, 14 NRC 925, 927 (1981).

Petitioner also has concerns regarding the Licensee's compliance with certain environmental license conditions appended to Facility Operating License No. NPF-27 which the NRC issued to the Licensee on October 26, 1984, to authorize operation of the Limerick facility. License No. NPF-27 was superseded by Facility Operating License No. NPF-39, which was issued on August 8, 1985, to permit full-power operation of the facility. License No. NPF-39 includes the same environmental license conditions as were contained in License No. NPF-27. Petitioner appears to be concerned that the Licensee will receive authorizations

¹ See DD-82-13, 16 NRC 2115, 2117 n.3 (1982).

² Petitioner has recognized the need to file his concerns directly with the DRBC by submitting a written document to the DRBC on October 1, 1985.

from the DRBC regarding water usage which permit it to operate in a manner in violation of the environmental license conditions. Such a course of action by the Licensee is certainly a possibility, albeit highly speculative at this point in time. Petitioner alleges no present violations by the Licensee of any NRC requirements including the license conditions. I have recently addressed in a Director's Decision adherence by this Licensee to its environmental license conditions.³ The issue in that matter was the potential use by the Licensee of alternate sources of supplemental cooling water for the Limerick facility and a concern on the part of that Petitioner that such alternate use would not receive NRC scrutiny. I noted there that the requirements placed upon the Licensee by the terms of its Environmental Protection Plan (EPP) to assure that activities undertaken by the Licensee affecting the environment would receive appropriate review. The language of that Decision is appropriate in this matter and bears repeating here:

The requirements of the EPP are triggered at the time of the Licensee's proposed action. The Licensee must meet these requirements and take the appropriate actions prior to taking the action itself. Compliance with these requirements in a timely manner so as to gain the relief of any changes sought is a matter for the Licensee's consideration. Consequently, to the extent that the Licensee wishes to operate the Limerick facility in a mode different from that presently represented in its license application, it must examine that proposed change in light of the terms of the license conditions set out above. It must make the appropriate determinations and, should the activity involve an unreviewed environmental question, the Licensee must obtain prior NRC approval. Should the activity involve a change in the EPP, a license amendment is required. These provisions of the license for the Limerick Unit 1 facility provide adequate assurance that any change contemplated by the Licensee having potential environmental implications will be appropriately dealt with.

DD-85-8, 21 NRC at 1566.

In summary, the NRC is without authority to stay DRBC considerations with respect to water quality matters placed before it by this Licensee. Furthermore, in the absence of any present violation of any regulation or license condition, I do not consider it appropriate to take any action in this matter. I do, however, fully expect the Licensee to adhere to all NRC requirements and license conditions, including those which specifically govern the types of changes which might be forthcoming from any consideration given by DRBC to the Licensee's current proposal regarding water use for its Limerick facility.

³ DD-85-8, 21 NRC 1561 (1985).

Accordingly, the Petitioner's request for action pursuant to 10 C.F.R. § 2.206 is *denied*. As provided by 10 C.F.R. § 2.206(c), a copy of this Decision will be filed with the Secretary for the Commission's review.

James P. Knight, Acting
Director
Office of Nuclear Reactor
Regulation

Dated at Bethesda, Maryland,
this 12th day of November 1985.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Nunzio J. Palladino, Chairman
Thomas M. Roberts
James K. Asselstine
Frederick M. Bernthal
Lando W. Zech, Jr.

In the Matter of

Docket No. STN 50-528
(Application In Respect
of a Sale and Leaseback
Financing Transaction by
Public Service Company
of New Mexico)

ARIZONA PUBLIC SERVICE
COMPANY, et al.
(Palo Verde Nuclear Generating
Station, Unit 1)

December 12, 1985

In this matter the Commission has determined that in the totality of the circumstances, the proposed sale and leaseback financial transaction with the license amendment recommended by the Staff and subject to specified conditions is acceptable under the Atomic Energy Act and the Commission regulations.

ATOMIC ENERGY ACT: OWNERSHIP OF FACILITIES
(SALE AND LEASEBACK FINANCING)

The lessor and anyone else who may acquire an interest under the sale and leaseback financing transaction are prohibited from exercising any control over the licensees.

**ATOMIC ENERGY ACT: OWNERSHIP OF FACILITIES
(SALE AND LEASEBACK FINANCING)**

The limitations in 10 C.F.R. § 50.81, "Creditor Regulations," are applicable to the named lessor in the sale and leaseback financing transaction and any successor in interest to that lessor.

ORDER

On October 18, 1985, the Arizona Public Service Company filed with the NRC an Application in Respect of a Sale and Leaseback Financing Transaction by Public Service Company of New Mexico. The Commission has determined that in the totality of the circumstances presented to it, this proposed financial transaction with the license amendment recommended by the Staff and subject to the conditions specified in this Order is acceptable under the Atomic Energy Act and the Commission regulations. This conclusion is subject to the condition that the lessor and anyone else who may acquire an interest under the transaction which is the subject of this application are prohibited from exercising directly or indirectly any control over the licensees of the Palo Verde nuclear facility. For purposes of this condition, the limitations in 10 C.F.R. § 50.81, "Creditor Regulations," as now in effect and as they may be subsequently amended are fully applicable to the named lessor and any successor in interest to that lessor as long as the license for the Palo Verde nuclear facility remains in effect. Accordingly, this financial transaction shall have no effect on the license for the Palo Verde nuclear facility throughout the term of the license.

Subject to the foregoing, the Commission consents to the financial transaction as set forth in the application and authorizes the Director of the Office of Nuclear Reactor Regulation to amend the license as described in SECY-85-367 and this Order.

It is so ORDERED.

For the Commission

SAMUEL J. CHILK
Secretary of the Commission

Dated at Washington, D.C.,
this 12th day December 1985.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Nunzio J. Palladino, Chairman
Thomas M. Roberts
James K. Asselstine
Frederick M. Bernthal
Lando W. Zech, Jr.

In the Matter of

Docket No. LRP

**INQUIRY INTO THREE MILE ISLAND
UNIT 2 LEAK RATE DATA
FALSIFICATION**

December 18, 1985

The Commission establishes the procedures to govern a legislative-format hearing (ordered in CLI-85-2), to develop sufficient information for the identification of persons involved in and the facts surrounding the reactor coolant system leak rate data falsifications at Three Mile Island Unit 2 prior to the March 28, 1979 accident. The Commission authorizes the appointment of a Presiding Board to rule on petitions to intervene, to conduct prehearing procedures and the hearing, and to issue a recommended decision. After issuance of the Presiding Board's findings, the NRC Staff is to recommend to the Commission what action, if any, should be taken against individuals found to have engaged in wrongdoing. The Commission will then address whether to initiate enforcement proceedings against individuals and whether employment restraints imposed on certain individuals in the Three Mile Island, Unit 1 restart proceeding should be lifted.

ORDER AND NOTICE OF HEARING

In an Order issued February 25, 1985, CLI-85-2, 21 NRC 282, the Commission stated that it would institute a separate hearing apart from the Three Mile Island, Unit 1 restart proceeding to develop the facts surrounding the reactor coolant system ("RCS") leak rate data falsifications at Three Mile Island, Unit 2 (TMI-2) prior to the March 28, 1979 accident, in sufficient detail to determine the ultimate status of those likely involved, which includes those segregated from TMI-1 and those now working at other facilities. The Commission herein specifies the procedures to govern the separate hearing, which will be a legislative format hearing designed solely to gather information. This Order also identifies the steps to be taken, after the Presiding Board issues a recommended decision setting forth the facts, in order for the Commission to determine what action, if any, will be taken.

A. Background

Harold Hartman, a control room operator at TMI-2 prior to the accident, alleged that RCS leak rate surveillance tests, which were used to assess whether primary system leakage surpassed limits contained in the facility's technical specifications, were at times purposely manipulated and records of unacceptable results were discarded at TMI-2 prior to the accident to cover up the fact that over an extended period of time the results of the tests exceeded technical specification limits for unidentified leakage. Hartman alleged that the computer program for calculating leak rates was unreliable, frequently yielding unrealistic results. This made it more difficult to get "good" leak rates. Hartman further alleged that the operators at TMI-2 sometimes manipulated the RCS leak rate test results by inputting wrong data into the computer, adding hydrogen gas to the make-up tank during leak rate tests, adding water to the make-up tank during a leak rate test and not inputting the addition into a computer, and leaking water into the make-up tank while performing water transfer operations involving other tanks. Hartman specifically alleged that shift supervision was aware of such improper conduct. After a preliminary investigation into Hartman's allegations, the NRC in April of 1980 referred the matter to the Department of Justice for criminal investigation.

After a Grand Jury investigation and indictment of Metropolitan Edison Company, the TMI-2 licensee at the time of the accident, the Department of Justice began prosecution of the criminal charges against Metropolitan Edison Company.

On February 29, 1984, Metropolitan Edison Company entered into a plea agreement with the United States which ended the criminal prosecution. Metropolitan Edison pleaded guilty to one count of the indictment charging it with failure to establish, implement, and maintain an accurate and meaningful reactor coolant system water inventory balance procedure to demonstrate that unidentified leakage was within the allowable limits. The Company also pleaded no contest to six other counts of the indictment, including those which charged the Company with improper manipulation of TMI-2 leak rate tests to generate results that would fulfill the Company's license requirements. In urging the Court to accept the plea agreement, U.S. Attorney David Queen stated that the evidence developed in the Grand Jury inquiry did not indicate that any of the directors and officers of GPU Nuclear from its inception in 1982 (as successor to Metropolitan Edison) to the date of the indictment, or any of the directors of Metropolitan Edison "participated in, directed, condoned, or was aware of the acts or admissions that are the subject of the indictment."¹

After the Court accepted the plea agreement, the Department of Justice on behalf of the Commission asked the Court to provide the NRC access to the record of the Grand Jury proceeding. The Court denied the request. *United States v. Metropolitan Edison Co.*, 594 F. Supp. 117 (M.D. Pa. 1984).

The Commission also asked its Office of Investigations ("OI") to examine whether Michael Ross, Manager of Operations at TMI-1, had participated in, directed or condoned leak rate falsifications at TMI-2. Prior to the accident Ross was licensed at both TMI-1 and TMI-2. OI interviewed Ross and many others under oath regarding Ross' involvement at Unit 2, reviewed pertinent records and concluded that Ross' role at TMI-2 was minimal, that during the period falsifications took place he was present at TMI-2 only the minimum time necessary to maintain his TMI-2 license, and that he was not involved in the falsifications.

¹ The individuals thereby cleared by the U.S. Attorney are William G. Kuhns, Herman M. Dieckamp, Robert C. Arnold, James S. Bartman, Shepard Bartnoff, Frederick D. Hafer, Richard Heward, Henry D. Hukill, Edwin E. Kintner, James R. Leva, Bernard H. Cherry, Philip R. Clark, Verner H. Condon, Walter M. Crietz, Robert Fasulo, Ivan R. Finfrock, William L. Gifford, Robert L. Long, Frank Mangano, Ernest M. Schleicher, Floyd J. Smith, William A. Verrochi, Raymond Werts, and Richard F. Wilson.

B. Purpose and Scope of Hearing

1. The purpose of this hearing is to develop the facts surrounding the leak rate falsifications that occurred at TMI-2 from February 2, 1978 (the date TMI-2 received its operating license) until March 28, 1979, in sufficient detail to determine the involvement of any individual who may now work, or in the future work, at a nuclear facility licensed by the Commission.

2. The specific issues which the Presiding Board is to address are limited to the following:

- (a) How were the Technical Specification 3.4.6.2 requirements for reactor coolant system unidentified leakage interpreted and implemented by control room operators (CROs), shift foremen, shift supervisors and onsite and offsite management? Following the discovery by an NRC inspector in October 1978 that Technical Specification 3.4.6.2 requirements were not properly interpreted or implemented, what corrective action was taken by management personnel? Was the corrective action taken sufficient to ensure compliance with the Technical Specification 3.4.6.2 by the personnel performing and reviewing the leak rate surveillance tests?
- (b) What difficulties, if any, were operators experiencing when conducting leak rate surveillance tests required by Technical Specification 4.4.6.2.d? Who knew about these difficulties? What corrective actions were taken? Did operators feel pressure to obtain leak rate surveillance test results which did not exceed technical specification limits? If so, what type of pressure was perceived or exerted and who was responsible?
- (c) Were unacceptable leak rate surveillance test results required by Technical Specification 4.4.6.2.d discarded? If so, who knew of, condoned or directed this practice? Were unacceptable leak rate surveillance test results discarded in an attempt to hide them from the NRC?
- (d) Did operators manipulate data or take other actions during leak rate surveillance testing in an attempt to improperly influence test results? Who performed, condoned, directed or was knowledgeable of data manipulation or other improper actions during leak rate surveillance testing? This would include, but is not limited to the following:
 - (i) inputting the wrong data into the plant computer;
 - (ii) adding hydrogen gas to the make-up tank during the test in an attempt to influence make-up tank level indication;

- (iii) adding water to the make-up tank during the test and either not including the addition in the computer calculation or underrecording the addition in the computer;
 - (iv) taking advantage of differences or inaccuracies in plant instrumentation (e.g., make-up tank level indicators) in an attempt to influence parameters critical to the leak rate surveillance test calculation;
 - (v) taking or failing to take any action in violation of technical specification requirements?
- (e) The Commission has accepted the findings of the U.S. Attorney that the twenty-four individuals mentioned in note 1, *supra*, were not involved in the leak rate falsifications. It has also accepted the OI finding that Michael Ross similarly was not involved. Accordingly, the Commission has decided that these individuals are outside of the scope of the hearing.² Therefore, the Presiding Board shall not address any issue regarding any alleged knowledge or involvement of these individuals in the falsifications that occurred at the TMI-2 reactor from February 2, 1978, until March 28, 1979.
- (f) The Presiding Board is not to entertain issues other than those set forth in (a)-(d) above without the prior authorization of the Commission.

C. Procedures

1. The Chief Administrative Judge, Atomic Safety and Licensing Board Panel, is to appoint a three-person Presiding Board to rule on petitions to intervene, to conduct any prehearing procedures and the hearing, and to render a recommended decision setting forth the facts surrounding the falsifications and identifying those individuals who participated in, or knew of and condoned, or by their dereliction or culpable neglect allowed the leak rate falsifications at TMI-2.

2. Any person who has an interest which may be affected by this hearing may petition to intervene. Petitions to intervene shall include the name of the party, how the party's interest may be affected by the proceeding, and how the party expects to contribute to the development of an adequate record. Petitions are to be filed within 45 days of the date

² If the Presiding Board believes that any of these individuals have pertinent information to provide on issues falling within the scope of the hearing, it may call them as witnesses at mutually convenient times or, if necessary, issue a subpoena requiring their attendance and testimony. The Board is not to make unreasonable demands on the time of these individuals or upon other persons playing key roles in the operation of any nuclear facility.

of this Order and Notice of Hearing. Petitions shall be granted if the Presiding Board determines that the petitioner has an interest that may be affected and petitioner will likely contribute to development of an adequate record.

3. The hearing will be held in the Washington, D.C. area, although the Presiding Board may hold portions of the hearing in other places consistent with the convenience of the parties or their representatives and the public interest.

4. The NRC Staff will not participate as a party. Instead, it will make available to the parties and to the Presiding Board, relevant documentary material within its possession as soon as practicable after issuance of this Order and Notice of Hearing. Disclosure of material is to be consistent with the Commission's Statement of Policy, "Investigations, Inspections, and Adjudicatory Proceedings," 49 Fed. Reg. 36,032 (Sept. 13, 1984). The NRC Staff will also provide whatever testimony or other assistance the Presiding Board requests to ensure that the hearing record is fully developed. All orders, petitions, submissions to the Presiding Board and other pertinent material shall be served on the NRC Staff.

5. This hearing will not be conducted under 10 C.F.R. Part 2, Subpart G, except that, in addition to the powers granted by this Order and Notice of Hearing, the Presiding Board shall have the powers specified in 10 C.F.R. §§ 2.718(a), (e), (f), (h), (i), (j) and (k). The hearing will be conducted using a legislative hearing format, as specified below.

- (a) Only relevant, material, and reliable oral and documentary evidence which is not repetitious should be admitted into evidence. Only the Presiding Board will be able to call witnesses or to question them. Witnesses will testify under oath.
- (b) No discovery will be conducted. Instead, it is the Commission's intent that the hearing itself serve as the fact-finding mechanism.
- (c) The Presiding Board may issue subpoenas if necessary to compel attendance of witnesses. The Presiding Board will make available to the parties lists of the individuals that it intends to call as witnesses. Parties will be invited by the Presiding Board to submit recommendations regarding whether additional individuals should be called to testify.
- (d) Before each witness testifies, the Presiding Board will invite the parties to submit questions in writing to the Presiding Board which they believe should be posed to the witness. The Presiding Board has the discretion to use the questions suggested by the parties.

- (e) After the hearing has been completed, the Presiding Board is to invite the parties to file proposed findings of fact and conclusions of law.
- (f) The Presiding Board is to issue a recommended decision which sets forth its findings on who participated in, had knowledge of and condoned, or by their dereliction or culpable neglect allowed the leak rate falsifications, and the facts surrounding any such involvement in sufficient detail to determine the involvement of any individual who may now work, or in the future work, at a nuclear facility. The Board's decision shall address each of the issues set out in Part B of this Order. The Presiding Board is not to make recommendations regarding whether any actions should be taken.
- (g) The Presiding Board's recommended decision will not be subject to review by an Atomic Safety and Licensing Appeal Board.
- (h) The Presiding Board is not to deviate from the procedures set forth above without prior authorization from the Commission. If the Presiding Board should determine that these procedures will not lead to the development of an adequate hearing record, and that other procedures, such as discovery or cross-examination, are necessary for the development of an adequate hearing record, the Presiding Board is to request authorization from the Commission to use more formal procedures. The Presiding Board in its request to the Commission is to specify in detail those issues which cannot be fully developed under the procedures in the Order and Notice of Hearing, what procedures it desires to use, and how use of those additional procedures will result in the development of the needed information.

On the basis of the Presiding Board's recommended decision and taking into account any other information which it believes is appropriate for Commission consideration, the NRC Staff shall make recommendations to the Commission regarding what action, if any, should be taken. The NRC Staff is to provide its recommendations to the Commission within 60 days after issuance of the Presiding Board's decision. Those recommendations are to include whether the Commission should remove the condition imposed in the TMI-1 restart proceeding barring certain individuals from certain positions at TMI-1.

After reviewing the Board's recommended decision and the NRC Staff's recommendations, the Commission will decide what further steps, if any, need to be taken with regard to involved individuals. This will include consideration of whether

to remove TMI-1 employment constraints and whether to initiate formal enforcement action or take any licensing action with regard to involved individuals. If as a result of its review the Commission institutes a formal enforcement proceeding³ or takes any licensing action, the facts found by the Presiding Board and Commission in the hearing ordered here will not be binding in the subsequent enforcement or licensing proceeding.

It is so ORDERED.

Commissioners Asselstine and Bernthal disapproved this Order and provided separate views.

For the Commission⁴

SAMUEL J. CHILK
Secretary of the Commission

Dated at Washington, D.C.,
this 18th day of December 1985.

SEPARATE VIEWS OF COMMISSIONER ASSELSTINE

I cannot agree with the hearing procedures established by the Commission in this order.

First, the Commission should simply hold an adjudicatory hearing on this issue rather than setting up some sort of ersatz legislative proceeding. Since the Commission will not do that, however, they should at least have modified some of the more unreasonable provisions. At a minimum any party to the TMI-1 Restart proceeding who wishes to participate in this proceeding should be automatically admitted as a party without having to establish standing. Further, holding the "hearing" in the Washington, D.C. area seems to needlessly make participation in this proceeding more difficult than it should be.

³ Because the leak rate falsification events to be addressed in this Board hearing are more than 5 years old, the 5-year statute of limitations set forth in 28 U.S.C. § 2462 may bar the NRC from subsequently instituting an enforcement proceeding for involvement in the events that are the subject of this hearing. However, the information developed in the hearing may be used for other purposes, for example, in evaluating whether an individual's operator license should be renewed.

⁴ Commissioner Bernthal was absent when this order was affirmed. He had previously disapproved the Order and had he been present he would have affirmed his prior vote.

Second, the Commission should not exclude consideration of the involvement of all upper-level GPUN management. I explained in more detail my reasons for believing that the scope of this hearing should not be limited in my dissenting views on CLI-85-2 so I will not repeat them here. Suffice it to say that in my view relying solely on the statement of the U.S. Attorney at a court hearing on a bargained plea agreement is not a valid justification for ignoring management responsibility for the leak rate falsifications.

SEPARATE VIEWS OF COMMISSIONER BERNTHAL

I dissented from the path the majority chose in respect to the number and scope of additional hearings in relation to the Commission's restart of TMI-1. I continue to believe that the overriding consideration in the denouement of the TMI-1 restart proceeding is public confidence — the need for the public to be provided, to the extent reasonably possible, with all the facts relevant to the TMI accident and its aftermath.

I consider this hearing as ordered by the Commission unlikely to prove adequate for that important purpose.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Nunzio J. Palladino, Chairman
Thomas M. Roberts
James K. Asselstine
Frederick M. Bernthal
Lando W. Zech, Jr.

In the Matter of

Docket Nos. 50-289-RA
50-289-EW
(Special Proceeding)

GENERAL PUBLIC UTILITIES
NUCLEAR CORPORATION
(Three Mile Island Nuclear
Station, Unit 1)

December 19, 1985

The Commission establishes procedures for determining whether to lift a condition imposed in the TMI-1 restart proceeding on GPU Nuclear Corporation. The condition requires GPU Nuclear to notify the Commission before assigning Robert Arnold or Edward Wallace to certain positions. The Commission solicits views from the public and the NRC Staff regarding whether Messrs. Arnold or Wallace willfully, knowingly, or with a reckless disregard for the truth made a material false statement to the NRC. If the Commission determines that there is a reasonable basis for answering that question affirmatively, the Commission will consider initiating an adjudicatory hearing to resolve whether to retain the notification requirement. If the Commission reaches a contrary determination, the Commission intends to lift the notification requirement.

ORDER

The NRC Staff in NUREG-0680, Supp. No. 5, "TMI Restart. An Evaluation of the Licensee's Management Integrity as It Affects Restart of Three Mile Island Unit 1, Docket 50-289" (July 1984), concluded that Metropolitan Edison Co., the former licensee at Three Mile Island, Unit 1 ("TMI-1"), may have knowingly provided false information in the December 5, 1979 response to the NRC's October 25, 1979 Notice of Violation ("NOV"). In response to motions to reopen the record of the restart proceeding on this issue, the Commission found the issue no longer significant to TMI-1 restart, because Robert Arnold and Edward Wallace — the two individuals primarily responsible for the response — were no longer associated with TMI-1 activities. The Commission required licensee "to notify the Commission before returning either of these individuals to responsible positions at TMI-1." *Metropolitan Edison Co.* (Three Mile Island Nuclear Station, Unit 1), CLI-85-2, 21 NRC 282, 323 (1985).

Subsequent to issuance of that order, Arnold and Wallace requested "a separate hearing to determine whether the adverse implications about the undersigned's management integrity are factually substantiated." They maintained that the NRC's statements "have damaged [their] good name, reputation, and honor and [their] opportunity to work and to obtain professional advancement." While Arnold and Wallace are primarily concerned about the conclusions regarding the licensee's December 5, 1979 response to the NOV, they also requested that the hearing address "any other issues raised by the Commission or its agencies that the Commission judges to be a constraint on [their] utilization for activities regulated by the Commission."

The NRC Staff in NUREG-0680, Supp. No. 5, discussed the potential involvement of individuals, including Arnold and Wallace, in several matters that raised questions about the integrity of GPU Nuclear's Management. Wallace was not potentially involved in any issue other than the December 5, 1979 NOV response. Arnold, on the other hand, was potentially involved in four issues: TMI-2 leak rate falsification, the false certification of James Floyd, the discrimination against Richard Parks, and the response to the NOV. The Commission will discuss below whether or not it views any or all of these issues to constitute a constraint on the employment of Arnold or Wallace in activities regulated by the Commission.

The Commission is not aware of any information implicating Arnold in TMI-2 leak rate falsifications. In fact, the U.S. Attorney specifically

cleared Arnold, among others, in his statement at the TMI-2 leak rate falsification sentencing hearing. See CLI-85-2, *supra*, 21 NRC at 305. The Commission has instituted a separate hearing "to develop the facts surrounding the . . . falsifications . . . in sufficient detail to determine the involvement of any individual who may now work, or in the future work, at a nuclear facility licensed by the Commission." CLI-85-18, 22 NRC 877, 880 (1985). However, that hearing will not address those cleared by the U.S. Attorney, which includes Arnold, because "agency resources should [not] be used to duplicate the work of the Grand Jury where the result of that inquiry is known." CLI-85-2, 21 NRC at 306. Accordingly, the Commission finds that the TMI-2 leak rate falsification issue is not a constraint on Arnold's employment in activities regulated by the Commission.

With regard to the false certification of Floyd, the Commission has taken enforcement action in that matter, and Floyd has been criminally convicted. No enforcement action was taken, or is under consideration against Arnold. Further, in CLI-85-2, no finding was made directly implicating Arnold in wrongdoing, nor was any condition imposed affecting Arnold as a result of this matter. This issue therefore is not a constraint on Mr. Arnold's employment in activities regulated by the Commission. See 21 NRC at 320-21.

Concerning the discrimination against Parks, the Commission, in CLI-85-2 concluded that this issue did not meet the standards for reopening because Bechtel, the contractor, must bear primary responsibility, and because there was no showing of a widespread pattern of discrimination. The Commission also found that the removal of Mr. Arnold, "the major GPUN official involved," removed any overlap between TMI-2, where the discrimination occurred, and TMI-1. The Commission in that connection did not impose any constraints on Mr. Arnold's employment. The NRC has proposed imposing a civil penalty against the licensee because of its responsibility for the discrimination. In reviewing this civil penalty, the Commission again determined that no action against Mr. Arnold was warranted. Accordingly, this issue is not a constraint on Mr. Arnold's employment in activities regulated by the Commission.

Therefore, the only remaining issue which may be viewed as a constraint on Arnold's and Wallace's employment is the notification requirement in CLI-85-2 which grew out of the December 5, 1979 response to the NOV. The Commission has determined that the most appropriate method to resolve the issues relating to the NOV is to invite written submissions from interested persons, particularly the parties to

the TMI-1 restart proceeding.¹ The NRC Staff is to submit comments. Comments are to be submitted by January 24, 1986.

The Commission encourages commenters to address the following questions:

- (1) Does any part of the following statements in licensee's December 5, 1979 NOV response constitute a material false statement:

Metropolitan Edison believes that Emergency Procedure 2202-1.5, "Pressurizer System Failure", [sic] was not violated during the period from October 1978 through March 28, 1979 notwithstanding the temperatures of the discharge line from the pilot operated (electromatic) relief valve ("PORV"). Although this procedure was understood by the plant staff, it is not clearly written and does not reflect actual plant conditions. It will be changed. However, although Metropolitan Edison is concerned about the issue, there is no indication that this procedure or the history of the PORV discharge line temperatures delayed recognition that the PORV had stuck open during the course of the accident.

- (2) If there was a material false statement, what knowledge and involvement, if any, did Arnold and Wallace have in making that statement?
- (3) If Arnold or Wallace knew of or were involved in making a material false statement, does that knowledge or involvement indicate willful or reckless conduct by either of them?

The Commission is interested in the facts; mere argument or speculation about knowledge or involvement will not be adequate. If based on the information submitted by the commenters or otherwise available to it, the Commission determines that there is information which could form a reasonable basis for concluding that either Wallace or Arnold willfully, knowingly, or with a reckless disregard for the truth made a material false statement to the NRC, it will consider initiating an adjudicatory hearing to resolve whether to retain the notification requirement in CLI-85-2. If, on the other hand, the determination is to the contrary, the Commission intends to issue an order lifting the notification requirement imposed in CLI-85-2.

It is so ORDERED.

¹ The Commission is handling the Arnold and Wallace request for the hearing outside of the TMI-1 restart proceeding because the outcome of their request can no longer have any bearing on whether TMI-1 should be permitted to operate. If Arnold and Wallace have engaged in wrongdoing, the remedy would be to retain or strengthen the condition in CLI-85-2, not to revoke or suspend GPU Nuclear's license to operate TMI-1.

Both Commissioners Asselstine and Bernthal approved the Order in part and disapproved it in part. Each provided separate views.

For the Commission²

SAMUEL J. CHILK
Secretary of the Commission

Dated at Washington, D.C.,
this 19th day of December 1985.

SEPARATE VIEWS OF COMMISSIONER ASSELSTINE

I agree in general with the Commission's order as it relates to the Arnold and Wallace hearing requests on the issue of their involvement in the response to the NRC's October 25, 1979 Notice of Violation. However, I do not agree with the Commission's conclusion, at least as it relates to Arnold, that there is no other issue which could be a constraint on the ability of the utility to use Arnold in activities regulated by the Commission. It appears to me that there are at least two other issues which could have a bearing on that question — the TMI leak rate issue and the discrimination against Parks. The Commission has never really come to grips with either of these issues, either as they relate to TMI-1 Restart or as they relate to Arnold.

The Commission absolves the upper-level management of GPU from responsibility for the TMI leak rate falsifications based upon the statement of the U.S. Attorney who prosecuted the utility. Unfortunately, the Commission has no idea upon what information the U.S. Attorney based his conclusion. The Grand Jury information is secret and the Commission never conducted its own investigation of the Hartman allegations on TMI-2 leak rate. As I said in my separate views on the Commission's decision not to reopen the TMI hearing, the Commission should just hold a hearing on the issue and resolve any doubts about the involvement of individuals. *See* CLI-85-2, 21 NRC at 348. If they will not do that, they should treat the leak rate issue, at least for purposes of

² Commissioner Asselstine was absent when this Order was affirmed. He had previously approved the Order in part and disapproved it in part. Had he been present he would have affirmed his prior vote.

the Arnold hearing request, exactly like they are treating the NOV; they should include the leak rate issue in the somewhat modified summary disposition proceeding established by the Commission's order.

The Commission should also include the Parks discrimination issue as a possible subject of the hearing. One of the bases for the Commission's decision not to reopen the TMI-1 restart proceeding on this issue was the fact that "Robert Arnold, the major GPUN official involved, is no longer associated with TMI-1 activities." 21 NRC at 329. Thus, the extent of Arnold's involvement has never been fully explored. The Commission should at least consider whatever information is available about his involvement and treat this issue like they are treating the NOV issue.

Rather than trying once again to skirt the leak rate and the Parks issues, the Commission should confront them, at least as they relate to Arnold. The Commission should give all interested parties an opportunity to present whatever facts are available on Arnold's involvement in all three of these matters. The Commission should then determine whether there is sufficient information to warrant holding a hearing.

SEPARATE VIEWS OF COMMISSIONER BERNTHAL

Messrs. Arnold and Wallace have requested a hearing to attempt to clear their names regarding any matter which the Commission believes may impact their ability to be employed at TMI-1. I agree with the order insofar as it provides the opportunity for anyone having knowledge of the involvement of either individual in a possible willful material false statement to come forward now. However, while I have no preconceptions about the issue, it is also true that Mr. Arnold's name has, in the past, been associated with the alleged harassment of Richard Parks. Further, it should be recalled that in my views regarding CLI-85-2, 21 NRC 282, 349-52 (1985), I called for further hearings regarding the Parks matter as a matter of sound policy. It appears to me only fair, given the request of Messrs. Arnold and Wallace, that in addition to the NOV response, Mr. Arnold be provided the opportunity once and for all, to confront evidence anyone might possess which could implicate him in harassment of Richard Parks. I would therefore have required interested members of the public (and NRC Staff) to present whatever evidence they might have which bears on either matter.



UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

**Gary J. Edles, Chairman
Dr. W. Reed Johnson
Christine N. Kohl**

In the Matter of

**Docket No. 50-289-SP
(Management Phase)**

**METROPOLITAN EDISON COMPANY,
*et al.***

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

December 18, 1985

The Appeal Board affirms on sua sponte review the Licensing Board's final two partial initial decisions in this special proceeding that resolved in the licensee's favor issues affecting the central question of management competence and integrity.

APPEAL BOARD: SUA SPONTE REVIEW

In the absence of an appeal, an appeal board will review on its own initiative any final licensing board decision (and pertinent portions of the underlying record) concerning significant safety or environmental issues. *Sacramento Municipal Utility District* (Rancho Seco Nuclear Generating Station), ALAB-655, 14 NRC 799, 803 (1981).

APPEAL BOARD: SUA SPONTE REVIEW

An appeal board's affirmance on sua sponte review of a licensing board's decision accords no stare decisis effect to any of the licensing

board's conclusions on purely legal matters. *Consumer's Power Co.* (Big Rock Point Plant), ALAB-795, 21 NRC 1, 2 (1985).

DECISION

We have before us for sua sponte review the Licensing Board's final two partial initial decisions in this special proceeding.¹ They resolve in the licensee's favor issues affecting the central question of management competence and integrity — namely, the adequacy of licensed operator training, and the circumstances surrounding a May 1979 mailgram sent by Herman Dieckamp (President of the licensee's parent firm, General Public Utilities (GPU)) to Congressman Morris Udall.² Both decisions were issued in response to our remand in ALAB-772, where we found that further record development was necessary before we could make any final judgment regarding the licensee's overall management capability.³

In the absence of an appeal,⁴ we review on our own initiative any final licensing board decision (and pertinent portions of the underlying record) concerning significant safety or environmental issues.⁵ Our review of the Licensing Board's thorough, well written decisions here has disclosed no error necessitating corrective action, and therefore we affirm both.⁶ Indeed, the Board more than fulfilled the terms of our remand, conducting hearings and issuing decisions more comprehensive

¹ See LBP-85-15, 21 NRC 1409 (1985); LBP-85-30, 22 NRC 332 (1985).

² In LBP-85-15, the Licensing Board imposed a condition requiring the licensee to implement a plan for formal on-the-job evaluation of operator performance. See 21 NRC at 1502, 1536-37. The licensee thereafter submitted such a plan, and the Board approved it. LBP-85-21, 21 NRC 1751 (1985).

³ 19 NRC 1193, 1232-39, 1265-68, 1279-80 (1984). We also reopened the record and ordered the Licensing Board to conduct hearings with respect to allegations that leak rate data at Unit 1 had been falsified, *id.* at 1276-78, but the Commission reversed our decision on this score and decided that no hearing on that subject was warranted. CLI-85-2, 21 NRC 282, 306-14, *reconsideration denied*, CLI-85-7, 21 NRC 1104 (1985). Earlier, we had reopened the record and required the Licensing Board to hold hearings on the so-called "Hartman allegations" of falsification of leak rate data at Unit 2. ALAB-738, 18 NRC 177, 183-92 (1983). But after staying these proceedings the Commission some time later determined that the Hartman allegations "no longer raised a significant safety issue" so as to warrant further hearings in this proceeding. CLI-85-2, 21 NRC at 304-05. Nevertheless, it decided to institute a separate proceeding to consider certain aspects of the Hartman allegations. *Id.* at 305-06. Thereafter, the Commission lifted the order directing that Unit 1 remain shut down and permitted resumption of operations. CLI-85-9, 21 NRC 1118, *aff'd*, *Three Mile Island Alert, Inc. v. NRC*, 771 F.2d 720 (3d Cir. 1985), *petition for cert. filed sub nom. Aamodi v. NRC*, 54 U.S.L.W. 3463 (U.S. Dec. 18, 1985) (No. 85-1095).

⁴ Appeals from both Licensing Board decisions here were timely filed but thereafter withdrawn. See *Appeal Board Order of October 21, 1985* (unpublished).

⁵ *Sacramento Municipal Utility District* (Rancho Seco Nuclear Generating Station), ALAB-655, 14 NRC 799, 803 (1981).

⁶ In accordance with our standard practice, no stare decisis effect, however, is to be accorded any of the Licensing Board's conclusions on purely legal issues. *Consumer's Power Co.* (Big Rock Point Plant), ALAB-795, 21 NRC 1, 2 (1985).

than we had anticipated. We nevertheless offer a few parting observations regarding the matter of licensed operator training, to which the Commission gave special emphasis in its 1979 order instituting this proceeding, and which we characterized as “[t]he most significant issue requiring further hearing.”⁷

The initial record and Licensing Board decision on training were unquestionably substantial. The concern that prompted our remand, however, was that, following the revelation of cheating on licensee and NRC reactor operator examinations and the Board’s reopening of the record to explore that matter, the Board failed to reevaluate adequately its original, favorable conclusions with regard to the licensee’s training program. We found this to be particularly true insofar as concerned the testimony of the outside consultants who were members of the Operator Accelerated Retraining Program (OARP) Review Committee and upon whom the Board had heavily relied.⁸ We therefore directed the Board to obtain the further views of these individuals in light of the disclosures of cheating and other incidents that reflected negatively upon licensee’s training program.⁹

The Licensing Board described the OARP Review Committee as “a select committee made up of experts in the fields of educational psychology, engineering/human factors psychology, nuclear engineering education, nuclear power generation, and nuclear power plant operator training.”¹⁰ The Committee’s reassessment of the TMI training program in response to ALAB-772 was carried out in two phases. Within a week of the issuance of our decision, the Committee met to take a quick look at the training program, primarily through documentation and briefings with the licensee’s training staff. The Committee then prepared a Special Report of its observations — an 87-page document submitted to the Commission for consideration in connection with its then-pending restart deliberations.¹¹

The second phase of the Committee’s assessment, when the Committee members scrutinized the training program itself, took place during August-November 1984. They observed classes, interviewed operators

⁷ CLI-79-8, 10 NRC 141, 144-45 (1979); ALAB-772, 19 NRC at 1279.

⁸ ALAB-772, 19 NRC at 1233.

⁹ *Id.* at 1234-37.

¹⁰ LBP-85-15, 21 NRC at 1414 n.1. *See also* ALAB-772, 19 NRC at 1210-11.

¹¹ LBP-85-15, 21 NRC at 1509-12; Tr. 33,351. One of the documents the Committee reviewed at this time was the licensee’s self-evaluation of the training program, which had been prepared for submission to the Institute for Nuclear Power Operations (INPO) as part of an accreditation process. *See* note 18, *infra*. One Committee member, Dr. Eric Gardner, considered this material to be a uniquely valuable description of the program. For, as he made clear under cross-examination, the licensee was likely to be candid in its program assessment, knowing that an INPO site visiting team was coming to make its own in-depth evaluation. Tr. 33,352. Dr. Gardner’s reasoning is persuasive.

and instructors, and visited facilities both at TMI and in Lynchburg, Virginia, where they reviewed the simulator training program.¹²

The Committee filed testimony in the remand hearing, documenting its updated assessment of the TMI training program and including its earlier Special Report. The Committee also submitted rebuttal testimony, responding to the prefiled testimony of intervenor Union of Concerned Scientists and the NRC staff. The OARP Review Committee's overall evaluation is that the training program is effective and adequate to justify restart of Unit 1.¹³

It is not necessary for us to review here particular aspects of the Committee's testimony and findings. The Licensing Board has done this job exhaustively and well, discussing and disposing of criticisms of the Committee's work raised by the parties below.¹⁴ We note only that, in accordance with ALAB-772, the Committee's assessment of the licensee's training program specifically takes the cheating incidents into account. Although it was unable to identify the root causes of the cheating, the Committee concluded that, in any event, the licensed operator training program as it now exists at TMI is effective.¹⁵ Indeed, in its opinion, the GPU Nuclear Training and Education Department "now ranks among the top utility training programs in the United States."¹⁶ Based on the Committee's testimony and that provided by the other witnesses (and subject to a now-satisfied condition¹⁷), the Licensing Board reasonably concluded that the training program at TMI is effective and adequate.¹⁸

¹² LBP-85-15, 21 NRC at 1513-22. A TMI replica simulator is scheduled to be installed at the improved onsite training facility in late 1985. Already in operation there is a Basic Principles Training Simulator. See *id.* at 1430-33.

¹³ Fol. Tr. 31,749 at 31; fol. Tr. 33,320 at 18.

¹⁴ See LBP-85-15, 21 NRC at 1508-35.

¹⁵ Fol. Tr. 31,749 at 31.

¹⁶ *Id.*, Attachment I at 82.

¹⁷ See note 2, *supra*.

¹⁸ See LBP-85-15, 21 NRC at 1535-36. The Board also indicated that, at the time of the hearing, the licensee was seeking accreditation of its licensed operator training program from INPO. Although the Board disclaimed reliance on the INPO accreditation in reaching its decision, it took official notice that such accreditation was obtained on February 28, 1985. *Id.* at 1421, 1503-08. The Commission has generally endorsed the INPO-managed training accreditation program. See 50 Fed. Reg. 11,147 (1985).

Our earlier concerns having been allayed, the Licensing Board's decisions are *affirmed*.
It is so ORDERED.

FOR THE APPEAL BOARD

C. Jean Shoemaker
Secretary to the
Appeal Board

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

James L. Kelley, Chairman
Dr. James H. Carpenter
Glenn O. Bright

In the Matter of

Docket No. 50-400-OL
(ASLBP No. 82-472-03-OL)

CAROLINA POWER & LIGHT
COMPANY and
NORTH CAROLINA EASTERN
MUNICIPAL POWER AGENCY
(Shearon Harris Nuclear Power
Plant)

December 11, 1985

In this Partial Initial Decision, the Licensing Board decides several emergency planning and safety issues in the Applicants' favor. The Board also states its reasons for accepting and rejecting numerous contentions based upon the emergency planning exercise for the Shearon Harris facility.

EMERGENCY PLANNING: EXERCISE CONTENTIONS

Contentions based on an applicant's emergency planning exercise should be considered in light of the fact that they arise at the end of a lengthy public evaluation process and that the exercise has been evaluated by the Federal Emergency Management Agency. Thus, only contentions alleging fundamental flaws in planning should be admitted; those alleging minor or readily correctable problems should be rejected.

TECHNICAL ISSUES DISCUSSED

Effectiveness of Sheltering
Fire Protection
Pipe Hanger Welding
Steam Generator Tube Failure Analysis.

APPEARANCES

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PARTIAL INITIAL DECISION ON EMERGENCY PLANNING AND SAFETY CONTENTIONS

I. INTRODUCTION

The factual and procedural background concerning this contested operating license case is set forth in our first partial initial decision on environmental issues. LBP-85-5, 21 NRC 410, 412-14 (1985). A second Partial Initial Decision addressed most of the safety contentions that were heard in the Fall of 1984. LBP-85-28, 22 NRC 232 (1985). This third Partial Initial Decision addresses the remaining safety contentions (except for the drug use contention currently before the Board) and the emergency planning contentions that were heard in June 1985. It resolves those contentions in favor of the Applicants and adversely to the Intervenor. The Decision also has the effect of making other dispositive Board rulings on emergency planning contentions — i.e., rulings granting summary disposition motions or rejecting proposed contentions — ripe for appellate review.

Hearings were held on the drug use contention and an emergency planning contention about siren effectiveness in November 1985. The Board anticipates that those contentions will be decided in early 1986.

II. EMERGENCY PLANNING CONTENTIONS

A. Protection Factors of Structures in the EPZ

1. Introduction

1. Eddleman Contention 57-C-10, as originally admitted by the Board, stated in pertinent part that:

The State Plan provides no useful analyses or information on sheltering effectiveness The Plan does not comply with Evaluation Criterion J.10.m. of NUREG-0654, which calls for "expected local protection factors in residential units or other shelter for direct and inhalation exposure"

The Applicants performed a study of residential structures in the EPZ which formed the basis for their motion for summary disposition. We granted that motion in part, leaving for litigation "the adequacy of the Applicants' review of sheltering other than single family residential." Unpublished Memorandum and Order of April 24, 1985, at 6. Thus the remaining issue concerned the protection factors for "typical institutional

structures (schools, churches, etc.) commercial structures and industrial facilities in the plume EPZ." *Id.* at 6-7.

2. Witnesses

2. Guy Martin, Jr., and Joseph F. Myers testified for the Applicants. Mr. Martin is Manager of the Radiological Assessment Department of Ebasco Services, Inc. He has a master's degree in nuclear engineering and has experience in performing analyses to determine the sheltering effectiveness of buildings. Direct Testimony of Guy Martin, Jr., on Eddleman Contention 57-C-10, ff. Tr. 7895 (hereinafter "Martin"), at 1-2. Mr. Myers is the Director of the Division of Emergency Management ("DEM") of the North Carolina Department of Crime Control and Public Safety. The basic responsibilities of DEM include fulfilling the State's role in emergency planning for natural and man-made disasters, in responding to and recovering from disasters, and in mitigating their effects. John C. Heard and Thomas I. Hawkins testified for FEMA and the NRC Staff. Both are employed by FEMA in the Natural and Technological Hazards Division, Technological Hazards Branch, Region IV, Atlanta, Georgia. As Branch Chief and Emergency Management Program Specialist, respectively, Messrs. Heard and Hawkins are responsible for providing assistance to State and local governments in the preparation of radiological emergency response plans. Mr. Eddleman did not call any witnesses on his behalf.

3. Sheltering Effectiveness — the Concepts Involved

3. The Applicants' Proposed Findings 43-45 provide a helpful explanation of the concepts involved in sheltering effectiveness. We adopt those findings, as set forth below:

43. The sheltering effectiveness of a structure is measured in terms of its Protection Factor (PF). The PF is the ratio of the radiation dose outside the structure to the dose inside. It indicates the degree to which a structure would afford protection from a radiation release in comparison with no shelter at all. Martin at 4.

44. Evaluation Criterion J.10.m. of NUREG-0654 calls for a determination of protection for both direct and inhalation exposures. Direct exposure is that which results from radiation impinging directly on the human body and organs either from airborne or deposited nuclides. Airborne nuclides are the source of radiation in the air; direct exposure results when radiation (mainly in the form of gamma rays) is absorbed by the body. Deposited nuclides may be on the outside of the structure, such as on the roof or in the ground surrounding a building; radiation from these sources may penetrate a structure and the occupants inside. In contrast to direct radiation exposure, which results from radiation impinging directly upon the body and its

organs, inhalation exposure results from breathing radioactive material in the air. In the event of an airborne release of radioactive material, the inhalation exposure to a person inside a structure increases over time because air carrying radionuclides penetrates the building so that the concentration of radionuclides inside eventually approaches the outside concentration. How quickly this will occur depends upon the air exchange between the structure and the outside atmosphere. Martin at 4-5.

45. The sheltering effectiveness of a structure is a function of the mass of material between the source of radiation and the person inside. The PF of the building will be greater for a building that is constructed of dense materials in which there are a number of floors between the radiation source and the occupied area. Thus, the most important structural characteristics are the type of construction and exterior finish, number of stories, and presence or absence of a basement. A building of brick or concrete or similar construction generally has a higher PF than one of wood frame construction. A multi-story structure generally provides more protection than a one-story structure. If a basement is available, it will provide even better protection. Since the inhalation exposure PF is a function of the air exchange rate between the structure and the outside, data concerning the windows and other exterior openings are also relevant. Martin at 5.

4. *The Applicants' Surveys*

4. Applicants' Proposed Findings 46-53 describe their surveys of the sheltering effectiveness of buildings in the plume EPZ. Except in the minor respects noted below in Mr. Eddleman's proposed findings, the Applicants' evidence in support of their proposed findings was not impeached. We adopt the Applicants' Proposed Findings 46-53, as follows:

46. The ERP has already been amended to reflect the results of Applicants' survey of residential units in the Harris plume EPZ. Information on the PFs of typical residential structures is included in the ERP. Martin at 8; Myers at 2; Applicants' Exh. 29.

47. DEM staff members, Mr. Martin and other Ebasco personnel worked together to gather the necessary information to determine the PFs of institutional, commercial and industrial structures in the Harris plume EPZ. Information was gathered from a variety of sources including the property tax records of the counties in the EPZ, information maintained by Carolina Power & Light Company district managers, discussions with various persons knowledgeable about the Harris EPZ (including members of local chambers of commerce, municipal clerks and postal employees), State listings of manufacturing facilities, State tax records, and State aerial photographic maps of the EPZ area. A road survey was also conducted to confirm the information obtained. Martin at 6-7; Myers at 2.

48. As a result of the survey, it has been determined that the predominant type of commercial/industrial structure in the EPZ is small retail establishments, such as service stations, fast food restaurants and convenience markets. However, a smaller number of major establishments has a greater capacity for sheltering the population. Fifty-one large commercial and industrial facilities were identified in the Harris

EPZ, and they can be divided into six categories: (1) shopping centers; (2) butler-type buildings; (3) steel frame, brick/concrete buildings; (4) multi-story homogeneous structures; (5) complex sites; and (6) downtown shopping districts. Martin at 7-8.

49. Institutional buildings in the Harris EPZ can be divided into three major categories: (1) schools; (2) churches; and (3) hospitals and nursing homes. There are also a number of other types of institutional structures in the EPZ. However, these structures were not separately analyzed because they either are of residential-type construction or are an integral part of another institutional structure. Information on the PFs of residential structures is already in the ERP. Martin at 8; Myers at 2.

50. Representative structures within each of the six categories of large commercial/industrial structures were selected for detailed analysis. They were selected so as to represent the range of construction type within each category. In addition, two schools were selected as representatives of the type of design and construction used by all school facilities. Each of these facilities was visited to obtain more detailed information regarding the construction material, wall, floor and roof thickness, among other characteristics. The information derived was transmitted to FEMA for input into FEMA's Shelter Analysis for Nuclear Defense (SAND) computer code which was used to calculate PFs for direct exposure to deposited nuclides. The identification of PF values for churches and small commercial structures was made by comparing their construction characteristics to those of typical residences for which protection factors were previously determined. Similarly, based upon an earlier survey of the hospitals, nursing homes, family care facilities and Homes for the Elderly (a senior citizen community), construction characteristics were identified and compared to those for other structures for which protection factors are known. Martin at 8-11.

51. On the basis of the information obtained, a range of protection factors for representative structures in each of the six categories of major commercial/industrial structures and for the two representative schools was derived. Martin at 11-12 and Attachments 6-8. Using a series of standard calculations, a range of protection factors for inhalation exposure was also derived for commercial and industrial structures and schools. Martin at 12 and Attachment 5.

52. For the typical smaller commercial establishments and churches in the EPZ, the range of PFs was determined by comparing their construction characteristics to those of typical residences in the EPZ. The range of PFs for direct exposure is comparable to that for residences in the EPZ. For inhalation exposure, the range of PFs for typical smaller commercial establishments is derived in the same manner as for other commercial and industrial structures. For a typical church, the range for PFs for inhalation exposure would be comparable to that for residences. Family care facilities in the EPZ are of residential construction and their range of PFs is the same as for typical residences. The relevant structural characteristics of the nursing homes are similar to those for the smaller commercial establishments. Thus, the nursing home PFs have a range comparable to that for typical small commercial structures. The hospitals have structural characteristics comparable to certain wings of schools that were visited and analyzed. Thus, the hospital PFs fall within the range of school PFs. Martin at 12-13 and Attachments 5, 8.

53. The Division of Emergency Management has accepted the results of the survey and the protection factor estimates for typical institutional, commercial and industrial structures in the Harris EPZ. The ERP will be amended to reflect the results of the survey and to include an analysis of the level of protection from radiation releases afforded by representative commercial, institutional and industrial structures in the Harris EPZ that could be used as shelter in the event of an accident at the Harris Plant. The information will be available to officials who will decide what protective action (that is, evacuation or sheltering of the population) to take in the event of an accident at the Harris Plant. Myers at 3; Tr. 7904, 8058 (Myers).

5. *Intervenor's Proposed Findings*

5. Mr. Eddleman's Proposed Findings 1-11 and 16 find some isolated support in the record, but read in context they do not undercut the Applicants' case. The thesis underlying certain of these findings appears to be that the survey of structures must be more site-specific than the survey the Applicants' actually conducted. Thus, Proposed Finding 4 implies that the surveyors must look for cracks in particular buildings. Similarly, Proposed Finding 9 faults the survey because assumed air change rates "are not specific to typical wind speeds around the Harris site." These proposed findings misconceive the purpose of the requirement that sheltering effectiveness in the EPZ be assessed. The purpose is to allow planners to make informed, but relatively gross, judgments about sheltering in the EPZ as a whole, or large segments of the EPZ, wherever people happen to be at the time. Its purpose is *not* to assist decisionmakers in deciding whether to move people, e.g., from wood buildings to brick buildings, seeking to maximize sheltering protection. See Tr. 8151, 8156 (Heard). Thus, what the decisionmakers need is a manageable set of reasonable estimates, not a finely tuned and detailed mass of data. Similarly, we see no need to develop varying infiltration estimates based on "typical wind speeds around the Harris site" — at least in the absence of any evidence that high wind speeds are typical. Mr. Martin was justified in relying on published studies for estimates of infiltration rates, which were incorporated into his conclusions. Martin Testimony, Attachment 5, at 1; Tr. 8027. Furthermore, we can assume that planners faced with an evacuation/sheltering decision and a high prevailing wind could take that factor into account on an *ad hoc* basis, noting, for example, that while the high wind might increase infiltration rates in buildings, presumably it would also disperse the radioactive release more rapidly.

6. Mr. Eddleman's Proposed Finding 12 states that the Applicants' summaries of protection factors "collapse data to the point that the ranges given are not typical of the actual structures within the EPZ." It is true that these summaries are not designed to and do not necessarily

convey protection factor information about “typical” structures. They merely provide low- and high-range data on various categories of buildings. See Attachment 8 to Mr. Martin’s testimony. But that is all that is necessary for emergency planning purposes. Indeed, as discussed in ¶ 9 below, it probably would have been sufficient to determine that the non-residential structures in the EPZ generally have higher protection factors than residences.

7. Mr. Eddleman’s Proposed Finding 17 asserts that “there is no evidence that the PF’s of structures in the EPZ do all fall in [the] ranges” listed in the Applicants’ direct case. This proposed finding largely ignores the Applicants’ uncontradicted case, including their fairly detailed description of how their survey was performed. See Applicants’ Proposed Findings 47-50, which the Board has adopted. Furthermore, that there may be a few isolated buildings in the EPZ which fall outside the Applicants’ ranges is both irrelevant and unlikely.

8. Mr. Eddleman’s Finding 18 faults the survey for not making separate calculated measurements of protection factors for churches and small commercial structures. Uncontradicted testimony in the record confirms the common-sense expectation that protection factors for churches and small commercial structures are similar to residential structures. See Applicants’ Proposed Finding 52, which the Board has adopted. We think the Applicants took a reasonable approach and that separate calculations for all such structures would have been a waste of time. Furthermore, calculations were made for inhalation exposures of small commercial establishments.

9. Eddleman Proposed Finding 19 notes a “low range of airborne direct exposure Protection Factors of about 1.2” in non-residential buildings, or less than that provided “in a single story brick house with no basement.” Proposed Finding 20 points in the same direction. The apparent implication is that reliance on the brick house protection factors as a basis for a sheltering decision would not be conservative. While that may be true as an abstract proposition, it would not happen in this case. As shown by a comparison of Applicants’ Exhibit 29 with Attachment 8 to Mr. Martin’s testimony, single-story wood frame houses with no basement are the general category of structures in the EPZ with the lowest protection factors, substantially lower than virtually all commercial/industrial buildings and schools. Furthermore, the Applicants’ motion for summary disposition establishes that most of the houses in the EPZ are of wood or similar construction, not brick or stone. It seems reasonable to assume, therefore, that the protection factors of wooden houses would be taken into account in a conservative decision whether to shelter. In any event, since the Board, in effect, required the Applicants to

expand their initial survey beyond residential houses to other structures, all of the relevant protection factors will be before the decisionmakers. The manner in which they would make that decision is beyond the scope of this contention.

10. Eddleman Proposed Findings 20-22 seek to raise questions about the value of the FEMA witnesses' testimony on this contention. The thrust of that brief testimony was that the use of residential protection factors as a basis for choice between available protective action options is "conservative since larger, institutional-type structures being normally more spacious and massive, offer a greater degree of protection." Testimony of Heard and Hawkins at 3. This broad generalization is supported by the Applicants' empirical data, particularly with respect to deposited nuclides. See Attachment 8 to Mr. Martin's testimony. However, we agree with Mr. Eddleman that FEMA's consideration of this contention was cursory and that FEMA did not materially contribute to the record. Whether, in these circumstances, the FEMA presentation should nevertheless be accorded substantial evidentiary weight (see 10 C.F.R. § 50.47(a)(2)) is ultimately not significant, because the Applicants presented a substantial case which Mr. Eddleman failed to rebut in any material respect. The Board is relying primarily on the Applicants' case in resolving this contention.

11. With the inclusion in the State Emergency Plan of information on the protection factors of representative institutional, commercial and industrial structures in the EPZ, the plan will meet Evaluation Criterion J.10.m of NUREG-0654 and the Applicants will have met their burden with respect to Eddleman Contention 57-C-10.

B. Eddleman Contentions Based on the Emergency Planning Exercise

1. Introduction and Standards

On May 17-18, 1985, the preliminary emergency planning exercise required by 10 C.F.R. Part 50, Appendix E, § IV.F, was conducted for the Shearon Harris facility. Participants in the exercise included CP&L, the State of North Carolina, and the four counties in the plume EPZ — Wake, Chatham, Harnett and Lee Counties. Representatives of the FEMA and NRC staffs were present as observers. FEMA subsequently issued an "Exercise Report" and "Interim Findings" based on the exercises, which were transmitted to the NRC on August 7, 1985. The NRC Staff prepared a report (No. 50-400/85-20) focusing on onsite aspects of the exercise. Officials of the State of North Carolina prepared an "Evaluation Report" on the exercise, which was accompanied by an "Opera-

tions Journal” and copies of messages of the State Emergency Response Team.

On September 30, 1985, Mr. Eddleman served a set of twelve contentions based on the emergency planning exercise as reflected in the documents cited above. The text of these contentions is set forth in the attachment hereto. The Applicants and the NRC Staff subsequently filed pleadings in opposition to all twelve contentions. Mr. Eddleman then filed a reply to those oppositions.

On November 5, 1985, at the close of the evidentiary hearing on Eddleman Contention 57-C-3, the Board ruled on the twelve exercise contentions. We admitted two of these contentions (one as modified) and rejected the remaining ten. We stated that we would provide reasons for our rulings in this opinion. Tr. 9971-74. Those reasons follow.

The contentions before us are, of course, subject to the specificity and other rules applicable to all contentions *See Philadelphia Electric Co.* (Peach Bottom Atomic Power Station, Units 2 and 3), ALAB-216, 8 AEC 13, 20-21 (1974). They are also subject to the limitations applicable to late-filed contentions. 10 C.F.R. § 2.714(a)(1). *See Duke Power Co.* (Catawba Nuclear Station, Units 1 and 2), CLI-83-19, 17 NRC 1041 (1983). Beyond that, we think these contentions should be considered in light of the fact that they are arising at the end of a lengthy public evaluation process — a process designed to surface serious planning defects — and relatively close to expected operation of the facility. Furthermore, we should take into account that FEMA has made an overall determination that the exercise was satisfactory and that the cited deficiencies are correctable. As we next explain, these latter two considerations were largely decisive in our rulings.

Through an amendment to its emergency planning rules in 1982, the NRC sought to exclude emergency planning exercises altogether from consideration in operating license cases. That amendment was successfully challenged in the U.S. Court of Appeals for the District of Columbia Circuit. *See Union of Concerned Scientists v. NRC*, 735 F.2d 1437 (D.C. Cir. 1984). The Commission had argued before the court against undue limitations on its discretion to structure its proceedings in the interests of speed and efficiency. The court rejected the implication that its ruling was intended to have any such effect. Most significantly, it stated that:

The Commission argues throughout its brief that the exercise is only relevant to its licensing decision to the extent it indicates that emergency preparedness plans are *fundamentally flawed*, and is not relevant as to *minor or ad hoc problems* occurring on the exercise day. Today, we in no way restrict the Commission’s authority to adopt this as a substantive licensing standard.

Id. at 1448 (emphasis added). The Board believes that the criteria implied by the underscored language should be applied to the pending contentions, namely, exercise contentions alleging a “fundamental flaw” (and satisfying other contention requirements) should be admitted; contentions alleging only minor or readily correctable problems should be rejected, even if they might have been admitted at an earlier stage.¹

Apart from the “fundamental flaw” criterion, the NRC’s emergency planning regulation, 10 C.F.R. § 50.47(a)(2) provides that: “In any NRC licensing proceeding, a FEMA finding will constitute a rebuttable presumption on questions of adequacy and implementation capability.” In this case, the overall FEMA findings on the Shearon Harris exercise were that:

The State and local emergency plans are adequate and capable of being implemented, and the exercise demonstrated that offsite preparedness is adequate to provide reasonable assurance that appropriate measures can be taken to protect the health and safety of the public living in the vicinity of the Shearon Harris Nuclear Power Station in the event of a radiological emergency.

Memorandum from Richard Krimm, FEMA, to Edward Jordan, NRC, dated Aug. 7, 1985, at 2. In addition, FEMA made specific findings about several of the problems that were to form the bases of Mr. Eddleman’s contentions. To be sure, the quoted regulation is not directly applicable at the contention stage: it comes into play when a contention goes to evidentiary hearing. Nevertheless, this regulation implies that a Board should give a FEMA finding of adequacy or correctability some deference at the contention stage. We have done so in this case.

¹ In discussing the application of these criteria, the court stated that the NRC could “summarily dismiss any claim that did not raise genuine issues of material fact about the fundamental nature of emergency preparedness plans.” 735 F.2d at 1448. As an abstract proposition, therefore, it might be argued that the “fundamental flaw” criterion should only come into play at the summary disposition stage, that it should not be applied to exclude a contention at the threshold. We find it significant, however, that the court did not draw this distinction and that it cited with approval *BPI v. AEC*, 502 F.2d 424 (D.C. Cir. 1974), which approved threshold exclusion of contentions. Furthermore the court went on to state that “the only central requirement is that there be an opportunity to dispute issues raised by the exercises under the relevant decisionmaking criteria.” *Union of Concerned Scientists*, *supra*, 735 F.2d at 1449. We believe that such an opportunity has been afforded here, where the pleadings have made it apparent that the bulk of these contentions do not involve fundamental flaws.

We are mindful that the court spoke of “the Commission’s authority” to adopt such substantive licensing standards and, to our knowledge, the Commission itself has not formally done so. Apparently, this is an issue of first impression. However, our delegated authority to decide this case includes the authority to decide novel legal questions, subject to Appeal Board and Commission review. *Cf. Duke Power Co.* (Catawba Nuclear Station, Units 1 and 2), ALAB-825, 22 NRC 785, 790 (1985).

2. *Applications of Standards*

Admitted Contentions — 2 and 8

These contentions were admitted because they could, if substantiated, involve a fundamental flaw in planning. Contention 2 alleges six areas of communications deficiencies. Effective communications among emergency personnel are crucial to plan implementation. In addition to unit capabilities, there must be effective interconnections and coordination among units. The number of problems cited here suggests that adequate coordination may be lacking. If, as the Applicants argue, Contention 2 merely “strings together a series of diverse, relatively minor communications problems,” it should be amenable to summary disposition.

Contention 8 cites various implementation deficiencies in the Emergency Broadcast System. The effective functioning of that system is of crucial importance. The FEMA Exercise Report is critical of the system in various respects (at 12-13, 17-18). It includes no specific determination of adequacy, noting only that “activation of the EBS did improve as the emergency continued.” *Id.* at 18. The FEMA findings refer to but do not discuss the EBS.

Contentions Reflecting Minor Problems — 3, 4, 6, 7, 9-11

These seven contentions allege minor, ad hoc, correctable problems. Even if substantiated, they would not represent “fundamental flaws” and thus would not compromise substantial implementation of the emergency plans. Specifically:

Contention 3. This contention was taken out of context from the State Evaluation Report, at 3, which gave a generally favorable review of emergency medical operations. Whether viewed separately or together, these criticisms can hardly represent a “fundamental flaw” in planning, i.e., the plans could be carried out successfully even if equipment like splints were unavailable and measures against contamination were not perfectly executed. The NRC Staff Report, at 8, found onsite emergency medical activities to be satisfactory. In any event, any deficiencies of this sort are readily correctable.

Contention 4. This contention is also based on circumstances described in the State Evaluation Report, at 5. The FEMA Exercise Report is generally more favorable on decontamination activities. FEMA Exercise Report at 4-5. Moreover, as noted above, problems in decontamination are readily correctable through training.

Contention 6. This contention alleges various problems with “rumor control,” relating principally to dissemination and coordination of infor-

mation among the media. These problems are discussed in some detail in the FEMA Report, and all appear to be minor and correctable. *Id.* at 11-13. FEMA found, correctly in our view, that these problems “are not significant enough to seriously hamper emergency response.” Findings at 11.

Contention 7. The first part of this contention is redundant in light of Contention 11, which also concerns hard-copy data transmission. *See* Discussion of Contention 11, below. The second part of this contention concerns delays in tabulation of coordinates of traffic control points to facilitate dose projections at those points. While better coordination might be helpful, we view it as a refinement in planning, not an essential element. FEMA apparently agrees. *See* Exercise Report at 9; Findings at 15.

Contention 9. This contention alleges, out of its context from the State Evaluations, at 12, a “weak level of training” in the use of anticontamination clothing and respirators by radiation survey teams. The Evaluation also notes generally, however, that the teams had adequate knowledge of their responsibilities and performed in a professional manner. For its part, FEMA stated that “team members in general were adequately trained.” Exercise Report at 15. Assuming some training deficiencies in these areas, they are minor and correctable.

Contention 10. This contention alleges several minor and readily correctable problems with respect to protection against radioactive iodine. *See* FEMA Exercise Report at 15, 29. FEMA found (at 13) that methods, systems and equipment for accident assessment and protection against radioactive iodine were adequate.

Contention 11. This contention alleges various problems in hard-copy transmission of information. As the Applicants point out, while such hard-copy messages “are useful for record-keeping and are more convenient than hand-written notes for maintaining logs, they are not integral to effective communication.” Response at 11. The primary means of communication are by telephone and radio. Furthermore, such problems are correctable. According to one county official:

[T]he facsimile unit that we had was not nearly as effective as we would have liked it to have been. It worked great up until Thursday morning, and it's working great today. So, evidently, it just didn't want to work for that drill.

FEMA Public Meeting, Tr. 86.

Contentions Rejected on Other Grounds — 1, 5 and 12

Contention 1 alleges an “approximate 42 minutes delay” in plant authorities’ notifying SERT of an uncontrolled release and a consequent lack of assurance of timely notification of emergencies. The allegation is based on an erroneous statement of such a delay in the State Evaluation Report, at 7. The Applicants’ analysis of contemporaneous messages demonstrates that notification of the release was virtually immediate. In addition to their analysis we note that State EOC Message 207 states that the county sirens sounded at 12:44, also demonstrating that notification must have been received prior to that time. *Contention 1* thus mischaracterizes the very documents on which it rests; it must be rejected.

Contention 5. This contention lists a number of problems with the sirens. Installation of the sirens has not been completed and, as noted in the FEMA Findings, at 8, “the official FEMA testing of the alert and notification system has not yet been conducted.” Accordingly, any contentions based on installed siren performance are premature. We note, however, that the problems cited in this contention, should they arise in further testing, appear to be straightforward and correctable.

Contention 12. This contention is similar to *Contention 1* in that it misstates the record upon which it rests. It alleges a lengthy delay in dispatching assistance to boaters on the Cape Fear River. State EOC Message 151 shows that assistance was dispatched in less than 1 hour. As the Applicants point out, such a response is acceptable for reaching remote areas of the EPZ. See NUREG-0654 at 3-16 — “best effort basis” acceptable. In any event, isolated instances of delay in such circumstances are to be expected.

3. *The Lateness Factors*

Applicants and the Staff argue at length that, for various reasons, all of the exercise contentions should be rejected under the *Catawba* “five factors” balancing test. Having rejected ten of the twelve contentions on other grounds, it is only necessary for us to apply that test to the two contentions we are admitting. For the reasons briefly summarized below, they pass.

- (a) *Good cause.* We accept Mr. Eddleman’s statement that he did not actually receive the FEMA Exercise Report and Findings — on which Contentions 2 (in part) and 8 were based — until the end of August.
- (b) *Other means and representation of interests by another party.* The Staff acknowledges that these factors favor admission. Staff Response at 9. Mr. Eddleman has been at odds with the

Staff and FEMA on virtually all emergency planning issues. The Applicants' suggestion that FEMA will represent Mr. Eddleman's interests (Applicants' Response at 36) is difficult to take seriously. See *Washington Public Power Supply System* (WPPSS Nuclear Project No. 3), ALAB-747, 18 NRC 1167, 1175 (1983).

- (c) *Contribution to the proceeding.* This factor tilts against Mr. Eddleman, but only slightly. He has failed to provide summaries of the proposed testimony of witnesses, which the Appeal Board has generally deemed a requirement. See *WPPSS, supra*, 18 NRC at 1177. On the other hand, since Mr. Eddleman expects to call the exercise evaluators, the substance of their expected testimony can be gleaned in part from the exercise reports and underlying papers.

The Applicants direct our attention to past Board criticisms of Mr. Eddleman's performance as bearing on his potential contribution here. In that connection, the Board's most recent such assessment provides a more balanced perspective. At the close of the hearing on the siren contention, we said:

The Board would just like to add that we thought that Mr. Eddleman's cross-examination was well prepared and professionally presented. We appreciate that. Thank you.

Tr. 9955.

- (d) *Delay.* Admission of these contentions may delay conclusion of this proceeding but not, we expect, by very much. We have established an accelerated discovery and summary disposition motion schedule which concludes on February 13, 1986. Tr. 10,206. We expect to decide any summary disposition motions by the end of February and we also expect to decide the siren and drug issues by that time. Therefore, if summary disposition is granted, there will be no resulting delay. Should hearings be necessary, hearings, findings and a Board decision could be accelerated to completion in the Spring of 1986. Since these issues would not affect fuel loading, they would not impact the Applicants' schedule for operations.

In light of the foregoing, the "five factors" balancing clearly favors admission of Eddleman Contentions EPX-2 and -8.

C. Other Emergency Planning Contentions

1. "Role Strain" in Adult School Bus Drivers

The Joint Intervenors sponsored a contention (denominated EPJ-4(b)), subsequently narrowed by the Board, that focused on whether adult school bus drivers in a "role strain" situation occasioned by a nuclear emergency would subordinate their driving duties to family obligations. This contention was litigated in an evidentiary hearing, with the Applicants and FEMA presenting direct cases and Mr. Eddleman conducting cross-examination for the Joint Intervenors. The Board directed all parties to file proposed findings of fact (Tr. 8159-60) and the Applicants and FEMA did so. The Joint Intervenors, while filing proposed findings on the protection factor contention heard at the same time, elected not to file findings on the "role strain" contention. As a result, this contention is no longer contested. Since this Board's decisional authority is limited to contested issues,² the EPJ-4(b) "role strain" contention must be dismissed.

2. Contentions Resolved by Summary Disposition or Withdrawn

Apart from the exercise contentions, the Board admitted twenty-eight emergency planning contentions. Of these, three were later withdrawn, one was settled, three were heard on the merits, and the remaining twenty-one were resolved in the Applicants' favor by summary disposition. See Applicants' Proposed Findings of Fact 3-5 for a detailed description of these rulings. In the case of contested summary disposition motions, we issued a statement of "Reasons Supporting Summary Disposition of Emergency Planning Contentions" dated August 14, 1985. Many of the Applicants' summary disposition motions were uncontested. In those cases, we could have simply dismissed the contentions.³ We nevertheless satisfied ourselves that the Applicants, supported by the Staff, had met their burden of proof and that the contentions did not raise a "serious safety matter" within the meaning of 10 C.F.R. § 2.760a.⁴ However, we see no need to provide in addition detailed state-

² 10 C.F.R. § 2.760a. The Board may put an issue in controversy on its own motion only upon a determination that a "serious safety . . . matter exists." There is no basis for such a determination with respect to EPJ-4(b). On the contrary, we found the direct cases of the Applicants and FEMA persuasive.

³ See note 2 above, and accompanying text.

⁴ One of Mr. Eddleman's contentions on which summary disposition was granted, 57-C-7, concerned arrangements for medical treatment. Following the Board's summary disposition ruling, the U.S. Court of Appeals for the District of Columbia Circuit reversed a Commission ruling on which an earlier Board ruling narrowing Mr. Eddleman's original contention had been based in part. *GUARD v NRC*, 753 F.2d

(Continued)

ments of our reasoning in dismissing contentions which had been abandoned by their sponsors.

III. SAFETY CONTENTIONS

A. Fire Protection

1. Introduction

1. Eddleman Contention 116 states:

The fire hazard analysis of section 9.5A (Appendix) in the FSAR does not address the availability of control and power to the safety equipment. In establishing fire resistance ratings of fire barriers with respect to fire in cable trays, Applicants have not established that qualification tests represent actual plant conditions or comparable conditions. Another vague statement is that fire barriers are used "where practical" without defining practical or stating the criteria to decide where a fire barrier is or is not practical (and what type of fire barrier should be used). FSAR 9.5.1.1.1. The "Analysis" of Appendix 9.5A does not demonstrate as 9.5.1.1.1 claims it will, the adequacy of other fire protection measures in all cases. Rather, it estimates the BTU of combustible material, smoke generation and removal rate from the area, gives usually a qualitative description of some measures to mitigate or reduce the fire effects, and assumes that the fire will be promptly detected (usually no analysis of location of detection instruments etc.) and the fire brigade will respond rapidly and put out the fire, or the automatic equipment will work. These assertions are made despite the time it takes to get people into the containment and to the fire (not well analyzed). Further, the "analysis" of what happens if the fire spreads is generally a rationalization that it can't spread much, not an analysis. See e.g. "Analysis of effects of postulated fires." The effect of a fire in a fire area or a fire zone with a combustible loading greater than 240,000 BTU/sq. ft. doesn't get dealt with in realistic terms. The plant fire fighting capability of simultaneous fire is inadequate, or at least unanalyzed.

This contention was admitted by the Board in its Memorandum and Order dated July 27, 1984 (unpublished). During the evidentiary hearing on this issue the Board dismissed the issue of simultaneous fires. See Tr. 4370, 4831-32.

2. Applicants presented the testimony of Margareta A. Serbanescu and David B. Waters. "Applicants' Testimony of Margareta A. Serbanescu in Response to Eddleman Contention 116 (Fire Protection)," ff. Tr. 4256 (hereinafter Serbanescu); "Applicants' Supplemental Testimony of Margareta A. Serbanescu in Response to Eddleman Contention

1144 (D.C. Cir. 1985). A motion from Mr. Eddleman to reconsider his Contention 57-C-7 as originally drafted is pending before the Board. We have issued an order establishing a pleading schedule on Mr. Eddleman's motion. We expect to address and resolve this matter expeditiously.

116 (Fire Protection),” ff. Tr. 4256 (hereinafter Serbanescu II); “Applicants’ Testimony of David B. Waters in Response to Eddleman Contention 116 (Fire Protection),” ff. Tr. 4250 (hereinafter Waters).

3. Ms. Serbanescu is a Principal Mechanical Engineer with Ebasco Services, Inc., and is the supervisor of the Ebasco Fire Protection Engineering Group. She was assigned as the Fire Protection Engineer for Harris in 1978, and is now in charge of the Fire Protection Group which is responsible for the Harris Fire Protection Program. Serbanescu, ff. Tr. 4256, at 1-3. Mr. Waters is employed by CP&L as the Principal Engineer-Operations, and is responsible for the administration of the Fire Protection Program at Harris. Waters, ff. Tr. 4250, at 2-3.

4. The Staff witnesses were Randall Eberly and Robert L. Ferguson. “NRC Staff Testimony of Randall Eberly and Robert Ferguson Concerning Eddleman Contention 116,” ff. Tr. 4626 (hereinafter Eberly/Ferguson). The Staff also presented the testimony of Dennis J. Kubicki in the form of a Joint Affidavit with Mr. Eberly. “Joint Affidavit of Randall Eberly and Dennis J. Kubicki Concerning SER Open Item 8 (Acceptability of Fire Doors).” Mr. Kubicki was cross-examined on the contents of this Affidavit on December 17, 1984. Tr. 7415-31.

5. Mr. Eberly was employed as a Fire Protection Engineer in the Chemical Engineering Branch, Division of Engineering, Office of Nuclear Reactor Regulation. He was directly responsible for the review of the fire protection programs at the Shearon Harris facility. Eberly/Ferguson, ff. Tr. 4626, at 6. Mr. Ferguson is a Section Leader of the Fire Protection Section, Chemical Engineering Branch, Division of Engineering, Office of Nuclear Reactor Regulation. He is responsible for supervising the Staff’s review of the fire protection programs at nuclear power generating stations. *Id.* at 3. Mr. Kubicki is a Fire Protection Engineer in the Chemical Engineering Branch of the Division of Engineering, Office of Nuclear Reactor Regulation, and is responsible for performing safety reviews and evaluations of the fire protection programs of nuclear power plants. Staff Exh. 8, Attach. 1.

6. Intervenor Eddleman presented no testimony on this contention.

7. The basic purpose of a fire protection program in a nuclear power facility is that, in the event of a fire, the capability of shutting down the reactor in a safe manner, maintaining it in a safe shutdown condition and limiting any release of radioactive material to the environment is assured. Eberly/Ferguson, ff. Tr. 4626, at 6-7.

8. The NRC regulations and regulatory guidance for nuclear plant fire protection programs are set forth in 10 C.F.R. Part 50, Appendix A, General Design Criterion 3; 10 C.F.R. § 50.48; Regulatory Guide 1.70,

Rev. 3; NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants," July 1981 (SRP), § 9.5-1.⁵

9. Implementation of the NRC rules is carried out by using a defense-in-depth philosophy. In the case of Harris, the plan encompasses plant system and facility design, fire prevention, fire detection, annunciation, confinement, fire suppression, administrative controls, fire brigade organization, inspection and maintenance, training, quality control and testing. Applicants' Exh. 6 at 9.5.1-1.

2. Control and Power Availability to Safety Equipment

10. The first subpart of Contention 116 alleges that the availability of control and power to safety equipment is not addressed in the Fire Hazards Analysis (FSAR Appendix 9.5A). Both Applicants and Staff testified that it is true that this is not addressed in Appendix 9.5A; rather, it is discussed in detail in FSAR §§ 9.5.1.2.1 and 8.3, and in the Applicants' Safe Shutdown Analysis. As the Staff indicated, the entire fire hazards analysis for Harris is made up of the FSAR, Appendix 9.5A and the Safe Shutdown Analysis. The availability of power and control cables to safety equipment is therefore addressed in Applicants' fire protection program. Serbanescu, ff. Tr. 4256, at 6; Eberly, Tr. 4653-54. Intervenor did not identify any specific deficiencies in the FSAR and SSA analyses.

3. Qualification of Cable Tray Fire Barriers

11. The second subsection of Contention 116 expresses concern that qualification of cable tray fire barriers does not correspond to actual conditions which might be encountered during a fire at the plant. Fire barriers are an integral part of the fire protection program. The plant is divided into a number of fire areas, each of which is enclosed by a 3-hour fire-resistant enclosure or its equivalent. Additionally, as set forth in the SSA at Table 9.5B-3, certain cable trays within a fire area are protected with 3-hour- or 1-hour-rated enclosures. Where a cable tray penetrates a fire area barrier, penetration fire stop seals are used. These have a minimum fire-resistance rating equal to that of the fire area barrier. Serbanescu, ff. Tr. 4256, at 8.

12. There are a number of standard testing procedures which have been developed. Applicants' witnesses testified that the ratings of their

⁵ The Harris plant is not required to comply with 10 C.F.R. Part 50, Appendix R, as the plant was not operating prior to January 1, 1979. However, Applicants' have committed to meet the requirements therein. O'Neill, Tr. 4598-99.

fire barriers are based on standard fire tests performed in accordance with the following: ASTM E-119; NFPA 251; Nuclear Material Limited, "Property Loss Prevention Standards for Nuclear Generating Stations," Appendix A-14; Underwriters Laboratories 263, "Fire Tests of Building Construction and Materials"; and American Nuclear Insurers Bulletin No. 5, "Standard Fire Endurance Test Method to Qualify a Protective Envelope for Class IE Electrical Circuits." Serbanescu, ff. Tr. 4256, at 7-8.

13. In determining the qualification conditions for fire barriers, an exposure fire is used which is based on a standard, empirically derived time-temperature curve. This time-temperature curve represents a worst-case exposure fire, not an average. *Id.* at 10, 11; Serbanescu, Tr. 4526; Ferguson, Tr. 4656-58, 4666-68. Therefore a fire barrier tested under the standard time-temperature conditions will resist a fire from the maximum calculated combustible loading in any fire area in the SHNPP power block. Serbanescu, ff. Tr. 4256, at 11.

14. For each barrier, tests will be performed by an independent laboratory on a "generic" assembly of that fire barrier, and installation of that barrier will be done in accordance with the recommendations of the testing laboratory to ensure that the actual barrier has the same configuration as the test assembly. *Id.* at 12.

15. The Board finds that the qualification methods to be used by the Applicants represent equivalent or more rigorous tests of cable tray fire barriers than would be experienced under actual plant conditions.

4. Location of Fire Barriers

16. In the third subpart of Eddleman 116 the complaint is made that FSAR § 9.5.1.1.1 is vague in that the term "where practical" is used in describing barrier placement but is not defined; neither are the criteria used to decide whether the location or type of barrier is or is not practical. A detailed description of the use of fire barriers is not contained in 9.5.1.1.1; a detailed treatment is presented in 9.5.1.2.2 and in Appendix 9.5A (Applicants' Exh. 6). Specific barrier locations and qualifications are contained in FSAR Appendix 9.5A and Applicants' SSA. Serbanescu, ff. Tr. 4256, at 13; Eberly/Ferguson, ff. Tr. 4626, at 11.

17. Applicants used the guidance of the Standard Review Plan, §§ C.5 and C.7, to determine the location of the Harris fire barriers. Under these guidelines, if it is not feasible to locate a fire barrier in compliance with SRP § 9.5.1, an applicant may use an approved alternative. The Staff cited as an example that if it is not feasible to erect a barrier between redundant safe shutdown components in the control room,

an alternative safe shutdown capability would be provided in another area. Deviations can also be requested for other features such as a combination of partial walls and automatic suppression systems. Eberly/Ferguson, ff. Tr. 4626, at 12.

18. Where the Staff's guidelines recommend a barrier, Applicants have attempted to install one. Where construction or equipment problems have rendered the placing of a barrier impossible, the Applicants have found an acceptable alternative. The Staff witness considers this statement to be, indirectly, its definition of "where practical." Eberly, Tr. 4670.

19. In view of the preceding discussion, the Board finds no merit in this part of Eddleman 116.

20. A number of doors used in the Harris facility have not been specifically fire-tested. These are special-purpose doors, bullet-resistant doors, and air- and watertight doors. Serbanescu II, ff. Tr. 4256, answer 7. A great deal of cross-examination was conducted on these doors which was objected to by both Applicants and Staff as being beyond the scope of the contention. The Board allowed the cross-examination to continue, and now feels that the fire resistance of these doors, while not specifically called out in the contention, has at least a peripheral bearing on the contention insofar as they are part of the barrier system.

21. Applicants' witness testified that the doors, while not undergoing standard fire-resistance testing, were so constructed that they otherwise met the requirements for a standard 3-hour, A-label-type fire door, and the vendors were requested to provide the appropriate certification. The witness further stated that many of these doors are located toward the outside of the building, and thus even if they failed, it would not contribute to the fire spreading. Serbanescu, Tr. 4417-18, 4440-41.

22. Staff witness testified that Applicants had taken a common approach when using specialty doors. These special-purpose doors are normally very heavy, bullet-resistant and missile-proof, and therefore would have a degree of built-in fire protection. Eberly, Tr. 4804-05.

23. Staff's witness further testified that the special-purpose doors are too large to fit into a standard test furnace, and too heavy for the furnace supports to bear. In the Staff's opinion, even if a special furnace were to be built for testing purposes the results would not be standard and there would be nothing to compare them with. Eberly, Tr. 4811-12.

24. The Staff has completed its review of the adequacy of the Harris fire doors. Staff Exh. 8. Except for the specialty doors Applicants have committed to provide tested fire doors. The special-purpose doors were found to be constructed of steel plates many times thicker than those used in approved fire doors, and to have multiple-point steel locking

pins which should prevent uneven expansion of the door and its frame, and thus prevent warping of the door in the event of a fire. Additionally, the combustible loadings on either side of the specialty doors are insufficient to create a fire which would endanger the strength of the doors. The Staff therefore found that there was sufficient reason to justify a deviation from fire protection guidelines. Staff Exh. 8.

25. In view of the uncontroverted facts presented, *supra*, the Board finds that Applicants have adequately defined the location of the fire barriers at the Harris plant and, further, that there is reasonable assurance that the untested special-purpose doors in the plant will be adequate to prevent the spreading of a fire.

5. Fire Protection Analysis

26. The fourth allegation in Eddleman Contention 116 takes issue with the analyses of the fire protection system in Appendix 9.5A of the Applicants' FSAR in certain specific aspects. We consider these aspects, namely the BTU content of combustible material, smoke generation and removal rate, measures to mitigate fire effects, fire detection capability, fire brigade effectiveness, and fire spreading, *seriatim*.

27. The Harris plant is divided into a number of fire areas which are established through consideration of a number of factors. One of these factors is the possible combustible loading, which is determined by the amount and BTU content of the materials within the area. Serbanescu, ff. Tr. 4256, at 16. Both normal and transient combustible materials are included, the transient materials being controlled administratively through written procedures. Heat values, or BTU contents, have been determined by use of those contained in the *Fire Protection Handbook* (14th Ed. 1976) prepared by the National Fire Protection Association (NFPA). The analysis itself is conservative, as it assumes complete combustion of all combustible materials in the area, takes no credit for lack of continuity of combustibles and does not assume that any automatic or manual suppression systems will limit combustion. Serbanescu, ff. Tr. 4256, at 17-20. The Board finds that the heat values, or BTU contents, used by the Applicants are acceptable and that the heat loadings which result from the analysis are reasonable and adequate.

28. The Standard Review Plan lays down no criteria for treatment of smoke generation and ejection. The Staff review relies on industry standards. The Harris philosophy follows a containment plan wherein the area is more or less sealed off to remove a continuing source of available oxygen. Eberly, Tr. 4677-83. To implement this plan the ventilation

ducts are equipped with dampers which close automatically when a fusible link is melted, and ventilation fans leading to that area are automatically stopped. Serbanescu II, ff. Tr. 4256, at 5-6. There is then a greatly lessened smoke removal capability. However, if it is determined that the fire must be fought manually, the ventilation system can be put back in operation from the control room or by the plant operator. Additionally, the fire brigade has smoke ejector equipment and self-contained breathing units which will allow them to manually fight the fire. *Id.* at 6. The Board finds that Applicants' approach to this problem in fire fighting is both reasonable and adequate.

29. The principal means of mitigating or reducing the effects of fires at the Harris plant is the use of sprinkler systems. The most common is the wet-pipe system, where the supply pipe is water-full and actuation of the system is achieved by nozzles controlled by fusible links. Other systems, used where inadvertent actuation of the sprinklers might damage equipment, are of the preaction, or dry-pipe type, where a valve which is temperature-controlled must open to fill the sprinkler pipe. Some of these systems then actuate as in the wet-pipe system; where a minimum amount of water is desired other systems have a temperature-controlled valve that cycles open and closed as the temperature rises and falls. Still another system, used to mitigate fires which spread rapidly or produce high temperature quickly, acts much like the preaction system but has open spray nozzles, allowing immediate discharge of water when activated by fire detectors. Serbanescu, ff. Tr. 4256, at 23-26. The Harris systems will conform with NFPA Codes, as committed to by the Applicants. Eberly/Ferguson, ff. Tr. 4626, at 16. The Board finds that these systems, designed and constructed in accordance with the applicable NFPA Codes, are an adequate means to mitigate the effects of potential fires.

30. The types of fire detectors used at the Harris plant are selected on the basis of the kinds of fires which would be expected in any particular fire area. The primary detectors are ionization smoke detectors, which respond to the first traces of fire in the form of visible or invisible combustion products; these are general-purpose instruments and provide early warning for timely fire brigade response. Thermal detectors, which are used to actuate water suppression systems, have a set point at 30°F above ambient temperature. Ultraviolet flame detectors are used in the diesel generator building and fuel oil pump areas inasmuch as a fuel oil fire can develop quickly and with little smoke. Serbanescu, ff. Tr. 4256, at 22-23. Applicants have committed to following the NFPA Codes in the design of these detection systems. Eberly/Ferguson, ff. Tr. 4626, at 16. The Board finds that these systems are adequate to provide timely warning to personnel and actuation of the fire suppression systems.

31. The fire brigade at the Harris facility will consist of a minimum of five people on each shift who have been trained as described in FSAR § 13.2. In addition, there will be at least one fire protection technical aide available for advice and assistance. If the need arises, additional plant personnel are available. Waters, ff. Tr. 4250, at 9-10, Attach. B; Tr. 4600-02. Applicants' witness Waters testified in some detail as to the staffing, training, equipment, drills, and other relevant items concerning the fire brigade. Waters, ff. Tr. 4250, at 5-11; Tr. 4306, 4308, 4311-12, 4318-19, 4330-31, 4601-02. After reviewing Mr. Waters' testimony and the ensuing cross-examination by Mr. Eddleman, the Board finds that the estimate of 5 to 15 minutes for fire brigade response in the power block is reasonable. We also note that the Staff evaluation of the fire protection program assumes that the fire brigade arrival time is 30 minutes, an estimate the Board considers conservative.

32. Mr. Eddleman contends that Applicants' analysis of the effects of fire spreading from one fire area to another is inadequate. Applicants maintain that this is an inherent part of their analysis, as each fire area's combustible loading has been calculated, and, if the fire should spread from one fire area to another, that combustible loading would describe the effects of such spreading. Serbanescu, Tr. 4521-24. It is the Staff's view that if the Staff's guidelines are followed there will be no spreading of the fire. That is, if the proper fire barriers are provided and detection and extinguishing equipment is provided, an adequate level of protection against fire spreading is attained. The Board agrees with both Staff and Applicants; if the proper barriers and mitigation sources are provided, the fire will not spread, but if it should spread, Applicants' would know what the effect would be. We find that the Applicants' and Staff's analyses are adequate.

6. Combustible Loadings Greater Than 240,000 BTU/Ft²

33. The NFPA has determined, through tests, that the reference time-temperature curve is followed by a fire in a fire area with a combustible loading of 240,000 BTU per square foot (BTU/ft²). Serbanescu, ff. Tr. 4256, at 11. Special attention must therefore be given to fire areas in the Harris power block which have combustible loadings above this figure. Eddleman Contention 116 alleges that the effects of fires in these areas are not treated in a realistic fashion.

34. There are four fire areas in the Harris power block that have combustible loadings above 240,000 BTU/ft². These are the two diesel fuel day tank rooms and the two diesel fuel storage tanks. *Id.* at 28; Eberly/Ferguson, ff. Tr. 4626, at 20-21; *see also* Serbanescu II, ff. Tr. 4256,

at 5. The storage tanks are underground, constructed of reinforced concrete with a steel liner and are Seismic Category I design. The only access to the tanks is through a reinforced concrete hatch. The tank vent is equipped with a flame arrestor, and yard hydrants for fire fighting are located adjacent to the area. The tanks are also located at a distance of over 175 feet from the principal plant structures. Serbanescu, ff. Tr. 4256, at 30; Eberly/Ferguson, ff. Tr. 4626, at 20-21. The Board agrees with Applicants that these tanks do not present a threat to safety-related systems.

35. The 3000-gallon capacity diesel fuel day tanks are isolated from other fire areas by 3-hour-rated reinforced concrete walls. The tanks themselves are Safety Class 3, Seismic Category I components which are designed to remain functional after a safe shutdown earthquake. Inasmuch as the combustible load was calculated on the basis of the burning of 3000 gallons of diesel fuel, the only way this could happen would be if the tank ruptured, thereby making all of the fuel available. Serbanescu, ff. Tr. 4256, at 29. The fuel would be confined to the day tank room, as the entrance to the room is located at a level which is 110% of the level the spilled fuel could attain. Serbanescu, Tr. 4530-31.

36. From the testimony, the scenario would be: (1) fuel tank ruptures, fuel is released; (2) ignition of the fuel is assumed to occur; (3) the automatic multicycle sprinkler system would actuate; (4) dampers in the ventilation ducts would close, limiting the available air supply; (5) the fire brigade would arrive, manually actuating the sprinkler system if the automatic system had malfunctioned; and (6) fire brigade would combat fire according to the proper procedures for this event. Serbanescu, ff. Tr. 4256, at 29.

37. The Board finds that the testimony presented does portray a "realistic" description of the event, albeit a very conservative one. We further find that all the fire protection measures taken in combination provide adequate assurance that the fire would not endanger safety-related components.

7. Intervenor's Proposed Findings

38. Mr. Eddleman submitted proposed findings on fire protection. "Wells Eddleman's Proposed Findings on Contention 41 (Pipe Hangers QA/QC), 116 (Fire Protection) and 9 (Environmental Qualification of Electrical Equipment)" on January 8, 1985, at 8-15. The Board has reviewed these proposed findings and finds them to be unsupported by the record and to provide little assistance in arriving at our findings in

this matter. We therefore reject them. We briefly discuss our evaluations below.

39. Proposed Findings 11-15 concern the special-purpose doors which are at various locations in the plant. Due to their sizes, they have not undergone standardized testing for fire resistance. The Staff has, however, granted exceptions for these doors for reasons which are contained in the record. The Board agrees that the exceptions are reasonable and well-founded. *See* Board Findings 20-24, at pp. 920-21.

40. Mr. Eddleman's Proposed Findings 16-21 consist of various allegations about material being omitted from the FSAR, in an apparent effort to impeach the FSAR's credibility. The Board finds that the material in question was placed in the record at the hearing, and thus any earlier omissions do not alter any conclusions the Board has reached.

41. Eddleman Proposed Finding 22 attacks the fire brigade training as being inadequate, but the only conclusion drawn is that there must be a well-trained fire brigade capability before the plant is operated. The Board was presented a great deal of testimony on this subject and is confident that there will be such capability in place prior to operation. *See* Board Finding 31 at p. 923.

42. Eddleman Proposed Finding 23 takes issue with the fact that the seals between fire areas are not yet in place, and suggests that proper installation must be verified by the NRC walkdown inspection. Although verification of proper installation of these seals could take place during the NRC walkdown inspection, they will be subject to the Applicants' QA program inspections, like any other piece of hardware in the plant. Mr. Eddleman does not point to any specific deficiencies in these seals or their proposed installation. We therefore reject this proposed finding.

43. Proposed Findings 24 and 25 argue that a fire in the diesel day tanks would be very serious, especially if the automatic suppression system did not work or if a door were left open. There is nothing in the record to show that this accident scenario should be considered. Adequate testimony was presented to support the Board's decision on the diesel fuel tanks. *See* Board Findings 35-37 at p. 924.

44. Mr. Eddleman's Proposed Finding 26 questions the quality assurance aspects of the fire suppression systems. This is beyond the scope of this contention and is therefore rejected.

45. Proposed Findings 27 and 28 express concern that the Staff will not properly perform certain inspections and reviews. There is no basis in the record for this concern.

46. Proposed Finding 29, Parts A-H, presents a lengthy list of various items, many of which have been discussed above. We find them to

be of little help to the Board in its deliberations. The fire protection contention is quite broad. This creates opportunities for an opposing party to present pieces of the record out of context in proposed findings, as is attempted here.

8. Conclusions

47. The Shearon Harris fire protection program is based on a defense-in-depth concept wherein no single aspect of the program is depended upon to protect against fire. The elements of the program are designed to (1) prevent fires, (2) detect any fire condition, (3) suppress fires, (4) confine fires, and (5) separate redundant safety-related equipment so that control of the plant can be maintained in case a fire occurs. Applicants have demonstrated that the various elements of the program meet at least minimum requirements. The Staff concurs. In view of the record before us the Board finds that Applicants have met their burden with respect to Eddleman Contention 116.

B. Pipe Hanger Welds

1. Introduction

1. Eddleman Contention 41 states: "Applicants' QA/QC program fails to assure that safety-related equipment is properly inspected (e.g., the 'OK' tagging of defective pipe hanger welds at SHNPP)." This contention was admitted by the Board on September 22, 1982. However, the Board ruled that the entire QA/QC program would not be the subject of litigation. Rather, the contention would be limited to Mr. Eddleman's only specified concern "that there exist defective hanger welds that have been improperly inspected and approved." LBP-82-119A, 16 NRC 2069, 2097 (1982).

2. The Applicants' direct testimony was sponsored by James E. Nevill, Principal Engineer-Civil, Harris Plant Engineering Section; Alexander A. Fuller, Principal Engineer-Mechanical (Hanger Engineering), Harris Plant Construction Section; David R. Timberlake, Senior Engineer-Metallurgy/Welding, Harris Plant Engineering Section; and Kumar V. Hate, Principal QA/QC Engineer, QA/QC Harris Plant Section. Nevill *et al.*, ff. Tr. 6663.

3. The Staff's direct evidence was sponsored by Paul R. Bemis, Acting Division Director, Division of Reactor Safety; Jerome J. Blake, Chief, Materials and Processing Section; and George A. Hallstrom, Reactor Inspector, all from the Atlanta Regional Office of the NRC. Bemis *et al.*, ff. Tr. 7217.

4. At the request of Mr. Eddleman and with the concurrence of the Board, the following appeared for cross-examination by Mr. Eddleman: Kenneth A. Douglas, QA specialist; William H. Pere, QA/QC specialist; and Gene G. Tingen, a pipe hanger welding inspector until February 1982 (all being employees of Applicants); and Mr. George F. Maxwell, the NRC senior resident operations inspector.

5. Mr. Eddleman sponsored no direct evidence to support his contention. Instead he relied upon extensive cross-examination of the witnesses and upon numerous documents (Exhibits 20 through 59) accepted into evidence.

2. *The Applicants' and Staff's Direct Cases*

6. Applicants' testimony is a general narration of the problems relating to pipe hanger welding and the corrective and preventive actions that have been instituted. Installation of pipe hangers began in early 1979. In September 1980 during a routine inspection, the NRC Resident Inspector identified several Bergen-Patterson pipe hanger drawings with unclear and incorrect weld symbols, as well as several cases in which the field weld was different from the drawing without the discrepancy having been identified by QC. Consequently, a site investigation was conducted by CP&L, with the result that full reinspection was deemed necessary. A report on the deficiencies and reinspection program was submitted to the NRC Staff in May 1981 and the NRC closed out this item in September 1981. Nevill *et al.*, ff. Tr. 6663, at 14-16.

7. In 1982, some different problems were identified. The Applicants' Receipt Inspection Program discovered deficient shop welds made by Bergen-Patterson. It was discovered that Applicants' inspectors and craftsmen were using an improper technique in the measurement of skewed tee welds. Several remedial actions were taken. Another reinspection program was carried out. Several remedial actions were taken. The Ebasco Vendor QA program at the Bergen-Patterson facility was upgraded to include both in-process and 100% final weld inspections. Applicants also instituted a 100% receipt inspection of shop welds on pipe hangers. *Id.* at 18-20. Additional training was provided to craft and QC welding inspection personnel which utilized the 1981 edition of AWS D-1.1. That document clearly outlined the proper techniques for measurement of skewed tee fillet welds. Timberlake, Tr. 6947.

8. Despite the efforts undertaken by Applicants, deficiencies related to pipe hanger erection continued to be identified. A stop work order was issued in July 1983 as the result of a QA surveillance; this stop work order required that final inspections of pipe hangers by both CI and QC

be discontinued.⁶ During this time, site management reviewed the problems that were identified by that surveillance, by subsequent hanger and welding engineering surveillances, past NRC inspection reports and previous nonconformances. The need to have a system that would stand up to constant scrutiny was recognized. In December 1983 a completely restructured pipe hanger program was implemented. Nevill *et al.*, ff. Tr. 6663, at 23.

9. The enhanced program for pipe hangers includes new and revised procedures intended to clarify the installation and inspection requirements; further, the enhanced program provides for engineering/technical support to the craft before and during the installation process in order to resolve potential problems prior to turning the hangers over for final inspection. The major improvements of the enhanced program as they relate to pipe hanger welding are summarized below.

10. First, pipe hanger work packages are reviewed by a work package group prior to issuance to the field. At this time, the hanger design drawing is "weld mapped," i.e., each joint to be welded is given a specific identifying number, thereby precluding the possibility that a joint would not be identified or would be confused with another joint during the inspection process. This weld mapping process has been retrofitted to previously inspected hangers as well as in-process hangers. *Id.* at 23; see also Fuller, Tr. 6915; Douglas, Tr. 7189.

11. Generic engineering documents are, for the most part, no longer used as solutions to common problems. Instead, field modifications are written for each hanger detailing necessary changes due to these problems. This has greatly reduced the potential for misinterpretation and subsequent misapplication of construction requirements. Nevill *et al.*, ff. Tr. 6663, at 24; Fuller, Tr. 6792; Douglas, Tr. 7189.

12. Additional engineering and technical resources have been provided to support the craft. A field hanger engineering support unit has been developed whose purpose is to support the craft during hanger installation. Welding engineering personnel examine hanger welds (both shop and field) prior to submitting the hanger package to QC for final weld inspection. Finally, in addition to the QC final review, a hanger engineering final review group has been formed to review seismic hanger packages prior to final turnover to the permanent QA records vault. Hanger package documentation is thus verified as being complete and accurate. Nevill *et al.*, ff. Tr. 6663, at 24-25; Hate, Tr. 7038; Blake, Tr. 7358-59.

⁶ Although final inspections/approvals were not undertaken until the new program was in place, QC welding inspections continued. Tr. 7327 (Bemis).

13. Although not formally a part of the enhanced program, in 1983 the visual weld acceptance criteria were also revised; by providing well-defined criteria for inspecting weld attributes, the potential for conflicting judgments based upon personal interpretation has been lessened. Douglas, Tr. 7159-60; Maxwell, Bemis, Tr. 7324-27. The revised acceptance criteria have been reviewed and accepted by the Staff. Bemis *et al.*, ff. Tr. 7217, at 14-16; Hallstrom, Tr. 7334-36.

14. Applicants' actions and resulting program appear to have been reasonably effective. For example, in the second quarter of 1984, approximately 93% of the work presented by the craft to QC for weld inspection was found to be acceptable. QA surveillance of QC final acceptance of hangers during the period January through October 1984 revealed 98.8% acceptance rate for attributes inspected by welding QC. Hate, Tr. 6670-71, 7041-42.

3. *Intervenor's Proposed Findings*

15. Mr. Eddleman's proposed findings are largely a recitation of the Applicants' problems with the pipe hanger welding program, as are many of the Board's findings, *supra*. Applicants state in their reply that these are "problems which Applicants readily concede have occurred." However, Mr. Eddleman gives little attention to the numerous remedial actions that CP&L has taken.

16. The Board finds that Mr. Eddleman did not focus on the basic issue; namely, whether or not a "significant safety issue" exists with respect to pipe supports. In the context of this operating license proceeding, the issue is whether uncorrected errors endanger safe plant operation or whether there has been a breakdown of the quality assurance program sufficient to raise legitimate doubt as to the plant's capability of being operated safely. *See Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-756, 18 NRC 1340, 1344 (1983); *see also Union Electric Co.* (Callaway Plant, Unit 1), ALAB-740, 18 NRC 343, 346 (1983).

17. We take the view that Mr. Eddleman was faced with an uncommon situation between the time this contention was admitted in September 1982 and tried in November 1984. By the Applicants' own testimony and the fact — testified to by Staff — that Applicants shut down their weld inspection program from July to December 1983 (Bemis *et al.*, ff. Tr. 7217, at 11), deficiencies clearly requiring remedial action existed at the time the contention was admitted. However, by the Fall of 1984, CP&L had reviewed the program, identified several deficiencies, and instituted an "enhanced" program, that has now been demonstrated to be

effective. See Finding 14 at p. 929. Lengthy and detailed cross-examination by Mr. Eddleman failed to uncover any significant safety issues in the revised program.

18. In Proposed Findings 4 and 5, Mr. Eddleman would have us find that Staff witnesses did not agree on “what the root cause of the problem was.” As the Staff witnesses responded to questions about the root cause in sequence, different aspects of problems with the weld acceptance criteria were described. However, these views are not inconsistent, but rather complement each other. Tr. 7321-26. The Board finds that there have been a variety of problems in the pipe support welding program as reflected in the variety of corrective actions that have been taken by CP&L. It seems probable that there was not a solitary root cause.

19. In Proposed Finding 10, Mr. Eddleman concludes that CP&L has not been keeping its commitments to quality assurance at the Harris plant. We do not reach such a broad conclusion. The record documents from Mr. Eddleman’s exhibits and cross-examination that numerous nonconformances requiring additional work were identified. As required by 10 C.F.R. Part 50, Appendix B, § I, the primary function of quality assurance is to verify — by checking, auditing, and inspection — that activities affecting safety-related functions have been correctly performed. Reporting of nonconformances is a demonstration of proper program execution, while at the same time revealing that corrective actions are needed.

20. We note that whenever the need to improve some activity is found necessary for regulatory compliance, *ipso facto* the activity must have not been in compliance previously. The various problems that CP&L and the NRC found in the pipe support welding activities caused extensive rework and reinspections to be carried out. One might wish, in retrospect, that the problems had been discovered sooner than they were, but the essential issue for this Board is whether adequate corrective actions have been taken.

4. Conclusions

21. The Board finds CP&L and its contractors had a variety of problems in carrying out the pipe support welding activities. This contention may have had merit when it was initially raised but remedial actions have averted a possible breakdown in quality construction. No uncorrected errors that would affect safe plant operation were identified in this proceeding.

C. Steam Generator Tube Failure Analyses

1. Introduction

Joint Intervenors' Contention VII was originally admitted by Board Memorandum and Order of September 22, 1982 (LBP-82-119A, *supra*). It stated as follows:

Applicants have failed to demonstrate that the steam generators to be used in the Harris Plant are adequately designed and can be operated in a manner consistent with the public health and safety and ALARA exposure to maintenance personnel in light of (1) vibration problems which have developed in Westinghouse Model D-4 steam generators; (2) tube corrosion and cracking in other Westinghouse steam generators with Inconel-600 tubes and/or carbon steel support plates and AVT water chemistry; (3) present detection capability for loose metal or other foreign objects; and (4) existing tube failure analyses.

16 NRC at 2077.

Applicants submitted a Motion for Partial Summary Disposition on May 16, 1984, in which they asked for dismissal of parts 1, 2 and 3 of the contention. Staff responded in support of Applicants' motion on June 5, 1984. Joint Intervenors answered on June 14, 1984, informing the Board that although they disagreed with the premises advanced by Applicants and Staff, that time and resource constraints did not allow them to respond adequately to the merits of the motions.

The Board has reviewed the arguments and accompanying affidavits submitted by the Applicants and Staff and has reached the following conclusions:

1. Sufficient experimental data, analyses and testing have been performed to provide assurance that vibration in the Shearon Harris steam generators will not be a major problem;
2. The use of all-volatile treatment (AVT) water chemistry is state-of-the-art and provides reasonable assurance of obviating many of the corrosion, cracking and denting problems experienced in earlier systems; and
3. The "loose-parts" detection system for foreign objects in the steam generators has been tested and found to be capable of detection of any such objects which might affect the integrity of the steam generators.

In accordance with the foregoing uncontroverted findings the Board confirms its prior grant of Applicants' motion for summary disposition of J.I. VII(1), (2) and (3).

2. *Joint Intervenors' Contention VII(4)*

1. A portion of this contention was settled by stipulation of the parties which was approved by the Board in a Memorandum and Order dated July 27, 1984. The remaining issue at bar is the question whether the Applicants were required to consider multiple tube failure in their tube rupture analysis.

2. Applicants' witness was Michael J. Hitchler, the Manager of Plant Risk Analysis with the Nuclear Safety Department of Westinghouse Electric Corp., the steam generator vendor. Staff's witnesses were Ledyard B. Marsh, a Section Leader in the Reactor Systems Branch, Division of Systems Integration, NRR, and Herbert F. Conrad, a Senior Materials Engineer in the Materials Engineering Branch, NRR. Joint Intervenors presented no testimony on this contention.

3. Using the conditions set forth in the "Standard Review Plan," NUREG-0800, Rev. 3, the Harris FSAR presents an analysis of a single double-ended break in a steam generator tube. Testimony of Michael J. Hitchler, ff. Tr. 4012, at 4. Results of the analysis show that the resulting release of radioactivity would be well within the limits of 10 C.F.R. Part 100. Staff Testimony of Ledyard B. Marsh and Herbert F. Conrad (Marsh/Conrad), ff. Tr. 4176, at 2. Intervenors did not question the analysis, but contend that analysis of a multiple-tube break should be included.

4. Applicants argue that the frequency of multiple-tube failures would be exceedingly small, and thus would present no significant risk to the public. Hitchler, Tr. 4014. The Staff agrees, and further argues that the conservatism embodied in the single-tube analysis assure that the analytical results will be bounding. Marsh/Conrad, ff. Tr. 4176, at 3.

5. Applicants' witness testified that a data base of over 4 million tube-years of operating Westinghouse steam generators using Inconel tubes has been accumulated. During this time only five tube ruptures have occurred. Hitchler, ff. Tr. 4012, at 5. Using a conservative number of 3.6 million tube-years to allow for 10% tube plugging, it would be predicted that a tube rupture at the Harris plant could occur with a frequency of 1.6×10^{-6} /tube-year, or about one tube rupture every 45 years. *Id.* at 6. This is a very conservative number, as the causes of the five failures — stress corrosion cracking, denting, and loose foreign objects in the system — have been either eliminated or mitigated by design and operational changes and sophisticated testing, as the Board determined in its summary disposition rulings, *supra. Id.* at 7-10. If these changes are factored into the analysis, single-tube failure would be predicted to occur about 0.6×10^{-6} /tube-year, or about once in 120 years. *Id.* at 10.

6. Westinghouse has developed an analytical method which can be used to determine the probability of multiple-tube ruptures. This was necessary inasmuch as there is no historical data; no multiple-tube failure has ever occurred. The method, termed the "pressure pulse" model, relates the pressure differential across the tubes to the probability of tube failure. *Id.*, Attach. A. Using this model, the single-tube rupture is calculated to have a probability of 7.5×10^{-3} /year, which compares well with the 8.2×10^{-3} /year obtained using historical data. *Id.* at 11. Multiple-tube failure predicted by this model shows a frequency of 7×10^{-5} /year, or once in about 14,000 plant-years. *Id.* at 12. The Joint Intervenors did not question the analytical method or the conclusions reached.

3. Intervenors' Proposed Findings

7. Intervenors submitted a number of arguments opposing the Applicants' findings. The Board has had great difficulty in determining a nexus between these proposed findings and the necessity of performing a multiple-tube rupture analysis in the FSAR. Nevertheless, we discuss them *seriatim*.

8. Intervenors' first and second proposed findings consist of a calculation not previously aired at the hearing or in any communications between Intervenors, the Board and the other parties. Intervenors include only U.S. plants in the calculation, rather than all Westinghouse plants worldwide using Inconel tubing, thus applying four of the five failures which have occurred to a reduced tube-year count. While this may be a legitimate statistical compilation for some uses,⁷ no grounds were laid for the four tube failures in the U.S. reactors and one tube failure in the foreign ones to be considered anything other than fortuitous. In any event, the results of the Intervenors' calculation show a probability of 1.8×10^{-6} compared to the result derived from using total plants data — 1.6×10^{-6} — a difference which the Board considers insignificant and not to indicate a trend in tube failures to either higher or lower values.

9. Intervenors' third finding is somewhat difficult to follow. However, the bottom line appears to be that, by Intervenors' calculations, two single-tube failures can be expected over the life of the plant, and therefore the possibility of multiple-tube failure is not zero. Even accepting Intervenors' calculations, the probability of two single-tube failures over

⁷ The Board notes that using only the statistics compiled by the four plants which have experienced tube failure would perhaps be valid under some circumstances, but that in the present case such use would be a *reductio ad absurdum*.

the life of the plant occurring at the same time, absent a common-mode initiation, is too remote to consider. Intervenors state that common-mode failure "cannot be excluded" but they do not elaborate. We find no merit in this finding.

10. Intervenors' fourth finding states that (1) there is no analysis of multiple tube failure in the FSAR, (2) Applicants' witness has never done one, and (3) the Staff did no statistical analysis for the Harris plant. These statements are all true, but have no discernible bearing on whether multiple-tube failure analysis should be required.

11. The fifth finding states that Applicants' witness has not reviewed Harris QA procedures, as the witness testified. Hitchler, Tr. 4136. However, Intervenors neglect to include the continuation of the witness' remarks, wherein he says:

What I have reviewed [is] where the recommendations have been made and what the plant has agreed to in terms of check list and keeping track of parts that go into and out of the steam generators. Also, [there is] the fact that this plant is using loose parts monitors such that when you start up the plant you will be able to hear these things and take corrective actions. So I have not specifically gone through every item in their QA procedure, but I know what the generic recommendations are at this point and those are being adhered to.

The Board finds that Mr. Hitchler's review of the actions to be taken at the plant are entirely adequate for the purposes of his calculations.

12. The sixth and seventh findings concern tube leakage before breaking and the technical specifications limit on detected leakage. Intervenors state that leaks before breaks cannot be depended upon and that the high technical specifications for tube leakage at Harris make it more difficult to detect leakage before rupture. These may be debatable points, but they shed no light upon the issue considered here — the need for multiple-tube failure analysis. The finding is therefore rejected.

13. Findings 8, 9 and 10 are somewhat difficult to evaluate, because they depend largely on isolated statements taken out of context. In any event, the Board finds nothing here which would support a need for rigorous analysis of multiple-tube failure in the FSAR.

4. Conclusions

14. The Board has evaluated the record before us and finds that there is no need for multiple-tube failure to be considered in the FSAR. It has been established that single-tube failures are rare and that multiple-tube failures are even more unlikely. We conclude that the testing, design modification, water chemistry procedures, loose parts monitoring and inspection and maintenance procedures which have

been or will be implemented should make tube failure even more unlikely than it has been historically. The Board therefore finds that analysis of potential single-tube failure is adequate.

IV. CONCLUSIONS OF LAW

The emergency planning and safety matters in controversy in this proceeding are limited to those raised by the Intervenor. 10 C.F.R. § 2.760a. As reflected in the foregoing findings of fact, those matters (with the few exceptions noted herein to be addressed later) now have been resolved in favor of the Staff and the Applicants and against the Intervenor. Based on those findings of fact, the Board concludes that as to the contested emergency planning and safety matters addressed herein, there is a reasonable assurance that, if an operating license is subsequently granted for the Harris facility, the activities authorized thereby can be conducted without endangering the health or safety of the public and that such activities will be conducted in compliance with applicable NRC regulations.

V. APPEALS

This Partial Initial Decision is effective immediately and will constitute the final decision of the Commission 45 days after the date hereof, unless a party appeals or obtains a stay pursuant to 10 C.F.R. § 2.788. Pursuant to 10 C.F.R. §§ 2.760(a) and 2.762, an appeal from this Partial Initial Decision or from any prior Board Order granting a motion for summary disposition, in whole or in part, of an emergency planning contention or excluding a proposed emergency planning contention from litigation may be taken by filing a notice of appeal with the Atomic Safety and Licensing Appeal Board within 10 days after service of this Decision. A brief in support of an appeal must be filed within 30 days after the filing of the notice of appeal (40 days if the appellant is the NRC Staff). Within 30 days after the period for filing and service of the briefs of all parties has expired (40 days if the appellant is the NRC

Staff), any other party may file a brief in support of or in opposition to an appeal.⁸

**FOR THE ATOMIC SAFETY AND
LICENSING BOARD**

**James L. Kelley, Chairman
ADMINISTRATIVE JUDGE**

**Dr. James H. Carpenter, Member
ADMINISTRATIVE JUDGE**

**Glenn O. Bright, Member (by JLK)
ADMINISTRATIVE JUDGE**

Bethesda, Maryland
December 11, 1985

**ATTACHMENT TO LBP-85-49
30 September 1985**

**CONTENTIONS BASED ON EMERGENCY PLANNING
EXERCISE**

After the emergency planning exercise for the Shearon Harris plant in May 1985, I sought the evaluations and other documents related to these exercises. However, the State evaluations were not in my hands until after 1 September 1985, the main cause being delay by the State in releasing same. Likewise I received FOIA documents from FEMA only at the end of August 1985. FEMA has still not fully responded to the FOIA requests for Harris, nor has the State to my knowledge made its original message logs available.

⁸ The Applicants' unopposed motion August 1, 1985, concerning transcript corrections is granted and the evidentiary record shall be deemed amended to incorporate said changes.

Nevertheless, the available information makes it possible to frame the following contentions. In general the same "5 factors" discussion under 10 C.F.R. 2.714 applies to each, and thus a general "5 factors" section and any specific additions re these contentions will come after all the contentions.

Contentions

EPX-1. Timely notification of radiation releases is not assured, e.g. in light of the approximate 42 minutes delay in notifying SERT of an uncontrolled radiation release during the exercise (State EOC evaluation by NC State Govt Evaluator). Without timely notice to emergency response personnel, the emergency management agencies cannot adequately protect the public from radiation releases.

EPX-2. Communications deficiencies revealed in the exercise could have severe bad effects in a real emergency, including lack of effective communications and radiation monitoring results, lack of contact with field and ground units, etc. For example, the emergency inter-system mutual aid frequency was so overloaded the state's communications evaluator stated it was "proved that there could be absolutely no communications with ground units on this frequency due to constant misuse." Other examples: The Highway Patrol evaluator found "communication inadequacies; equipment . . . is not yet capable of adequately handling the impact of so many units responding to an emergency of this type"; Harnett County had "insufficient telephones": "[E]xtra radio traffic overloaded personnel on duty" in Chatham County; "excessive delays" in Emergency Medical Services Office receiving messages from SERT (State Emergency Response Team); communications from the mobile radiation lab had to be relayed to base station at times, which "always introduces the possibility of delayed and/or incorrect information" according to the State Radiation Protection Section evaluator.

EPX-3. CP&L emergency medical personnel do not have adequate equipment available (e.g. splints) to treat fractures, and have not demonstrated the ability to maintain a high level of patient care while preventing contamination of themselves and the environment. (Ref: State of NC's on-site evaluation of Emergency Medical Operations).

EPX-4. Lee County's decontamination training and practice are not adequate. For example, evaluation revealed that the group of decontaminators indicated "they had not been trained and were unsure what to do. They appeared to have no knowledge in the use of the instruments, no consideration was given to collecting water and attempting to control contamination. None of the personnel (knew) . . . 'when is decontamination complete' " (Lee County evaluation). This problem must be reme-

died by training and retesting to assure people evacuating in this area can be decontaminated and that Lee County's volunteers and other personnel are assuredly able to carry out first-class decontamination work.

EPX-5. Emergency siren activation is inadequate and there is no reliable means assuring that Wake County emergency response personnel will know when the sirens have been activated. Ref: Wake County evaluation by State of NC "some method should be devised to determine if emergency warning sirens have been activated"; State EOC messages 53, 122, 160, 166, 176, 182, 205; numerous areas had sirens not sounding, sounding of sirens was delayed about 40 minutes and there appeared to be initial confusion over confirmation.

EPX-6. Management and coordination of rumor control were inadequate (FEMA exercise report, e.g. at 13, see discussion at 11-13) especially in that there was no announcement of the early Harris Lake evacuation (necessary to avoid panic, FEMA, p. 12); likewise the General Emergency was not publicly announced for almost an hour after it was declared (FEMA, p. 12). With the General Emergency declared but unannounced, public knowledge (e.g. from emergency personnel and radio-frequency scanners and listeners) could also spread panic. (FEMA report received 8/30/85).

EPX-7. Radiation dose assessments were not promptly communicated to State Emergency Response personnel, data files were delayed up to half an hour, and coordinates of Traffic Control Points (TCPs) were not tabulated to allow faster calculation of doses giving allowable "stay times" at those TCPs. (FEMA, pp. 8-9). All such deficiencies need to be remedied to protect the health and safety of the public, which depends on accurate and timely radiation dose assessment.

EPX-8. Emergency Broadcast System use was incomplete and ineffectively managed (FEMA, 2.3.1. (2), page 13; see p. 12 discussion). Inadequacies include procedures for activation and use of the EBS (before the State assumes control); inadequate coverage of the emergency area and emergency response area, incomplete messages and instructions to the public. (Ref.: FEMA report received 8/30/85 Board Notification 85-078). Numerous problems with EBS activation mentioned on pp. 17-18 of the same report also need to be identified and rectified. All these problems must be resolved to ensure timely and effective notice to the public about nuclear/radiation emergencies so that the public can be protected in such emergencies.

EPZ-9. Radiation survey teams have a weak level of training in the use of anticontamination clothing and/or respirators (State Radiation Protection Section evaluation). This needs to be remedied to protect the health and safety of these teams and to ensure that they will be able to do their work in a timely manner.

EPX-10. Protection of emergency personnel and the public from radioactive iodine is not assured because (1) low volume air samplers are deficient in calibration and flow rate information, as detailed in the NC Radiation Protection Section evaluation, and (2) there are deficiencies in the distribution of, and notification of when emergency personnel are to use, potassium iodide (KI): See, e.g., Wake County workers being notified late (after possible contamination) (Wake Co. evaluation by State of NC/Meck. Co. evaluator).

EPX-11. There are numerous deficiencies in hard-copy transmission of information (see, e.g., State EOC messages 13, 14, 15, 16, 25, 34, 35, 40, 41, 57, 67, 71, 127) which must be remedied to assure timely and accurate emergency information is available to protect public health and safety.

EPX-12. Emergency assistance needs to be upgraded to assure evacuation of people fishing, boating, camping, etc. near the Cape Fear River in Zone ('H') — see State EOC message 162, a high priority third request to get assistance.

Five Factors (generic)

(i) There is good cause for not filing these “on time” (5-1982) since the exercise hadn’t been done then, the right to litigate based on emergency planning exercises had not been clearly established, and the information was not in my hands to provide the basis of these contentions. State and Federal agencies controlled the timing of the release of this information. I have filed within 30 days of having it.

(ii) and (iv) There are no other means or other parties that will protect or represent my interests in these matters.

(iii) I can call as witnesses the evaluators and other knowledgeable persons (e.g. exercise participants); I am able to conduct discovery and cross and direct examination and have more time available now to deal with contentions; also my health is better than it was during the safety hearing period. Without a record, of course, there is no sound record.

(v) Admitting these contentions would broaden the issues, but that is inherent in emergency plan exercise contentions since they cannot be framed until after the exercise. Since the scheduling of the exercise and the release of the information about evaluations of the exercise were outside my control (the information was timely sought, e.g. one FOIA request near the time of the exercise to FEMA, other requests to the State of NC within a reasonable time of the exercise), this delay should not be charged to me as an intervenor.

There is sufficient time to have discovery until late December, and still hold a hearing (if necessary) in February on these issues, before fuel load (even if Applicants don't delay it again — they can deny delays and then delay, as experience shows), and fuel load and low-power testing could go forward without the emergency plan being approved.

Thus, the delay and broadening of the issues are inherent in preserving the public's right to litigate based on the emergency planning exercise, and there is time to carry out a hearing.

Specific factors: the time information was available for each contention's basis is the time the information was in my hands for each such contention, this being 8/30 for the FEMA evaluation and after 1 September for the State evaluations and messages.

For the above reasons, the contentions given above should be admitted.

Wells Eddleman

30 September 1985

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ADMINISTRATIVE LAW JUDGE

Ivan W. Smith

In the Matter of

Docket No. 30-14821
(ASLBP No. 85-508-01-OT)
(License No. 25-18304-01
EA-84-78)

REICH GEO-PHYSICAL, INC.
1019 Arlington Drive
Billings, Montana

December 11, 1985

In this Initial Decision, the Administrative Law Judge sustains a civil penalty of \$1600.00 imposed against the petitioner by the Director of Investigation and Enforcement for possession, use, storage and transportation of radioactive material in ways not authorized by petitioner's license.

ENFORCEMENT POLICY: 10 C.F.R. PART 2, APPENDIX C

The Commission's General Statement of Policy and Procedure for NRC Enforcement Actions is, by its express terms, imposed upon the Staff and the Commission's presiding officers. As a matter of fair notice to licensees, the Commission's presiding officers must apply the Enforcement Policy in civil penalty actions.

ENFORCEMENT POLICY: 10 C.F.R. PART 2, APPENDIX C

The conduct of licensed activities by a technically unqualified person is *per se* a Severity Level III violation under the Commission's Enforcement Policy.

**ENFORCEMENT POLICY: 10 C.F.R. PART 2, APPENDIX C;
AUTHORITY OF ADMINISTRATIVE LAW JUDGE**

Under the Commission's enforcement policy, the authority of an administrative law judge is limited to imposing, mitigating or remitting the civil penalty imposed by the Director, Office of Inspection and Enforcement.

**ENFORCEMENT POLICY: 10 C.F.R. PART 2, APPENDIX C;
AGGREGATION OF VIOLATIONS**

The Commission's policy statement is silent as to the effect of aggregation of violations. While many violations flowing from the same mistake may be aggregated into a single violation of the same severity level, the violations in this case are cumulative, demonstrating the absence of mistake and a pervasive pattern of disregard for license requirements, and justifying aggregation to a serious Severity Level II.

CIVIL PENALTIES

Civil penalties will normally be assessed for any willful violation of the Commission requirements regardless of severity level. Even for Severity Level IV violations, civil penalties may be imposed for violations that are similar to previous violations for which effective correction was not taken.

CIVIL PENALTIES: MITIGATION

While adverse publicity resulting from an enforcement action may deter violations of the Commission's regulations to some extent, it is not a reliable or necessarily effective means of assuring continued compliance with those regulations, and in this case was entitled to no mitigating weight.

APPEARANCES

On behalf of Reich Geo-Physical, Inc.: **Mr. Keith A. Reich, President**

On behalf of the Director, Office of Inspection and Enforcement: **Lillian M. Cuoco, Esq., and Stephen G. Burns, Esq.**

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INITIAL DECISION

Findings of Fact and Conclusions of Law

I. INTRODUCTION AND LICENSING HISTORY

On October 31, 1984, the Director of the Office of Inspection and Enforcement issued his order imposing a \$1600 civil penalty on Reich Geo-Physical, Inc., the Licensee, charging it with the possession, use, storage and transportation of radioactive material in ways not authorized by its

license. The Licensee requested a hearing. This Decision is about that hearing.

Reich Geo-Physical, Inc., is a small firm whose business office is at 1019 Arlington Drive, Billings, Montana. The president, owner, and principal employee of the firm is Mr. Keith A. Reich. Reich Geo-Physical does energy exploration in the States of Montana, North Dakota, Utah, and Wyoming. It has used cesium-137 and americium-241 sources to perform well- and coal-mine logging operations.

Cesium-137 and americium-241 are radioactive byproduct materials within the meaning of § 11e of the Atomic Energy Act of 1954. Section 81 of the Act, as pertinent here, prohibits the transfer and possession of byproduct materials except as authorized under specific or general licenses issued by the Commission or unless exempted by the Commission. The Commission has provided for the domestic licensing of byproduct materials in 10 C.F.R. Parts 30 and 31.

Part 30 exempts some concentrations of some isotopes from the licensing requirement. Neither cesium-137 in the concentration relevant to this proceeding, nor americium-241 appears on the schedules of exempt isotopes. See 10 C.F.R. §§ 30.70, 30.71. Part 31 grants general licenses for the possession and use of some byproduct materials. Neither radioactive source used by Reich Geo-Physical is covered by a general license.¹

Section 274b of the Act authorizes the Commission to enter into an agreement with any State to transfer the authority to regulate activities involving byproduct materials within a State to the respective State. Part 150 of Title 10 sets out the framework for the regulation of radioactive material, including byproduct material, by those States with which the Commission has entered into agreements — the “Agreement States.” When an Agreement State has licensed activities pursuant to an agreement, the licensed person may, under a general license, conduct the same activity in a non-Agreement State for no more than 180 days in a calendar year, provided that an NRC-241² form is filed with the Commission at least 3 days beforehand. 10 C.F.R. § 150.20. North Dakota is an Agreement State. Montana, Wyoming, and Utah are non-Agreement States.

On August 8, 1978, Reich Geo-Physical applied to the Nuclear Regulatory Commission for a byproduct material license for cesium-137

¹ Americium-241 in the form of calibration or reference sources is covered by a general license. However, Reich Geo-Physical uses americium-241 in a manner and in concentrations not covered by the general license. See 10 C.F.R. § 31.8.

² The NRC-241 form is entitled “Report of Proposed Activities in Non-Agreement States.” It is a coincidence that the form number is the same as the americium-241 isotope number.

in the form of one sealed source of 125 millicuries to be used for well logging. Mr. Reich listed himself as the owner of the firm, the sole user of the source, and as the Radiation Protection Officer. The application contained several commitments explaining the testing, survey metering, storage, operating procedures and other aspects of possessing the cesium-137 source. Mr. Reich amended the application by letter dated January 30, 1979. Staff Exh. 3, Attach. 2.

The NRC issued License No. 25-18304-01 to Reich Geo-Physical on March 1, 1979, in much the form applied for. The license contained several conditions including one (condition 17) which incorporated the commitments made in the application. The license authorized the use of the cesium source at temporary job sites in Montana and Wyoming. Staff Exh. 3, Attach. 1.

NRC Region IV inspected Reich Geo-Physical on April 14, 1981, apparently at Billings, Montana, and discovered a 15.5-millicurie americium-241 sealed source in Mr. Reich's possession in addition to the licensed, cesium-137 source. The disposition of that inspection is a matter in contention in this proceeding, but it is not disputed that Mr. Reich possessed the americium source and that he possessed a valid North Dakota license for americium, but no NRC authorization for it. As a consequence of the 1981 inspection, Mr. Reich agreed to apply for an amendment to his NRC license to cover the americium-241 source and to store that source until he received his amended license or until he filed an NRC-241 notification. *Id.*, Attach. 6.

On June 12, 1981, Reich Geo-Physical filed the NRC-241 notification. Mr. Reich certified that he intended to use two americium-241 sealed sources of 15.5 millicuries each at his business address in Billings, Montana, for 180 days beginning June 20 and ending December 20, 1981. Staff Exh. 3, Attach. 7. Reich Geo-Physical does no well logging at its business address. All of its exploration activities are conducted at sites in the field. Reich Geo-Physical's NRC materials license was never amended, nor were any additional NRC-241 forms ever submitted during the period relevant to this proceeding. I understand, however, that at the time of the hearing, Reich Geo-Physical was in compliance with NRC licensing regulations.

II. BACKGROUND OF THE PROCEEDING

On June 20, 1984, Mr. Charles H. Hooker, an inspector from NRC's Region IV, conducted an inspection of Reich Geo-Physical at the firm's Billings, Montana office. As a result of the inspection, the Region IV Administrator, on August 22, 1984, issued a Notice of Violation and

Proposed Imposition of Civil Penalty in the amount of \$1600.00. On September 8, 1984, the Licensee opposed the proposed civil penalty. On October 31, 1984, the Director of the Office of Inspection and Enforcement issued an Order Imposing Civil Monetary Penalty in the amount of \$1600.00. 49 Fed. Reg. 44,253 (Nov. 5, 1984). The Licensee requested a hearing on the Director's order and, accordingly, the Commission ordered, on March 8, 1985, that this matter be heard by an Administrative Law Judge.

The hearing was held in Billings, Montana, on July 24, 1985. As part of its direct case, the NRC Staff offered into evidence the relevant documentary exhibits.³

Mr. Hooker testified concerning his inspection. Mr. Edwin D. Flack, a Senior Enforcement Specialist in the Office of Inspection and Enforcement, testified about the safety significance of the alleged violations and the application of the Commission's Enforcement Policy (10 C.F.R. Part 2, Appendix C) to the case.

Mr. Reich also testified. He offered into evidence a copy of a letter dated May 13, 1985, from the State of North Dakota favorable to Reich Geo-Physical, concerning an inspection of the company's activities under his North Dakota Agreement State License. Reich Exh. 1. The NRC Staff offered two exhibits in rebuttal: a June 28, 1982 letter (Staff Exh. 4) and an October 5, 1984 letter (Staff Exh. 5), both from the State of North Dakota to Reich Geo-Physical concerning violations under the same Agreement State license.

³ Staff Exhibits 1 and 2 consist of pages from the Licensee's utilization logs. Staff Exhibit 3 is an affidavit of Barbara J. Kay of Region IV as custodian of records. Attached to Staff Exhibit 3 are true copies of 11 documents from the Reich Geo-Physical file:

- Attachment 1: NRC License No. 25-18304-01 issued March 1, 1979.
- Attachment 2: License Application of Reich Geo-Physical, Inc., dated August 8, 1978.
- Attachment 3: Letter from Reich Geo-Physical, Inc., to Joseph M. Brown, Jr., License Management Branch, Division of Fuel Cycle and Material Safety, Office of Nuclear Material Safety and Safeguards, NRC, dated January 30, 1979.
- Attachment 4: Letter and Notice of Violation issued to Reich Geo-Physical, Inc., dated May 18, 1981.
- Attachment 5: Letter from Karl V. Seyfrit, NRC Region IV Director to Reich Geo-Physical, Inc., dated May 21, 1981.
- Attachment 6: Letter from Keith A. Reich, Reich Geo-Physical, Inc., to D.B. Spitzberg, NRC Region IV, dated August 11, 1981 (executed August 19, 1981).
- Attachment 7: Form NRC-241, "Report of Proposed Activities in Non-Agreement States" submitted to NRC Region IV by Reich Geo-Physical, Inc., dated June 12, 1981.
- Attachment 8: Letter from Glen D. Brown, Chief, Technical Inspection Branch, NRC Region IV, to Reich Geo-Physical, Inc., dated June 25, 1981.
- Attachment 9: Letter, Notice of Violation and Proposed Imposition of Civil Penalty, issued to Reich Geo-Physical, Inc., dated August 22, 1984.
- Attachment 10: Response of Reich Geo-Physical, Inc., to Notice of Violation and Proposed Imposition of Civil Penalty, dated September 8, 1984.
- Attachment 11: Letter, Order Imposing Civil Monetary Penalty and Appendix issued to Reich Geo-Physical, Inc., dated October 31, 1984.

This civil penalty proceeding is brought pursuant to 10 C.F.R. § 2.205. My authority is limited to imposing, mitigating or remitting the civil penalty imposed by the Director's Order of October 31, 1984. 10 C.F.R. § 2.205(f). The NRC Staff, as the proponent of the Director's order, bears the burden of proof. 10 C.F.R. § 2.732.

III. THE CASE AGAINST REICH GEO-PHYSICAL

The Notice of Violation alleges six violations of the license conditions charging (1) unauthorized use and possession of americium-241; (2) use by unauthorized persons; (3) failure to timely calibrate survey meters; (4) unauthorized storage of cesium-137; (5) failure to timely test americium sources for leaks; and (6) improper transportation of radioactive materials. Staff Exh. 3, Attach. 9. In brief, two of the alleged violations would, according to the Staff, be Severity Level III items under the Enforcement Policy. The remaining four alleged violations would be Severity Level IV items. Flack, ff. Tr. 144, at 7. However, the Region IV Administrator and the Director regard the alleged violations collectively to represent a careless disregard by Reich Geo-Physical for compliance with NRC regulations and, for that reason, categorized them in the aggregate as a Severity Level II "problem." Staff Exh. 3, Attach. 9, face page.

For his part, Mr. Reich does not dispute the underlying facts of each of the allegations although he believes that the NRC Staff sometimes exaggerated the number of instances of violation. He disputes the Staff's assessment of the significance of the alleged violations and, most of all, denies that he has carelessly disregarded NRC regulations. He opposes the aggregation of the alleged violations into a Severity Level II consideration.

In the findings and conclusions below, I have first considered each of the Staff's allegations to determine whether the Staff has carried its burden on each. Then I considered whether it is appropriate to aggregate any violations that I find into a more severe, aggregated violation. In the order below, I impose the civil penalty in the full amount imposed by the Director of the Office of Inspection and Enforcement, \$1600.

A. Violation No. 1

Violation No. 1, as alleged in the Notice of Violation, charges that:

License Conditions 6, 7, 8, and 9 authorize only the possession of one 125-millicurie cesium 137 sealed source for use in well-logging.

Contrary to this limitation, the licensee also possessed two sealed sources of americium-241. Specifically, one source of 15.5 millicuries and one source of 25 millicuries had been possessed and used by the licensee during the period April 14, 1981 to June 20, 1984.

(This is a repeat violation.)

Staff Exh. 3, Attach. 9, at 3.

As noted above, Reich Geo-Physical's NRC license authorized only the possession and use of one cesium-137 sealed source. *Id.*, Attach. 1, at 1. However, two sealed radioactive sources of americium-241, one containing 15.5 millicuries, and one containing 25 millicuries of material, were observed by Mr. Hooker inside the Licensee's logging vehicles during the inspection. Hooker, ff. Tr. 75, at 10. Reich Geo-Physical's utilization logs show that the americium sources were used by the Licensee to conduct well-logging activities in Montana, Wyoming and Utah in 1981, Montana and Wyoming in 1982, and Montana in 1983. See generally Staff Exhs. 1 and 2.

Beginning with 1981, the Licensee's utilization logs indicate that the 25-millicurie americium-241 source was used in Utah that year a total of 29 days. It was used in Montana 10 days and in Wyoming on 12 days.

Also in 1981, Reich Geo-Physical used its 15.5-millicurie americium-241 source in Wyoming on 36 days, and on 1 day in Montana that year. Staff Exh. 1.

All of the uses of the americium sources cited above occurred after May 1981 when Mr. Reich had agreed to store his 15.5-millicurie source until he received his amended NRC license, or until he filed his NRC-241 form. Staff Exh. 3, Attach. 5. I can identify no uses of americium-241 during 1981 which occurred after the expiration of the December 20, 1981 date for the termination of the NRC-241 notification.

Reich Geo-Physical also used the 15.5-millicurie americium-241 source in Montana or Wyoming on 35 days in 1982 and on 1 day in 1983. Staff Exhs. 1 and 2. None of the Montana uses was at the headquarters in Billings.

The year 1981 presents a special subissue. The Staff charges that *any* field use of the americium-241 sources in non-Agreement States was unauthorized because the NRC-241 notification specified only that the sources would be used at Arlington Drive in Billings, Montana. *E.g.*, Tr. 86-87 (Hooker). Mr. Reich, however, states that his understanding of the purposes of the NRC-241 notification was to extend his North Dakota americium license to all places authorized by his NRC license, and that anybody who knows anything about well logging must know

that it cannot be done at the office. *E.g.*, Tr. 87-89 (Reich). Mr. Reich's point is rational. True, the NRC-241 form, by its express terms, requires specific notification of locations where activities will be conducted and the dates of that activity. Yet, it is not an unknown phenomenon that government forms do not always conform to individual situations.

Moreover, the Staff did not explain how it was hindered in its pattern of monitoring the use of Reich Geo-Physical's americium in non-Agreement States in 1981 because of any shortcoming in Mr. Reich's NRC-241 notification. The NRC does not learn in advance where (except by State) and when the cesium byproduct source is used by Reich Geo-Physical in field-site well-logging operations under the NRC license, and it is not apparent how specific site information under an NRC-241 notification would have been useful.⁴

I find that Mr. Reich's belief that his NRC-241 notification authorized the use of americium-241 sources in the same manner and locations that his NRC license authorized the use of cesium-137 was inaccurate but not unreasonable. Such use was in violation of NRC regulations but it did not indicate an intentional disregard for the regulations.⁵

This finding does not carry the day for Reich Geo-Physical, however. As noted, Reich Geo-Physical used the americium-241 sources frequently in Utah in 1981, while the NRC byproduct license authorized activity only in Montana and Wyoming. Staff Exh. 3, Attach. 1. Mr. Reich had no defense for that aspect of the charge. Nor is there any color of authority for Reich Geo-Physical's use of americium-241 in the non-Agreement States in 1982 and 1983. Further, until the inspection in June 1984, Reich Geo-Physical unlawfully stored the americium-241 sources in its two logging trucks at the Arlington Drive address in Billings whenever those sources were not being used in the field.

Mr. Reich acknowledges these facts but contends that he is not solely at fault. He states that, pursuant to his agreement with Region IV in 1981 (*id.*, Attach. 5), he twice orally requested application forms from the NRC to amend his materials license but received no response. *E.g.*, *id.*, Attach. 10. Neither Mr. Reich nor the NRC can produce any record of his request, but it doesn't matter. That explanation, even if proved, would not attenuate in any way the seriousness of the violation.

⁴ I agree, however, that the Staff could have been misled into believing that the sources were being stored at Billings rather than being used in the field, but there is no basis to believe that Reich Geo-Physical intended to convey that impression.

⁵ The NRC-241 notification listed two americium-241 sources of 15.5 millicuries each. The Staff, however, has not charged Reich Geo-Physical with a separate count of using a 25-millicurie americium-241 source. I assume that this is because the Staff does not credit Reich Geo-Physical with the right to use either 15.5-millicurie or 25-millicurie americium source by virtue of the NRC-241 notification.

Mr. Reich argues also that the Region IV inspector, Mr. Hooker, conducted a hasty and careless inspection in 1984 as is evidenced by some errors made by Mr. Hooker when he copied from Reich Geo-Physical's utilization logs (Staff Exhs. 1 and 2). The errors made by Mr. Hooker in copying from the logs were trivial. Hooker, ff. Tr. 75, at 14. Also, in copying from the logs, he overlooked some of the unauthorized uses of the americium sources. Tr. 79 (Hooker). Mr. Reich has not pointed to any material instance where the Staff's inspection has produced unreliable evidence.

Mr. Reich does not dispute that Violation No. 1 is a repeat violation. It was the discovery of the americium-241 source by Region IV during the inspection of April 14, 1981, that led to the filing of the NRC-241 notification. Staff Exh. 3, Attach. 4 (Notice of Violation).

Mr. Flack, the Senior Specialist, Office of Inspection and Enforcement, who assessed the significance of the June 1984 inspection findings, testified that Violation No. 1 was a Severity Level III violation because it fits example C.2 of Supplement VI of the Enforcement Policy. Flack, ff. Tr. 144, at 7. That example states: "Possession or use of unauthorized equipment or materials in the conduct of licensed activities which disregards safety."⁶ 10 C.F.R. Part 2, Appendix C, Supp. VI.C.2.

Mr. Flack is correct. For almost 4 years, Reich Geo-Physical possessed and used the byproduct material americium-241 in violation of statute and regulations in Utah, Montana or Wyoming without the knowledge of the NRC and thereby foreclosed the opportunity for State or Federal inspection.

Remaining to be considered is whether the severity assigned to Violation No. 1 should be reduced because roughly half of the days of unlawful use of americium-241 have been found to be unintentional under the NRC-241 notification. The severity of Violation No. 1 should not be reduced on that account. The remaining days of use and the uncounted times the americium-241 sources were possessed at Billings without licensed authority are more than enough to establish Violation No. 1. Moreover, Violation No. 1, without regard to the other five allegations, establishes a willful and careless disregard of the NRC regulations by Reich Geo-Physical.

⁶ Literally it could be argued that the use of americium-241 was not "in the conduct of licensed activities" in that the NRC licensed Reich Geo-Physical to use only cesium-137. Reich Geo-Physical has not raised this point, however, and it would be to no avail to do so. Section 234 of the Atomic Energy Act subjects any person, licensed or not, to civil penalties for the violation of § 81 and other sections of the Act. 42 U.S.C. § 2282.

B. Violation No. 2

Violation No. 2, as described in the Notice of Violation, charges that:

License Condition 12 states that licensed materials shall be used by, or under the supervision and in the physical presence of, a specific individual named in the license.

Contrary to this requirement, during the period of August 17, 1981 to August 14, 1982 licensed material had been used by, or had been under the supervision of, individuals who were not named on the license.

Staff Exh. 3, Attach. 9, at 3.

The Licensee's utilization logs confirm the inspector's report with respect to the dates radioactive material was used. According to the logs, Mr. J. Jarocki used the 15.5-millicurie americium-241 source for 44 days in Wyoming between August 5 and November 4, 1981. Mr. Jarocki also used the same source on September 26, 1981, in Montana. Staff Exh. 1. Mr. Terry Dowling used the 25-millicurie americium-241 source for 7 days in Wyoming between August 10 and August 16, 1982. Staff Exh. 2. Mr. Hooker testified that Mr. Reich said during the inspection that he was not physically present when Messrs. Dowling and Jarocki used the americium sources. Hooker, ff. Tr. 75, at 15. Mr. Reich offered no evidence concerning this violation.

However, in the Response to the Notice of Violation, Mr. Reich admitted the unsupervised use by unauthorized persons. His defense is that the employees were properly trained; that the sources, when enclosed in the logging tool, are inherently safe; and that the employees were instructed not to remove the source from the tool. Staff Exh. 3, Attach. 10, at 1.

The difficulty with this defense is that it cuts the NRC out of the regulatory process in favor of Mr. Reich's own self-serving judgment as to the adequacy of his employees' training. In his application for the NRC materials license, Mr. Reich listed extensive training and on-the-job experience in the practice of radiation protection. *Id.*, Attach. 2, Items 8 and 9. Obviously, Mr. Reich must have known that this representation would be material to the issuance of any NRC byproduct material license. The NRC Staff knew nothing about the training of Messrs. Dowling and Jarocki — neither do I. Even if it had been adequate, the NRC had a right and duty to be assured of that fact before those individuals were permitted to use the sources.

I find that Reich Geo-Physical violated Condition 12 of its NRC license when Mr. Jarocki and Mr. Dowling, not named on the license, used radioactive material without the physical presence and supervision

of Keith A. Reich, the authorized user named on the license. The conduct of licensed activities "by a technically unqualified person" is *per se* a Severity Level III violation under the Enforcement Policy. 10 C.F.R. Part 2, Appendix C, Supp. VI.C.4. This violation, standing alone, demonstrates a willful and careless disregard for NRC regulations.

C. Violation No. 3

Violation No. 3, as described in the Notice of Violation, charges that:

License Condition 17 requires, in part, that the licensee shall possess and use licensed material described in the license in accordance with statements, representations, and procedures contained in the license application dated August 8, 1978. Item 11 of the license application states that calibration of the survey meters will be performed at 6-month intervals.

Contrary to this requirement, one survey meter had not been calibrated during the period July 27, 1982 to April 10, 1984, and a second survey meter had not been calibrated during the period April 14, 1981 to April 10, 1984.

(This is a repeat violation.)

Staff Exh. 3, Attach. 9, at 4.

The NRC inspector, Mr. Hooker, testified that, from his review of the Licensee's calibration records during the inspection, survey meter serial no. 11898 had been calibrated only once during the 3-year period prior to his inspection (April 14, 1981, through June 20, 1984) — on April 10, 1984. Survey meter serial no. 8075 was calibrated only twice during the same period — on July 27, 1982, and on April 10, 1984. Hooker, ff. Tr. 75, at 15.

The Licensee's initial position on this violation, stated in its Response to the Notice of Violation, was to admit that survey meters were not calibrated at 6-month intervals. The Licensee attributed this failure, in part, to an effort to "cut cost." Staff Exh. 3, Attach. 10, at 1. At the hearing, Mr. Reich asserted that the license required survey meter calibration every 6 months only when the meters were in use. Tr. 229, 234-35 (Reich).

The Staff acknowledged that, where a survey meter had not been used, and was not required for some other purpose, such as storage surveys, literal compliance with the license condition would not be required. The Staff noted, however, that should radioactive material be put into use, the survey meter used in connection with that material is required to be calibrated within 6 months prior to the date of renewed use. Tr. 235-36 (Hooker).

In any event, it is evident that the survey meters were regularly placed in service between April 14, 1981, and April 10, 1984, but were not calibrated as required. Mr. Reich admitted that there were occasions when survey meters were used with byproduct material more than 6 months following the last calibration. Tr. 237 (Reich). The utilization logs, which list the serial numbers of the survey meters used in connection with radioactive sources, indicate that survey meter serial no. 11898 was used with the 25-millicurie source in Montana, Wyoming and Utah in July, August, September, October and November 1981, and with the 15.5-millicurie source in Wyoming and Montana in May, June and July 1982, and in November 1983 in Montana. Staff Exhs. 1 and 2. As noted, survey meter serial no. 11898 was not calibrated until April 10, 1984.

Survey meter serial no. 8075 was used with the 15.5-millicurie americium-241 source between August 5 and September 23, 1981; on September 26, 1981; and between September 30 and November 4, 1981. Staff Exh. 1. However, this meter was not calibrated until July 27, 1982. This same survey meter was used with the 15.5-millicurie source on November 18, 1983, well over a year following the last calibration. Staff Exh. 2. This meter was not calibrated again until April 10, 1984.

The Licensee offered no evidence which would indicate that either survey meter had been calibrated during 1981. In fact, a Notice of Violation issued to the Licensee on May 18, 1981, charged the Licensee with last calibrating its survey meters in February 1978 and March 1980. See Staff Exh. 3, Attach. 4, at 3. Even assuming the meters had been calibrated in 1981,⁷ I find that the Licensee failed to have survey meters calibrated as required by the NRC license.

In responding to the Notice of Violation, Mr. Reich asserted that, "there was not any change in survey measurements performed with meters that were over the six-month calibration date, versus the meters within the six months." *Id.*, Attach. 10, at 2, 2nd page. The idea here, I assume, is that, if an uncalibrated meter matches a calibrated meter, one may infer that the uncalibrated meter is accurate. This point was not raised in the hearing, but I have considered it nevertheless. In that there was an extensive period (according to the unrefuted evidence) when neither meter had been calibrated within 6 months, and in that there is no evidence of a third, calibrated meter, the response does not help

⁷ The Licensee's response to the 1981 Notice of Violation, dated August 11, 1981, stated that: "Calibration of Ludlum Survey Meters will be conducted by ICN Pharmaceuticals." Staff Exh. 3, Attach. 6. There is no evidence, however, that the Licensee actually carried out its promise to have the meters calibrated.

Reich Geo-Physical.⁸ Accordingly, I find that the Staff has carried its burden on Violation No. 3. It is, as alleged, a repeat violation. This violation standing alone demonstrates a careless disregard for NRC regulations.

D. Violation No. 4

Violation No. 4, as described in the Notice of Violation, charges that:

License Condition 10 restricts the storage of licensed material to the licensee's address at 1019 Arlington Drive, Billings, Montana.

Contrary to this requirement, on June 20, 1984, a 125 millicurie cesium 137 sealed source was being stored at a location in Billings, Montana, not authorized on the license.

Staff Exh. 3, Attach. 9, at 4.

There is no factual dispute. Mr. Hooker testified that on the date of the inspection, the NRC-licensed cesium-137 source was not at the Licensee's address. Mr. Hooker was informed by Mr. Reich that the source was in storage in an underground bunker at the Airport Industrial Park in Billings, Montana. Hooker, ff. Tr. 75, at 12.

The Licensee admitted at the hearing that the cesium-137 source was not stored at the location specified by its NRC license on the date of the inspection. Staff Exh. 3, Attach. 10, at 2; Tr. 238 (Reich).

I find that the Licensee violated Condition 10 of its NRC license by storing its 125-millicurie cesium-137 source at a location other than 1019 Arlington Drive, Billings, Montana.

However, I also find that Violation No. 4 is of little safety consequence. The airport bunker is a secure shelter — better than the logging trucks approved by the Staff. It had been a National Guard fallout shelter. Tr. 111 (Reich). The NRC Staff does not believe the storage violation is important. Tr. 145, 183 (Flack).

Although the matter has little safety significance, it does have some regulatory significance. It is a minor example of Mr. Reich cutting the NRC out of the process when, in his judgment, the NRC requirement is not important. It is an intentional violation but it does not rise to the level of a willful and careless disregard for regulatory requirements. I

⁸ I have also considered whether two meters, beyond the calibration date, but in agreement with each other (if such were the case) provided any assurance of accuracy. Agreement between the meters would indicate that the meters were probably functioning properly but would not provide sufficient assurance of their accuracy.

have given it a relatively small value in assessing the overall seriousness of the aggregated charge against the Licensee.

E. Violation No. 5

Violation No. 5, as described in the Notice of Violation, charges that:

License Condition 13.A(1) requires, in part, that each sealed source containing licensed material shall be tested for leakage and/or contamination at intervals not to exceed 6 months.

Contrary to this requirement, two sealed sources containing 15.5 millicuries and 25 millicuries of americium-241, respectively, were not tested within six month periods from November 20, 1981 to April 30, 1984.

Staff Exh. 3, Attach. 9, at 4.

Mr. Hooker testified that, from his review of the Licensee's records during the inspection, leak tests were conducted on the americium-241 sources on January 20 and November 20, 1981, January 12, 1983, and April 30, 1984. Mr. Hooker also testified that, since the americium-241 sources possessed by the Licensee were taken in and out of storage during the period April 15, 1981, through June 20, 1984, leak tests should have been conducted prior to any renewed use of the sources, unless a leak-rate test had been conducted no more than 6 months prior to the date of renewed use. Hooker, ff. Tr. 75, at 16-17. Under license Condition 13.A(2), periodic leak tests need not be conducted for sealed sources that are stored and not being used. However, such sources must be tested for leakage prior to any use or transfer to another person unless a leak test was conducted within 6 months prior to the date of use or transfer. Staff Exh. 3, Attach. 1, at 2.

The Licensee admitted in its Response that it failed to conduct a leak test for the 15.5-millicurie source in 1983 when required, but asserted that, since the 25-millicurie source was not in use after November 18, 1982, leak testing was not required after that date. *Id.*, Attach. 10, at 2.

The utilization logs, when compared with the dates on which leak tests were conducted, substantiate the violation. The 15.5-millicurie source was placed into service on May 10, 1982. Staff Exh. 1. The most recent leak test had been conducted on that source on November 20, 1981, a date slightly less than 6 months prior to May 10, 1982. Then it was used continuously until December 13, 1982, more than a year since the November 1981 leak testing. Staff Exhs. 1 and 2. The 15.5-millicurie source was then leak-tested on January 12, 1983, placed back into service on March 5, 1983, and used in August and November 1983 — the

latter 2 months being beyond the 6-month period. Apparently the 15.5-millicurie source was then stored and not placed into service again until after it was leak-tested in April 1984. Staff Exhs. 1 and 2; Hooker, ff. Tr. 75, at 16.

The 25-millicurie source was leak-tested with the other source on November 20, 1981, then placed into service on August 4, 1982. It was used regularly that year until November 18 — almost a year from the most recent leak testing. It was then taken out of service. Hooker, ff. Tr. 75, at 16-17; Staff Exhs. 1 and 2.

In his cross-examination of Mr. Flack, Mr. Reich attempted to minimize the importance of failing to have the americium-241 sources leak-tested. Unfortunately for Mr. Reich, Mr. Flack is an expert radiation health-physicist by virtue of his education, training, and his extensive NRC experience as a Senior Health Physicist. Flack, ff. Tr. 144, Attach. 1 (*Professional Qualifications*).

First, Mr. Reich postulated that the sources of 15.5 and 25 millicuries of americium-241 do not have a high level of radioactivity compared to cesium-137 which he is licensed to use. His point, apparently, is that if he practiced traditional time/distance/shielding principles on americium-241 in the manner that he uses in handling cesium-137, he would necessarily be conservative because of the lower activity of the americium sources.

Mr. Flack acknowledged that, because of its greater radioactivity, a 125-millicurie source of cesium-137, a gamma emitter, would present a greater external hazard than the 25-millicurie source of americium-241. However, americium-241, an alpha emitter, has a very long half-life; leaking is difficult to detect; and, if ingested, it could create a long-term health problem. Tr. 172-78, 199-200 (Flack). It is necessary to perform the wipe-type leak testing because leakage of americium is very hard to detect without sophisticated equipment. Tr. 186 (Flack).

Mr. Reich suggested that it is unlikely that the sealed sources of americium would leak. But he offered no evidence to that effect. Tr. 178 (Reich). In any event, the license condition requiring leak testing also recognizes the fact that the source is sealed and enclosed in a tool.

Finally, Mr. Reich's argument that the survey meters would detect serious leaking is not very persuasive in view of the fact that the evidence established that the meters themselves were out of the calibration dates and that wipe testing is important even if the meters were freshly calibrated.

I find that Reich Geo-Physical intentionally violated License Condition 13.A(1) as charged in the Notice of Violation by failing to conduct

leak tests of sealed sources containing radioactive material at the required intervals.

F. Violation No. 6

Violation No. 6 as described in the Notice of Violation charges that:

10 C.F.R. § 71.5(a) requires, in part, that no licensee shall transport any licensed material outside the confines of his plant or other place of use, or deliver any licensed material to a carrier for transport unless the licensee complies with applicable requirements of the regulations appropriate to the mode of transport of the Department of Transportation in 49 C.F.R. Parts 170-189.⁹

- a. 49 C.F.R. § 172.403 requires that each package of radioactive material, unless excepted from labeling by § 173.391 or § 173.392, be labeled, as appropriate, with a RADIOACTIVE WHITE-I, a RADIOACTIVE YELLOW-II, or a RADIOACTIVE YELLOW-III label.

Contrary to the above, on June 20, 1984, the containers used to transport radioactive well-logging sources were not labeled with an appropriate RADIOACTIVE WHITE-I, a RADIOACTIVE YELLOW-II, or a RADIOACTIVE YELLOW-III label.

- b. 49 C.F.R. § 178.305-3 [sic — should be 178.350-3] requires that each package used to transport Type A quantities of radioactive material have the markings "USA DOT 7A type A."

Contrary to the above, on June 20, 1984, sealed sources containing millicurie quantities of americium-241 were being transported in packages that were not marked as "USA DOT 7A Type A" containers.

Mr. Hooker testified that on the day he conducted the inspection, he did not observe any distinctive Department of Transportation (DOT) markings or labels on either of the Licensee's americium-241 source containers. He also testified that in view of the amounts of americium the Licensee possessed, he would expect to see a "Radioactive White-I" label on the containers, and the markings "USA DOT 7A Type A" and "Radioactive Material" on the source containers. Mr. Hooker was informed by the Licensee that, when transported to temporary job sites, the source containers looked exactly as Mr. Hooker observed them on the day of the inspection. Hooker, ff. Tr. 75, at 11; Tr. 96-97 (Hooker).

There was, however, a sign or tag on the logging tool, which is also a satisfactory transport and storage container, identifying the package as

⁹ Condition 16 of NRC License No. 25-18304-01 also required the Licensee to transport licensed material in accordance with the provisions of 10 C.F.R. Part 71. Staff Exh. 3, Attach. 1, at 3; Tr. 137 (Hooker).

“Radioactive material storage.” The sign was very visible. Tr. 93-95 (Hooker).

Mr. Reich admits that a “Radioactive White” label was not on display and explained that the sign would have wrapped around the source because of the small diameter of the tool. Tr. 242-43 (Reich). He testified however that a Radioactive Yellow-II sign was in fact present. Mr. Hooker was uncertain about this. He could not recall. Tr. 243-44 (Reich, Hooker). As a whole, the testimony, and Mr. Reich’s Response to the Notice of Violation (Staff Exh. 3, Attach. 10, ¶ 6) are ambiguous. Whatever was on display in the logging truck had been placed there by the manufacturer of the source, and Mr. Reich, quite logically in my view, believed that the manufacturer had affixed the appropriate warning.

It is significant that Violation No. 6a charges Licensee with a failure to have a Radioactive White-I, a Radioactive Yellow-II, *or* a Radioactive Yellow-III label. Therefore I cannot accept Mr. Hooker’s testimony that the label was required to be Radioactive White-I. The preponderance of the evidence — Mr. Reich’s testimony — was that there was a Radioactive Yellow-II label, and Mr. Hooker could not dispute Mr. Reich’s account. Therefore I find that the NRC Staff has failed in its burden of proof on Violation No. 6a. By no account was there a legend “USA DOT 7A Type A” on the transport container. Therefore I find that the Staff has prevailed on Violation 6b.

However, the NRC Staff placed “very little significance” on the failure to have the appropriate Department of Transportation labels on the sources in assessing the civil penalty. Tr. 145 (Flack). It does not seem to be a serious matter in that the radioactive nature of the package was clearly marked. It was an unintentional violation and I do not consider it to be material to the aggregated charge of willful and careless disregard of regulatory requirements. Of greater concern to me is the fact that, even as late as the hearing, Mr. Reich did not have a clear understanding as to the Department of Transportation and NRC requirements for posting transport and storage labels on his materials. Tr. 238-47.

IV. WHETHER THE VIOLATIONS SHOULD BE CLASSIFIED AS A SEVERITY LEVEL II PROBLEM

A. Enforcement Policy

Section 234 of the Act provides for civil penalties of up to \$100,000 for each day of a continuing violation. If it were left solely to my own sense of justice in this case, I would, without further analysis, have no

difficulty in arriving at the conclusion that the pattern of violations by Licensee calls for a civil penalty of at least \$1600. However, the Commission's General Statement of Policy and Procedures for NRC Enforcement Actions (10 C.F.R. Part 2, Appendix C) imposes the Policy upon the Staff and presiding officers. Moreover, in that my authority is limited to imposing, mitigating, or remitting the civil penalty previously imposed by the Director, Office of Inspection and Enforcement (10 C.F.R. § 2.205(f)), I am bound to either affirm, in whole or in part, or to reject the rationale employed by the Director in arriving at the amount of the civil penalty. As a matter of fair notice to this and to other licensees, the Enforcement Policy must be applied.

The Enforcement Policy categorizes violations in terms of five levels of severity that are representative of their relative importance and safety significance within each of eight activity areas. One of the activity areas, Fuel Cycles and Material Operations (Supplement VI), covers the violations I have found above. Another area, Transportation (Supplement V), would be relevant except that I have determined that the transportation violation should not be counted in considering an increased severity level.

As noted, within each activity area, there are five severity levels:

Severity Level I and II violations are of very significant regulatory concern. In general, violations that are included in these severity categories involve actual or high potential impact on the public. Severity Level III violations are cause for significant concern. Severity Level IV violations are less serious but are of more than minor concern; *i.e.*, if left uncorrected, they could lead to a more serious concern. Severity Level V violations are of minor safety or environmental concern.

10 C.F.R. Part 2, Appendix C, § III.

The Staff aggregated the violations into a single Severity Level II problem to focus on the underlying common cause of the violations. The severity level was selected by the Staff in view of the particular significance of two of the violations and, in the Staff's view, Licensee's careless disregard for regulatory requirements. Flack, ff. Tr. 144, at 10-11; Tr. 146-47 (Flack); Staff Exh. 3, Attach. 9. As noted, a Severity Level II matter is of very significant regulatory concern. In the absence of mitigating circumstances, Severity Level II matters result in the imposition of a civil penalty. 10 C.F.R. Part 2, Appendix C, §§ III and V.B.

B. Whether the Violations Should Be Considered as a Single Problem

The Enforcement Policy provides that:

In some cases, violations may be evaluated in the aggregate and a single severity level assigned for a group of violations.

10 C.F.R. Part 2, Appendix C, § III. According to the Staff, the violations are attributable to a common cause — the Licensee's failure to exert sufficient control over licensed activities to ensure compliance with regulatory requirements. Staff Exh. 3, Attach. 9, at 1; Flack, ff. Tr. 144, at 10; Staff Proposed Finding 54. I agree with the Staff that Violation Nos. 1 through 5 (but not No. 6) have a common cause and accept the Director's somewhat euphemistic description of that cause.

The Policy Statement on aggregating violations into a single severity level is silent as to the effect aggregation should have. Aggregation does not necessarily increase the overall seriousness of a charge. In most instances that I have noticed over the years, aggregation simply better defines a problem and any needed correction. It usually has the effect of actually reducing the quantitative seriousness of an unacceptable activity. For example, many violations at a Severity Level IV flowing from a single mistake in an administrative manual might be aggregated into a single violation at the same severity level.

In this case, however, aggregation creates a new violation of a somewhat different nature. The five violations are cumulative. Moreover, together they demonstrate the absence of mistake and better demonstrate a continuing and pervasive pattern of disregard for law and regulations governing many aspects of Reich Geo-Physical's NRC materials license.

C. Whether the Violations Are of Very Significant Regulatory Concern

I must now determine which of four severity levels described in the Enforcement Policy is appropriate for application in this case.¹⁰ The Staff urges me to consider both the safety significance of the individual violations and the Licensee's attitude towards compliance.

¹⁰ Contrary to the Staff Proposed Finding 55, I may not consider assigning a Severity Level I to the problem area because that would exceed the position taken by the Director in imposing the penalty and the position taken by Mr. Flack at the hearing.

Safety Significance

I have already discussed Mr. Flack's testimony about the long-term health effects of internally absorbed americium in the context of Licensee's failure to have its americium source leak-tested on schedule. § III.D, *supra*. The potential risk to Licensee's employees and to the public in this case is not an abstraction. The americium violations are not simply parallel incidents; they are compounded, each upon the other. I have found under Violation No. 1 that the americium was possessed and used without even a hint of any license. It was, in effect, a bootleg operation during the relevant years in the non-Agreement States. The NRC Staff was denied any opportunity to inspect Licensee's use of americium in the non-Agreement States — a matter in itself of important regulatory concern even if the use and possession of americium had otherwise been proper.

But the unlawful use and possession was compounded by the fact that Reich Geo-Physical denied its employees and the public the benefit of the redundant safety requirements of the license. The meters were not calibrated on schedule (Violation No. 3), the sources were not leak-tested on schedule (Violation No. 5), and finally, the untested, unmeasured sources were, perhaps, turned over to unauthorized users (Violation No. 2).¹¹

As to the cesium-137 violation (No. 4), I found that changing the storage to the bunker at the airport did not present a safety event because the storage place was satisfactory. The change in storage location without a license amendment is a matter of regulatory concern, however, because the NRC could not be assured that the new storage site was adequate.

Mr. Reich urges that the absence of any radiological incident attendant to the use and possession of these sources be considered in assessing the safety significance of the americium violations. The general description of Severity Levels I and II refers to the high *potential* impact on the public. 10 C.F.R. Part 2, Appendix C, § III. I have also examined each of the eight activity areas (Supplements I through VIII) for examples of Severity Level II violations, particularly the activity area covering material operations (Supplement VI). In each activity area the *potential* for a safety event is listed as an example as well as an *actual* safety event. In

¹¹ Since the testimony does not reveal exactly when Mr. Reich was present during the use by unauthorized users, the record does not establish with certainty that an unauthorized user, not in the presence of Mr. Reich, used a source not leak-tested on schedule at the same time he used a survey meter not calibrated on schedule. On the other hand, there is no evidence of any controls that would have prevented the coincidence of all of these circumstances.

fact, in most of the activities areas, a *potential* safety event is included in the Security Level I examples. Therefore the fact that there were no safety-significant events as a consequence of Reich Geo-Physical's violations does not control the assignment of the severity level. I have, however, considered the Reich Geo-Physical safety record below when I consider mitigation.

Licensee's Attitude

A second factor used by the Director in assessing a Severity Level II problem in this case was the perception of the Licensee's attitude about compliance with regulatory requirements. Staff Exh. 3, Attach. 9, at 1-2; Flack, ff. Tr. 144, at 10-11. The Enforcement Policy allows for an increase on that basis:

The severity level of a violation may be increased if the circumstances surrounding the matter involve careless disregard of requirements, deception or other indications of willfulness. The term "willfulness" as used here embraces a spectrum of violations ranging from deliberate intent to violate or falsify to and including careless disregard for requirements. Willfulness does not include acts which do not rise to the level of careless disregard, e.g., inadvertent clerical errors in a document submitted to the NRC. In determining the specific severity level of a violation involving willfulness, consideration will be given to such factors as the position of the person involved in the violation (e.g., first-line supervisor or senior manager), the significance of any underlying violation, the intent of the violator (i.e., negligence not amounting to careless disregard, careless disregard, or deliberateness), and the economic advantage, if any, gained as a result of the violation. The relative weight given to each of these factors in arriving at the appropriate severity level will be dependent on the circumstances of the violation.

10 C.F.R. Part 2, Appendix C, § III.

I have found that Licensee's possession and use of the americium-241 sources from June 20 to December 20, 1981, in Wyoming and Montana under the authority of the NRC-241 notification did not indicate a willful or careless disregard for the regulations — or even an intentional violation. Licensee was exonerated of the Violation No. 6a charge in that the evidence established that, contrary to the charge, his sources had a "Radioactive Yellow-II" label. Reich Geo-Physical's failure to have a "USA DOT 7A Type A" label as found under Violation No. 6b was not intentional. Every other violation set out in the Notice of Violation has been intentional. However, changing the storage location of the cesium-137 source without a license amendment, although intentional, did not rise to the level of a willful and careless disregard for the regulations.

Violation No. 1 and Violation No. 2, each standing alone, constitute a willful and careless disregard of the Commission's regulations. The combined circumstance of Violation No. 3 (survey meter calibration) and Violation No. 5 (source leak-testing) are each intentional violations and, in combination, they constitute a willful and careless disregard for the Commission's regulations. Necessarily, then, the aggregated violations constitute a single problem of willful and careless disregard of the regulations.

Moreover, the willful and careless disregard of the regulations has been by Mr. Reich, the President, owner, principal employee, and Radiation Protection Officer of the licensed firm. His purpose in violating the regulations could have been for no other reason than economic advantage — either in the form of saving money, or the equivalent, saving time and effort. The circumstances of this case fit every aspect of the Policy criteria for willful and careless disregard and for increasing the severity level of violations on that account.

Accordingly, I conclude that the violations as discussed in the decision involve matters of safety significance, meet the Enforcement Policy criteria for willful and careless disregard of the regulations, and, for those reasons, the aggregated single problem constitutes a very significant regulatory concern. I assign a Severity Level II to the aggregated violation.

V. WHETHER A CIVIL PENALTY OF \$1600.00 IS APPROPRIATE

A. Amount of Penalty

Under the Enforcement Policy, civil penalties are generally imposed, absent mitigating circumstances, for Severity Level II violations. 10 C.F.R. Part 2, Appendix C, §§ III and V.B. Moreover, civil penalties will normally be assessed for any willful violation of any Commission requirement regardless of severity level. Even for Severity Level IV violations, civil penalties may be imposed for violations that are similar to previous violations for which effective correction was not taken. *Id.* § V.B.

Tables 1A and 1B of the Enforcement Policy provide guidance in determining the appropriate amount of a civil penalty. These tables identify the base civil penalty values for different severity levels, activity areas and classes of licenses. Reich Geo-Physical, Inc., falls in the category of "other material licensees" under Table 1A. Since there is a Type A quantity or less involved in this case, the base penalty would be

\$1000 under Table 1A. Because the violations are at a Severity Level II, the penalty would be 80% of the base, or \$800.00, in accordance with Table 1B. *Id.*

The Director of the Office of Inspection and Enforcement escalated the base civil penalty against Reich Geo-Physical by 100%, resulting in a penalty of \$1600.00, in view of the Licensee's poor enforcement history and length of time over which the violations occurred. Staff Exh. 3, Attachs. 9 and 11; Flack, ff. Tr. 144, at 12.

The Enforcement Policy provides that a base penalty can be decreased or increased by as much as 100% for prior good or poor performance in the general area of concern. 10 C.F.R. Part 2, Appendix C, § V.B.3. Where there has been a prior notice of a similar event such as here where the Licensee had prior knowledge of a problem as a result of the 1981 inspection, the penalty may be increased by adding as much as 50% of the base. *Id.* § V.B.4. But the Staff has elected not to apply the "prior notice" escalating factor and I am bound to do no more than the Staff. The Staff may also increase the penalty by adding as much as 50% of the base for multiple occurrences. The Staff may also consider the duration of the violation. A greater civil penalty may be imposed if a violation continues for more than 1 day. *Id.* § V.B.5. In an example pertinent to this case, the Enforcement Policy provides:

If a licensee is aware of the existence of a condition which results in an ongoing violation and fails to initiate corrective action, each day the condition existed may be considered as a separate violation and, as such, subject to a separate additional civil penalty.

Id. § V.B.5(1).

With respect to past performance, inasmuch as the Licensee continued to use unauthorized americium sources and failed to calibrate its survey meters following the 1981 NRC inspection, it is obvious that the previous corrective action was not implemented.

As to duration, the continued possession and use of unauthorized americium sources could constitute a continuing violation such that a daily assessment of civil penalties could have been made. The Licensee was certainly made aware in 1981 that failure to obtain NRC authorization for the americium sources would violate NRC requirements, yet it failed to initiate corrective action. The Licensee used radioactive material on numerous occasions without NRC approval. On several occasions, the Licensee also failed to calibrate its survey meters and failed to leak-

test its americium sources.¹² The Staff, in its discretion, increased the base penalty, rather than imposing separate penalties for each day.

In sum, the Enforcement Policy would have permitted the Staff to increase the amount of the penalty under several theories. It could have considered a violation of long duration as separate daily violations. It could have considered each of the types of violation as separate violations. While this approach would have resulted in lower base penalties, the total amount would have been higher. Flack, ff. Tr. 144, at 19, 20. The Staff declined to apply the full 100% and 50% additive formula for prior bad performance *and* multiple occurrences. The Staff was well within its discretion when it settled on a modest 100% increase over the base penalty.

B. Mitigation

The Enforcement Policy permits mitigation of a civil penalty under several circumstances. 10 C.F.R. Part 2; Appendix C, § B. The theme of the Policy mitigation criteria is that consideration may be given to the need, or lack thereof, of a penalty to accomplish the Policy objectives. *Id.* For example, prompt identification and reporting to NRC by a licensee of a violation, the promptness and extent of any corrective actions, and past good performance may be considered in mitigating the amount of a penalty. I am not limited to the examples of mitigating circumstances set out in the Policy. I may consider any factor indicating that the penalty is not a needed enforcement method.

Mr. Reich alludes to corrective action by Reich Geo-Physical taken since the NRC inspection in June 1984. *See* Reich Exh. 1. The Staff responds to this argument with the observation that under the Enforcement Policy corrective action is *always* required. Staff Proposed Finding 85. Reich Geo-Physical's corrective actions have not been timely and do not convince me that a civil penalty is not an appropriate method of assuring continued compliance. In effect, the Policy looks with careful scrutiny at corrective actions taken while the arm of the law lies firmly on the violator's shoulder.

By taking corrective action, albeit untimely, Reich Geo-Physical has done nothing more than avoid a possible revocation of its license. The Staff concluded that revocation might have been appropriate. That option was considered. Flack, ff. Tr. 144, at 20.

¹² The Staff could have argued, but did not, that each day of using the survey meters beyond the required calibration date and each day of using the americium sources beyond the required date for leak-testing were separate violations.

Mr. Reich also argues that there has been no safety event, and that, in view of the nature of the sealed sources, none was likely. The Staff has accepted Mr. Reich's representation that there has been no safety event. To Mr. Reich's credit, his utilization logs apparently have been complete and accurate, even when they record information adverse to him. However, the same evidence, particularly evidence of the failure to calibrate meters on time, to leak-test the sources on time, and the employment of unauthorized users, casts some doubt on whether or not there has been a safety event. But I accept the Staff position that there has been none. What has not been established is whether the absence of any safety event is a product of careful management, or whether it is a matter of luck. There is evidence both ways and I will count it as a neutral factor, i.e., no mitigation.

As to the supposedly inherent safety of the sealed sources, that fact has already been reflected in the relatively low amount of the base civil penalty in the Policy.

I have considered, but rejected, Mr. Reich's argument that adverse publicity following the Notice of Violation is in itself a sufficient deterrent and penalty. First, his claim that he lost revenue and must reestablish himself in business was not explored at the hearing. Mr. Reich waived any defense concerning the economic impact on his business brought about by the imposition of a civil penalty. It is possible that adverse publicity, which incidentally was not established on the record, would deter Reich Geo-Physical and others from violating the Commission's regulatory requirements. However, adverse publicity is not a reliable or necessarily effective means of assuring continued compliance with the regulations. I afford no mitigating weight to any adverse publicity Reich Geo-Physical may have received about this affair.

After considering the entire record, I find no basis upon which the civil penalty, properly imposed by the Director of Inspection and Enforcement, may be mitigated or remitted. Considering the pattern of willful violations and the repetition of them, a civil penalty is an appropriate method to reinforce the principle that the licensee may not decide on its own with which of the Commission regulations it will comply.

VI. ORDER

IT IS HEREBY ORDERED that the Licensee pay a civil penalty in the amount of One Thousand Six Hundred dollars within 30 days of the date of this Order, by check, draft, or money order, payable to the

Treasurer of the United States and mailed to the Director of the Office of Inspection and Enforcement.¹³

Pursuant to 10 C.F.R. § 2.760, this Initial Decision shall constitute the final decision of the Commission 30 days from the date of issuance unless an appeal is taken in accordance with 10 C.F.R. § 2.762. *See also* §§ 2.785 and 2.786. Either party may take an appeal from this Decision by filing a Notice of Appeal within 10 days after service of this Initial Decision. The Licensee must file a brief supporting its position on appeal within 30 days after filing its Notice of Appeal. If the NRC Staff appeals, it must file its supporting brief within 40 days of the filing of its Notice of Appeal. Further briefing schedules shall be in accordance with Atomic Safety and Licensing Appeal Board direction.

Ivan W. Smith
ADMINISTRATIVE LAW JUDGE

Bethesda, Maryland
December 11, 1985*

¹³ I will lose jurisdiction over this proceeding upon the filing of a Notice of Appeal and, at the same time, I will lose authority to change the due date for payment of the civil penalty. As a matter of information, however, I advise Licensee that, upon the filing of a timely Notice of Appeal, the due date for the payment of the civil penalty will be suspended until further order of the Atomic Safety and Licensing Appeal Board or the Commission.

*An unofficial advance copy of this Decision was sent to the parties on December 4, 1985.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ADMINISTRATIVE LAW JUDGE

Ivan W. Smith

In the Matter of

Docket No. 30-14821
(ASLBP No. 85-508-01-OT)
(License No. 25-18304-01
EA-84-78)

REICH GEO-PHYSICAL, INC.
1019 Arlington Drive
Billings, Montana

December 20, 1985

In this Supplement to Initial Decision, the Administrative Law Judge authorizes payment of a civil penalty in installments pursuant to arrangements reached between the Licensee and the Director, Office of Inspection and Enforcement.

SUPPLEMENT TO INITIAL DECISION

On December 17, 1985, Mr. Keith A. Reich, President of Licensee corporation, orally requested reconsideration of the Initial Decision of December 11, 1985. In a telephone conference with Mr. Reich and Counsel for the Director, Office of Inspection and Enforcement, Mr. Reich explained that he had read the Initial Decision and that he accepts the result. He does not intend to appeal. He stated, however, that, unless he has relief in the terms of paying the civil penalty, the ability of his business to survive will be weakened. He pointed out that his well-logging business usually stops in December and begins again in May of each year and that his income is reduced accordingly. This cycle is corroborated by the utilization records in evidence. Staff Exhs. 1 and 2.

Also, according to Mr. Reich, the market for his services has been soft. In sum, Mr. Reich sought leave to pay the civil penalty in installments.

Upon inquiry, Mr. Reich acknowledged that he recognizes that, simply by filing an appeal from the Initial Decision, at virtually no cost to him, he could defer payment of the penalty and, perhaps, find relief in that fashion. But, as he explained, to file an appeal, when, in fact, he accepts the decision, would not be forthright. He prefers to seek relief in an ethical manner.

Counsel for the Director conferred with her clients and with Mr. Reich. She reported the following agreement:

Mr. Reich will sign a promissory note in accordance with Department of Justice and General Accounting Office regulations covering the standards for Federal claims collection. 4 C.F.R. § 101.1, *et seq.* In particular, interest will accrue beginning the date of the Initial Decision, December 11, 1985, at the U.S. Treasury tax and loan account rate. The first installment will be due on May 11, 1986, and subsequent installments will be due the 11th of each month thereafter, for 8 months, until paid.

ORDER

The arrangement is fair to the government, accomplishes the purpose of the civil penalty, and is consistent with the Commission's Enforcement Policy.¹ Therefore, the Order of December 11, 1985, is modified to approve the installment-payment agreement between Licensee and the Director, Office of Inspection and Enforcement. It is so Ordered.

Ivan W. Smith
ADMINISTRATIVE LAW JUDGE

Bethesda, Maryland
December 20, 1985

¹ 10 C.F.R. Part 2, Appendix C. The ability of a licensee to pay a penalty is an appropriate consideration. Putting a licensee out of business should be the result of orders directed toward that end rather than a civil penalty. *Id.* § V.B. Although the Licensee elected not to defend the enforcement action on the basis of its ability to pay, it seems clear that this small business needs the relief sought. Collection by installments based on the debtor's ability to pay is also consistent with Federal collection standards. 4 C.F.R. § 102.11.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

OFFICE OF NUCLEAR REACTOR REGULATION

Harold R. Denton, Director

In the Matter of

Docket Nos. 50-289

50-206

50-305

50-213

(10 C.F.R. § 2.206)

GENERAL PUBLIC UTILITIES
NUCLEAR CORPORATION
(Three Mile Island Nuclear
Station, Unit 1)

SOUTHERN CALIFORNIA EDISON
COMPANY
(San Onofre Nuclear Generating
Station, Unit 1)

WISCONSIN PUBLIC SERVICE
CORPORATION
(Kewaunee Nuclear Power Plant)

CONNECTICUT YANKEE ATOMIC
POWER COMPANY
(Haddam Neck Plant)

December 23, 1985

The Director of the Office of Nuclear Reactor Regulation declines to take action based upon alleged equipment qualification deficiencies at specific plants identified in the "Union of Concerned Scientists' Comments on Proposed Rule" submitted on May 23, 1984. The Director

concluded that the overall state of equipment qualification of the facilities is adequate to assure protection of the public health and safety.

DIRECTOR'S DECISION UNDER 10 C.F.R. § 2.206

INTRODUCTION

On November 19, 1984, the Nuclear Regulatory Commission (NRC) promulgated its final rule on environmental qualification of electric equipment (49 Fed. Reg. 45,571). The rule requires licensees of operating power plants to meet the schedule for environmental qualification set out in the rule, specifically, 10 C.F.R. § 50.49(g). In adopting the final rule, the Commission directed the Director of the Office of Nuclear Reactor Regulation to consider pursuant to 10 C.F.R. § 2.206 four comments filed in response to the Notice of Proposed Rulemaking issued on March 7, 1984 (49 Fed. Reg. 8445). Each of the four comments alleged equipment qualification deficiencies at specific plants. The Commission's action had the effect of requiring the Director of the Office of Nuclear Reactor Regulation to issue a formal decision pursuant to § 2.206 considering the plant-specific comments filed in the rulemaking proceeding noted above. The comments filed by the Union of Concerned Scientists (hereinafter referred to as Petitioner) dated May 23, 1984, were among those identified by the Commission for consideration. Those comments alleged equipment qualification deficiencies at four plants: Three Mile Island Nuclear Station, Unit 1; Kewaunee Nuclear Power Plant; San Onofre Nuclear Generating Station, Unit 1; and the Haddam Neck Plant (hereinafter referred to as the facilities). On January 4, 1985, I advised the Petitioner by letter that I would issue a formal decision regarding the Petitioner's comments concerning these facilities in the reasonably near future. My decision in this matter has been formulated after extensive Staff review and is as follows.

DISCUSSION

Petitioner's comments relate to alleged inadequacies in a number of equipment qualification items including certain items identified by the Franklin Research Center (FRC) and set out in its Technical Evaluation

Reports (TERs) for the facilities.¹ It is important to recognize that the FRC studies to which the Petitioner refers were initiated by the Nuclear Regulatory Commission itself to assist in assessing the adequacy of the Licensees' electrical equipment qualification programs at the facilities. The TERs provided by FRC have been available to the NRC Staff since the fourth quarter of 1982 and have been specifically addressed by both the Licensees and the NRC Staff.²

On February 8, 1979, the NRC Office of Inspection and Enforcement issued IE Bulletin 79-01, "Environmental Qualification of Class IE Equipment." The Bulletin, together with IE Circular 78-08 (issued on May 31, 1978), requested affected licensees to perform reviews to assess the adequacy of their environmental qualification programs. The NRC Staff's review in this area for TMI Unit 1, Kewaunee, and San Onofre Unit 1 was discussed in the final Safety Evaluation for each plant (Attachments 1 through 3). The final program review for Haddam Neck has not been completed.

Following submittal by the Licensees of additional information from September 1981 to June 1982, the NRC Staff asked FRC to evaluate that information in order to (1) identify all cases where the Licensees' response did not resolve the significant qualification issues, (2) evaluate the Licensees' qualification documentation in accordance with established criteria to determine which equipment had adequate documentation and which did not, and (3) evaluate the Licensees' qualification documentation for safety-related electrical equipment located in harsh environments consistent with TMI "Lessons Learned" implementation. TERs dated June 7, 1982, for Haddam Neck, June 28, 1982, for San Onofre Unit 1, November 5, 1982, for TMI-1, and January 14, 1983, for Kewaunee, were prepared by FRC to document its evaluation. It is these documents to which the Petitioner makes reference. A Safety Evaluation (SE) was subsequently prepared by the NRC Staff and issued to each of the Licensees between November 1982 and January 1983 with

¹ The licensees of the facilities are GPU Nuclear Corporation for Three Mile Island Unit 1, Wisconsin Public Service Corporation for Kewaunee, Southern California Edison Company for San Onofre Unit 1 and Connecticut Yankee Atomic Power Company for Haddam Neck (hereinafter referred to as Licensees).

² The background associated with the NRC Staff's review of three of the Licensees' equipment qualification programs is provided in Attachments 1 through 3 (not published): Safety Evaluation, Office of Nuclear Reactor Regulation, Equipment Qualification Branch, Three Mile Island Nuclear Station, Unit 1, Docket No. 50-289 (hereinafter referred to as the Three Mile Island SE); Safety Evaluation, Office of Nuclear Reactor Regulation, Equipment Qualification Branch, Kewaunee Nuclear Power Plant, Docket No. 50-305 (hereinafter referred to as the Kewaunee SE); Safety Evaluation, Office of Nuclear Reactor Regulation, Equipment Qualification Branch, San Onofre Nuclear Generating Station, Unit 1, Docket No. 50-206 (hereinafter referred to as the San Onofre SE). A final SE for Haddam Neck is not yet available.

the FRC TER as an attachment.³ These TERs identified a number of electrical equipment environmental qualification deficiencies and the SE concurred with the bases and findings of the TER. Based on these findings, the Staff requested the Licensees to provide their plans for qualification or replacement of certain items and justifications for continued operation in the near term.

The Staff reviewed the FRC TERs and the Licensees' justifications for continued operation and concluded that continued operation until completion of the Licensees' environmental qualification program would not present undue risk to the public health and safety. Furthermore, the Staff continued to review the Licensees' environmental qualification programs. If any additional qualification deficiencies were identified during the course of that review, the Licensees would be required to reverify the justification for continued operation.

Meetings were held with the Licensees from December 1983 to April 1984 in order to discuss the Licensees' proposed method of resolving the environmental qualification deficiencies identified in the SEs and FRC TERs. During these meetings with the Licensees, proposed resolutions for each of the deficiencies were discussed and the NRC Staff found the Licensees' approach for resolving them acceptable. The approaches described by the Licensees for addressing and resolving the identified deficiencies included replacing equipment, performing additional analyses, utilizing additional qualification documentation beyond that reviewed by FRC, obtaining additional qualification documentation, or determining that some equipment was outside the scope of 10 C.F.R. § 50.49 and therefore not required to be environmentally qualified. The discussions also included the Licensees' general methodology for compliance with § 50.49 and justification for continued operation with those equipment items for which environmental qualification was not yet complete.

Subsequent to the 1983 and 1984 meetings, the Licensees provided further information for resolution of the identified deficiencies. With the exception of Haddam Neck, the NRC Staff completed its evaluation of the acceptability of the Licensees' electrical equipment environmental qualification program, including the type of documentation the Licensees indicated they had retained. The Staff's findings for TMI Unit 1, Kewaunee, and San Onofre Unit 1 are provided in Attachments 1 through 3, respectively.

³ Three Mile Island Unit 1 SE dated December 10, 1982; Kewaunee SE dated February 21, 1983; San Onofre Unit 1 SE dated November 30, 1982; Haddam Neck SE dated December 6, 1982.

The final Safety Evaluation for Haddam Neck is presently in preparation and will be issued in the near future. An interim SE for Haddam Neck was issued on December 6, 1982. Subsequently, a scheduler extension for equipment qualification was issued on March 28, 1985. By letter dated September 30, 1985, the Licensee requested an extension until January 4, 1986, to complete the remaining plant modifications. By letter dated November 14, 1985, the Commission granted the requested extension. The final SE has been delayed because of an issue concerning approximately 20 equipment items with about 120 discrete components located outside containment that have not been included in the environmental qualification program for Haddam Neck. The Staff is evaluating the Licensee's position on this issue, and will verify that the Licensee's program is adequate to ensure the continued protection of the health and safety of the public. The final SE will include the resolution of this issue along with the conclusion of the Staff with regard to the Licensee's equipment qualification program.

The Staff has initiated a 2-year implementation inspection program to monitor the status of equipment qualification programs at operating reactors. The inspections are designed to verify that licensees' files contain appropriate analyses and other necessary documentation to support the licensees' conclusions that their equipment is properly qualified. Additionally, the inspections will verify that the programs for surveillance and maintenance of environmentally qualified equipment conform to the licensees' prior assertions and are adequate to assure that the equipment is maintained in the as-analyzed or as-tested condition. The methods used for tracking periodic replacement of equipment will also be verified. As with any program of such complex and extensive proportions, discrepancies are expected to be identified. NRC regional personnel who are conducting the inspections will follow up to ensure that appropriate corrective action is taken where deficiencies are identified.

TMI Unit 1 and San Onofre Unit 1 are among those plants that have undergone inspections. The Staff is satisfied that discrepancies identified during these inspections have been adequately addressed by the Licensees, and the overall implementation of the equipment qualification program has been found acceptable for these facilities. The inspection program will continue until the implementation of environmental qualification programs at all operating reactors has been found acceptable.

Petitioner's comments raised several specific concerns with respect to the state of equipment qualification at the facilities. These specific comments are addressed below.

A. Three Mile Island Unit 1

1. Limitorque Valve Operators

With regard to the Limitorque valve operators, the Staff's initial evaluation of the qualification status of this and all other equipment was based primarily on summary-type information supplied by the Licensee in response to IE Bulletin 79-01. More detailed qualification information was subsequently reviewed for the Staff by FRC. FRC prepared a TER that identified equipment qualification deficiencies for this equipment, based on the information submitted to them for review. The Staff met with the Licensee on October 5, 1983, and again on March 8, 1984, to discuss the Licensee's proposed resolutions of the TER-identified deficiencies.

Subsequent to the meetings cited above, the Staff performed several audits of the Licensee's TMI Unit 1 equipment qualification files, including audits on August 6, 1984, and January 29 and 30, 1985. The sample of equipment audited included Limitorque valve operators. Based on the audit results, the Staff concluded that the Licensee had the documentation necessary to demonstrate that TMI Unit 1 Limitorque valve operators, modified to correct qualification deficiencies discovered for some of the operators during field walkdowns (hardware visual inspections), are environmentally qualified. Further, the Staff then reviewed some of the operators to assure that the Licensee had corrected the deficiencies discovered during the field walkdowns.

Based on the review of TMI Unit 1 Limitorque Valve operators described above, the Staff is satisfied that there is adequate assurance regarding environmental qualification, and thus there is no need to address each individual point raised by the Petitioner regarding these items of equipment.

In summary, the Staff did not rely solely on the Licensee's assertions in meetings, or on the information submitted by the Licensee in its February 10, 1984 letter, where the reference to Limitorque generic report B-0058 was contained. Rather, the Staff independently verified that the Licensee has documented evidence that Limitorque valve operators are environmentally qualified.

2. Emergency Feedwater System

The Petitioner raises several questions about the qualification of the emergency feedwater system (EFW) at TMI Unit 1. The Petitioner's questions concerning EFW are fully addressed in a September 25, 1984

Director's Decision Under 10 C.F.R. § 2.206 responding to an earlier petition filed by the Union of Concerned Scientists alleging deficiencies in the TMI Unit 1 EFW system.⁴

The SE accompanying the September 25, 1984 Director's Decision provides the history of the review and detailed audits conducted concerning the TMI Unit 1 EFW. In particular, page 37 of the SE states:

Based on the results of our audits, the staff finds that all electrical equipment requiring qualification, both EFW system equipment and equipment associated with the proper functioning of the EFW system, has been demonstrated to be environmentally qualified in accordance with the requirements of 10 C.F.R. 50.49.

3. Justification for Continued Operation (JCO)

The Petitioner challenges the justification for continued operation, or lack thereof, for potential deficiencies regarding TMI Unit 1 equipment qualification. This issue is now moot. In the case of TMI Unit 1, the plant remained in a shutdown condition for the entire time of the Staff's environmental qualification equipment review. The Licensee has now completed its program implementation thereby obviating the need for JCOs. The Licensee has documented qualification or replacement of equipment where environmental qualification was in question by letters dated June 28 and August 30, 1985.

B. San Onofre Unit 1

The Petitioner raised two concerns regarding the justifications for continued operation (JCOs) at the San Onofre Unit 1 facility and an additional concern regarding the Licensee's schedule to correct qualification deficiencies.

1. The Petitioner alleged that the Licensee, by letter dated January 18, 1984, refused to submit JCOs to the NRC for 52 component types consisting of 100 separate pieces of equipment. The Staff's review of the docket found no such letter dated January 18, 1984. However, the Staff did find a letter dated January 18, 1983, in which the Licensee did not refuse to submit JCOs but stated that, except for two items, all previously provided JCOs were still applicable. For the two remaining items, the Licensee provided JCOs in the January 18, 1983, submittal. After several meetings and further discussions with the NRC Staff, the Licensee provided new JCOs for all nonqualified equipment items in a submittal

⁴ GPU Nuclear Corp. (Three Mile Island Nuclear Station, Unit 1, DD-84-22, 20 NRC 1033 (1984).

dated November 3, 1984. The Staff notes that San Onofre Unit 1 was shut down for a seismic upgrading on February 27, 1982, and did not resume power operation until November 27, 1984. Thus, the facility did not operate until the new JCOs had been provided to the NRC. These JCOs were reviewed by the Staff and found acceptable for the reasons stated in the Staff's March 11, 1985 SE (Attachment 2).

2. The Petitioner also alleged that the Licensee's JCOs were inadequate for the following items which were found to have qualification deficiencies in the FRC TER:

TER Item No.	Equipment Description
53, 54, 55, 56, 59	electrical cable
1, 3, 4, 6, 7, 8	15 Limitorque valve actuators
10, 11, 13, 14, 15, 16, 17	19 solenoid valves
18, 20, 21, 22, 23	12 flow transmitters
28, 29	6 level transmitters
31, 32, 33, 34	13 pressure transmitters
43, 44, 45	unspecified no. of electrical penetrations
47	2 long-term recirculation pumps
49	2 safety injection pumps, and
50	1 motor-driven auxiliary feedwater pump

Subsequent to the Petitioner's comments, the Staff confirmed that its March 11, 1985 SE (Attachment 2), did evaluate new JCOs provided by the Licensee's November 3, 1984 submittal for all of the above items cited by the Petitioner. These JCOs were found acceptable by the Staff for the reasons stated in the March 11, 1985 SE.

3. The Petitioner also alleged that the Licensee "has no immediate plans to correct the qualification deficiencies found by FRC and NRC." This statement was based on the Licensee's February 27, 1984 letter which requested that modifications required for environmental qualification of electrical equipment be removed from the Integrated Living Schedule of Backfits for San Onofre Unit 1 until a request for schedular exemption had been submitted to and approved by the NRC.

The NRC Staff notes that, in accordance with 10 C.F.R. § 50.49(g), the Licensee did submit requests for extension of equipment qualification deadlines on July 30 and December 21, 1984, and March 15, 1985,

for a total of seventy-nine different pieces of equipment. The NRC Staff reviewed these requests and determined that there was good cause for the extensions based upon procurement lead time, test complications, and installation problems. Thus, the extension requests were found to be consistent with existing regulations in § 50.49(g) and were approved by the NRC in letters dated November 26, 1984, and February 15 and March 27, 1985. The extensions require the Licensee to have the electrical equipment qualified by November 30, 1985.

C. Kewaunee Nuclear Power Plant

1. *Qualification Documentation*

The Petitioner comments that the Licensee's submittal of March 16, 1984, demonstrates poor qualification documentation. This submittal was forwarded by the Licensee to document proposed methods of resolution for environmental qualification deficiencies discussed at a meeting with the Licensee held on January 20, 1984. During this meeting, the Staff discussed deficiencies in the Licensee's program. Among the deficiencies identified was documentation. All open items identified in the SE dated February 2, 1983, were also discussed and the resolution of these items has been found acceptable. The Licensee utilized additional qualification documentation beyond that reviewed by FRC. The content of the additional documentation was discussed at the meeting. The Staff concluded in its September 11, 1984 SE that the Licensee's equipment qualification program is now considered acceptable.

2. *Justification for Continued Operation*

The Petitioner alleges that the Licensee refused to submit JCOs for twenty-five Limitorque valve operators. The Petitioner cited the Licensee's April 22, 1983 letter as the document containing the alleged "refusal." However, that letter stated, "Limitorque operators identified in our submittals are qualified equipment (NRC Category 1.A) and no justification for continued operation is required." The Licensee stated it had documentation in its equipment qualification files to support this statement. Therefore, the Staff found that JCOs were not needed and hence there was no "refusal."

D. Haddam Neck

Justifications for Continued Operation

1. The Petitioner comments that the JCO for the resistance temperature elements does not satisfy the Commission's criteria and attempts to excuse the lack of documented environmental qualification for the temperature elements.

The Staff met with the Licensee on April 10, 1984, to discuss the resolution of the TER deficiencies. During that meeting, the Licensee informed the Staff that the temperature elements, cited by the Petitioner as having a deficient JCO, will be replaced with qualified elements by March 31, 1985, in accordance with an extension granted by the NRC Staff. By letter dated February 28, 1985, the Licensee requested an extension until November 30, 1985, to complete the replacement of the temperature elements. This extension was granted by the Staff on March 28, 1985. The Staff has reviewed and accepted the JCO for these elements submitted by the Licensee in letters dated October 19 and November 30, 1984, and October 25, 1985.

The basis for the Staff's acceptance of the JCO for these elements included the fact that backup instrumentation, specifically, in-core exit thermocouples and the subcooled margin monitor, was available. The Licensee has stated that the in-core exit thermocouples consist of inorganic material and are not exposed to accident conditions more severe than normal operating conditions. As such, they will be operational during a design basis accident. All associated electrical equipment (e.g., cabling, cabinets) outside the reactor vessel and potentially exposed to a harsh environment is qualified pursuant to 10 C.F.R. § 50.49. The existing subcooled margin monitor is likewise qualified.

2. The Petitioner also comments that the Licensee has not provided either a JCO which satisfied the Commission's criteria or demonstrated environmental qualification for the in-core exit thermocouples.

In a submittal dated October 19, 1984, the Licensee stated that presently installed in-core thermocouples were not in the scope of § 50.49, and thus no JCO was required. The Staff agrees with this interpretation of § 50.49. In any event, the in-core thermocouples are scheduled to be upgraded to meet the criteria of Regulatory Guide 1.97, with an expanded range (200-1600°F) capability as part of the effort to improve emergency response capability.⁵ The schedule for this effort is controlled

⁵ Regulatory Guide 1.97, "Instrumentation for Light-Water Cooled Nuclear Plants to Assess Plant and Environs Conditions During and Following an Accident."

by the Licensee's commitments to implement Supplement 1 to NUREG-0737, and is the subject of a Confirmatory Order dated June 12, 1984, 49 Fed. Reg. 26,653 (June 26, 1984).

CONCLUSION

In summary, the NRC Staff has reviewed each of the items relied upon by the Petitioner. The FRC TERs and NRC's letters to the Licensees, which were identified by the Petitioner, do indicate various environmental qualification deficiencies. Those deficiencies were identified by the FRC and the NRC Staff in reviewing the information available at that time. Thus, the Petitioner has not raised any environmental qualification issues of which the Staff was unaware.

Since the TERs were issued, the Licensees have provided considerable additional information regarding the identified electrical equipment deficiencies and have proposed a resolution to each of them that has been found acceptable by the Staff. The three attached final SEs document the Staff's reviews which conclude that these Licensees have electrical equipment qualification programs which comply with the requirements of § 50.49, that the proposed resolutions for each of the environmental qualification deficiencies identified in the FRC TERs are acceptable, and that continued operation until implementation of the Licensees' environmental qualifications programs are complete as scheduled will not result in undue risk to the public health and safety. With respect to Connecticut Yankee, the Staff is in the process of completing the review of its environmental qualification program, and will ensure that appropriate corrective actions are taken to resolve any remaining discrepancies.

The Staff will be continuing to monitor the Licensees' progress in developing and implementing their environmental qualification programs. Consequently, I conclude that the overall state of equipment qualification of the facilities is adequate to assure protection of the public health and safety. Accordingly, I decline to take any additional action in this matter.

As provided by 10 C.F.R. § 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

Attachments: Safety Evaluations

Dated at Bethesda, Maryland,
this 23rd day of December 1985.

[The attachments have been omitted from this publication but may be found in the NRC Public Document Room, 1717 H Street, NW, Washington, DC 20555.]

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