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NUCLEAR REGULATORY COMMISSION ISSUANCES

December 1984

U.S. NUCLEAR REGULATORY COMMISSION

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NUREG-0750
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NUCLEAR REGULATORY COMMISSION ISSUANCES

December 1984

This report includes the issuances received during the specified period from the Commission (CLI), the Atomic Safety and Licensing Appeal Boards (ALAB), the Atomic Safety and Licensing Boards (LBP), the Administrative Law Judge (ALJ), the Directors' Decisions (DD), and the Denials 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.

U.S. NUCLEAR REGULATORY COMMISSION

Prepared by the Division of Technical Information and Document Control,
Office of Administration, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555
(301/492-8925)

COMMISSIONERS

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

Alan S. Rosenthal, Chairman, Atomic Safety and Licensing Appeal Panel
B. Paul Cotter, Chairman, Atomic Safety and Licensing Board Panel

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Cite as 20 NRC 1573 (1984) CLI-84-22

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. 50-289-SP (Restart)**

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

December 13, 1984

The Commission denies the Intervenors' motion to defer a decision on restart of Three Mile Island Unit 1 pending investigation of alleged radiation effects of the March 1979 Unit 2 accident on the health of the local population, finding the motion and its supporting data insufficient to call into question results of previous scientific studies that indicated such radiation releases will pose minimal risks to the population.

ORDER

On June 21, 1984, Marjorie and Norman Aamodt filed a motion with the Commission alleging that releases of airborne radioactive materials from the March 28, 1979 accident at TMI-2 were substantially greater than have been acknowledged by the Licensee, the NRC Staff or the Commonwealth of Pennsylvania and that such led to health effects in the local population. The Aamodts further claim that Licensee probably

intentionally destroyed radiation release records to prevent the disclosure of the hazard the accident posed to the health of local residents. The Aamodts' assertions regarding purported health effects are based on their analysis of door-to-door interviews that Ms. Marjorie Aamodt, among others, conducted of residents of two areas near the TMI-2 facility. The Aamodts requested the Commission to investigate immediately their allegations and that the Commission defer a decision on Unit 1 restart until the issues they raise have been fully resolved.

Both the NRC Staff and the Licensee filed responses opposing the request. The NRC Staff notes that there have been allegations of adverse health effects raised by numerous groups in the aftermath of the TMI-2 accident, and that these allegations have been investigated by the NRC, independent investigatory bodies, and the Commonwealth of Pennsylvania, and found to be without merit. Staff concludes that nothing in the Aamodts' "survey" gives cause to question the conclusions previously reached. The Staff further notes that while health effects claims were not evaluated in the management phase of the restart proceeding, there was extensive testimony in the emergency planning phase of the proceeding on alleged thyroid abnormalities and potential fetal health effects downwind of the plant, and those claims were found by the Licensing and Appeal Boards to be without merit. The Staff believes that the charge that Licensee has intentionally destroyed radiation release records is sheer speculation unsupported by evidence and should be given no weight.

The Licensee acknowledges that radiation records are missing, but emphasizes that it informed the NRC Staff that records were missing shortly after the accident. It argues that if the Aamodts wished to raise allegations of intentional withholding of this data as a management integrity issue in the restart proceeding, they should have done so 5 years ago. The Licensee also states that the Aamodts' conclusions on health effects are a direct contradiction to numerous scientific studies performed by a variety of organizations and that the Commission has before it enough scientifically based information to determine that the issues which the Aamodts attempt to raise need not be further pursued.

After responding to the Aamodts' motion, the NRC Staff asked the Centers for Disease Control (CDC) to review the Aamodts' allegations. On September 7, 1984, CDC sent a three-page critique of the Aamodts' allegations to the Staff. CDC concluded that the Aamodts had not presented convincing evidence of increased cancer incidence, cancer mortality, or adverse pregnancy outcomes in TMI-1 area residents related to the TMI-2 accident.

At an August 15, 1984 Commission meeting, Ms. Aamodt informed the Commission of a relatively high radiation measurement she had taken somewhere in the vicinity of the TMI-1 site. Ms. Aamodt stated that she had measured "ten times background" with a Geiger counter. Subsequently, the NRC Staff, and representatives of EPA and the Commonwealth of Pennsylvania's Department of Environmental Resources went with the Aamodts to three locations selected by the Aamodts. At each of these locations informal field surveys were taken with portable instrumentation designed to monitor alpha, gamma and beta radiation. No radioactivity beyond background levels was found at any location. Soil samples were also collected at each location and a water sample was taken at one of the locations. The analysis of these samples did not produce evidence which would support the Aamodts' allegations.

Based on the available information the Commission agrees with the Staff and the Licensee that the Aamodts have not presented sufficient reliable information to show that previous, more comprehensive and scientific surveys of TMI-2 accident radiation releases are erroneous.[1] The Aamodts' informal survey is based entirely on recollections and opinions and has no scientific basis. The Commission finds this insufficient to raise serious questions about earlier studies. Those studies had found that radiation releases from the TMI-2 accident will pose minimum risks to the population. For example, one study found that the projected number of excess fatal cancers due to the accident that could occur over the remaining lifetime of the population within 50 miles of TMI-2 is approximately one.[2]

The Commission notes that the Pennsylvania Department of Health is continuing to conduct epidemiological research in the Harrisburg area and is cognizant of the Aamodts' allegations. We presume that this research will take these allegations into account. Should its studies or other scientific studies demonstrate that the radiation releases from the TMI-2 accident could pose risks to public health and safety, the Commission will not hesitate to take appropriate action. Accordingly, we do not believe that further investigation by the NRC into this matter is warranted at this time. Therefore, the Aamodts' motion is denied.

Commissioner Bernthal disapproved in part and provided separate views. Commissioner Asselstine disapproved and provided additional views.

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[1] The Staff enclosed the list of these studies in an August 31, 1984 memorandum to the Commission.

[2] *See* NUREG-0558, "Population Dose and Health Impact of the Accident at the Three Mile Island Nuclear Station" (1979), at 2.

It is so ORDERED.

For the Commission*

SAMUEL J. CHILK
Secretary of the Commission

Dated at Washington, D.C.,
this 13th day of December 1984.

ADDITIONAL VIEWS OF COMMISSIONER ASSELSTINE

The Commission should do more to resolve the concerns raised by Mr. and Mrs. Aamodt. The Commission should request that the Pennsylvania Department of Health review the information submitted by the Aamodts as well as the various existing studies of the radiological releases from the TMI accident and their impact on the people surrounding the plant as part of the Department's ongoing epidemiological research efforts. To assist the Department in this effort, the Commission should provide the funds needed to hire an independent consultant who is expert in the fields of epidemiology and the health effects of ionizing radiation. I can think of no more upsetting concern to the people living in the vicinity of the Three Mile Island plant than the possibility that radiation releases from the accident were higher than estimated by previous studies and that such releases are causing serious health effects. Given the obvious seriousness of these concerns, we should do more than just rely on what appears to be a very cursory review of the Aamodts' information by the Centers for Disease Control. At the same time, I do not find sufficient evidence in the Aamodts' petition to justify a decision to defer further action in the TMI-1 restart proceeding at this time.

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*Commissioner Zech was absent for the affirmation of this order; if he had been present he would have approved it. Commissioner Asselstine, in order to allow the will of the majority to prevail, did not participate in the formal vote.

SEPARATE VIEWS OF COMMISSIONER BERNTHAL

In my vote of 30 October 1984 on the above matter, I noted the suggestion of the Centers for Disease Control that "it might still be useful for NRC to fund additional scientifically valid followup studies in [the TMI area] population." While rejecting the Aamodts' paper as "not presenting convincing evidence of cancer incidence, cancer mortality, or adverse pregnancy outcome in TMI area residents following the [TMI-2] accident," CDC also provided guidance to the Commission on a worthwhile approach that might be taken for these "scientifically valid followup studies," to wit: "The proper way to address [these] concerns is through the Pennsylvania Department of Health's TMI followup program."

In my judgment, the Commission must continue to exercise extraordinary diligence, vigilance, and persistence in this matter, so that to the extent scientifically possible, all reasonable concerns regarding possible effects of the TMI-2 accident on citizens in the TMI area may be acted upon or laid to rest. To demonstrate its commitment to that goal, the Commission therefore should have carried through on CDC's suggestion, and should have offered direct support to the Pennsylvania Department of Health's followup program by contractual or other appropriate arrangement. It is worth noting in this regard that Dr. George Tokuhata, Director of the Division of Epidemiology Research of the Pennsylvania Department of Health, in a recent meeting with the TMI-2 Advisory Panel committed the expertise of his Department to continued monitoring of the possible long-term health effects of the TMI-2 accident.

I therefore cannot support the Commission's disposition of the Aamodt motion in the terms contained in the current order. I would have taken action consistent with my comments above.

Atomic Safety and Licensing Appeal Boards Issuances

ATOMIC SAFETY AND LICENSING APPEAL PANEL

Alan S. Rosenthal, Chairman
Dr. W. Reed Johnson
Thomas S. Moore
Christine N. Kohl
Gary J. Edles
Dr. Reginald L. Gotchy
Howard A. Wilber

APPEAL BOARDS

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

Gary J. Edles, Chairman
Christine N. Kohl

In the Matter of

Docket No. 50-289-SP
(Restart Proceeding-
Management Remand)

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

December 3, 1984

The Appeal Board, concluding that interlocutory appellate review is not warranted, denies intervenor's motion seeking directed certification and reversal of a Licensing Board ruling that prevented intervenor from introducing into evidence the testimony of two former NRC Commissioners.

ETHICS IN GOVERNMENT ACT: RESTRICTION

The Ethics in Government Act prohibits former federal officials from attempting to influence their former agencies with respect to particular matters in which they were personally and substantially involved while government employees. 18 U.S.C. § 207(a).

RULES OF PRACTICE: RESPONSIBILITIES OF PARTIES (DIRECTED CERTIFICATION)

Failure of a party to address the standards for directed certification in responding to a motion seeking such review may be construed as a waiver of any argument regarding the propriety of directed certification. *Cf. Public Service Co. of New Hampshire* (Seabrook Station, Units 1 and 2), ALAB-734, 18 NRC 11, 14 n.4 (1983).

RULES OF PRACTICE: INTERLOCUTORY APPEALS (DIRECTED CERTIFICATION)

In deciding whether to exercise its directed certification authority, an appeal board 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 New Hampshire* (Seabrook Station, Units 1 and 2), ALAB-737, 18 NRC 168, 171 (1983), *quoting Public Service Co. of Indiana* (Marble Hill Nuclear Generating Station, Units 1 and 2), AL[illegible]05, 5 NRC 1190, 1192 (1977).

RULES OF PRACTICE: INTERLOCUTORY APPEALS (EVIDENTIARY RULINGS)

Determinations regarding what evidence should be admitted rarely, if ever, have a pervasive or unusual effect on the structure of a proceeding so as to warrant interlocutory intercession by an appeal board. *See Long Island Lighting Co.* (Jamesport Nuclear Power Station, Units 1 and 2), ALAB-353, 4 NRC 381 (1976); *Toledo Edison Co.* (Davis-Besse Nuclear Power Station, Unit 1), ALAB-314, 3 NRC 98 (1976). *See also Cleveland Electric Illuminating Co.* (Perry Nuclear Power Plant, Units 1 and 2), ALAB-675, 15 NRC 1105, 1113 (1982) (error must fundamentally alter the very shape of the proceeding to warrant interlocutory review).

RULES OF PRACTICE: INTERLOCUTORY APPEALS (DIRECTED CERTIFICATION)

The fact that an evidentiary ruling involves a matter that may be novel or important does not alter the strict standards for directed certification. *See Virginia Electric and Power Co.* (North Anna Power Station, Units 1 and 2), ALAB-741, 18 NRC 371 (1983).

RULES OF PRACTICE: INTERLOCUTORY APPEALS (DIRECTED CERTIFICATION)

The Commission's *Statement of Policy on Conduct of Licensing Proceedings*, CLI-81-8, 13 NRC 452, 456 (1981), neither explicitly nor implicitly relaxes the standards for directed certification. Rather, it simply exhorts the licensing boards to put before appeal boards legal or policy questions that, in their judgment, are significant and require prompt appellate resolution. *North Anna, supra*, 18 NRC at 375. *See also Long Island Lighting Co.* (Shoreham Nuclear Power Station, Unit 1), ALAB-780, 20 NRC 378, 382 (1984); *Arizona Public Service Co.* (Palo Verde Nuclear Generating Station, Units 2 and 3), ALAB-742, 18 NRC 380, 384 n.10 (1983).

RULES OF PRACTICE: INTERLOCUTORY APPEALS (DIRECTED CERTIFICATION)

The language regarding directed certification in § V(f)(4) of Appendix A to the Rules of Practice, like the Commission's Policy Statement, CLI-81-8, *supra*, 13 NRC at 456, does not relax the standards for directed certification.

APPEARANCES

Joanne Doroshow and **Lynne Bernabei,** Washington, D.C., for intervenor Three Mile Island Alert.

Ellyn R. Weiss, Washington, D.C., for intervenor Union of Concerned Scientists.

George F. Trowbridge, Washington, D.C., for licensee Metropolitan Edison Company.

Mary E. Wagner for the Nuclear Regulatory Commission staff.

MEMORANDUM AND ORDER

This proceeding is pending before the Licensing Board pursuant to our remand of certain issues, including the so-called Dieckamp mail-

gram.[1] On November 9, 1984, during the course of a prehearing conference, the Licensing Board ruled that it would not permit intervenor Three Mile Island Alert (TMIA) to introduce into evidence the testimony of former NRC Commissioners Peter Bradford and Victor Gilinsky in connection with the Dieckamp mailgram issue. The Board's determination rested on several grounds, including unreliability, irrelevance, and inconsistency with the intent of the Ethics in Government Act.[2] That statute prohibits former federal officials from attempting to influence their former agencies with respect to particular matters in which they were personally and substantially involved while government employees.[3] The Licensing Board also denied TMIA's request to refer its ruling to us.[4]

TMIA has filed a motion seeking directed certification and reversal of the Board's determination.[5] We ordered the expeditious filing of responses to TMIA's motion.[6] The licensee and the NRC staff oppose the motion.[7] Intervenor Union of Concerned Scientists (UCS) supports it. Upon consideration of the pleadings and the relevant record, we conclude that interlocutory appellate review of the Board's ruling is not warranted.

In deciding whether to exercise our directed certification authority, we 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.[8] TMIA claims that the Board's ruling affects the basic structure of the proceeding in a pervasive manner because it effectively permits only the licensee to present evidence on some elements of the case.[9] TMIA also argues that the Board's reliance on the Ethics in

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[1] *See* ALAB-772, 19 NRC 1193, 1265-68, *stay denied*, CLI-84-17, 20 NRC 801, *review granted*, CLI-84-18, 20 NRC 808 (1984).

[2] Tr. 27,832-76.

[3] 18 U.S.C. § 207(a).

[4] Tr. 27,874-75.

[5] TMIA invokes 10 C.F.R. § 2.771 as authority for its motion. That regulation, however, pertains to petitions for reconsideration of final decisions. Directed certification of interlocutory board rulings is pursuant to 10 C.F.R. §§ 2.718(i), 2.785(b)(1).

[6] Order of November 20, 1984 (unpublished).

[7] Curiously, the licensee confines its argument to the merits of the Licensing Board's evidentiary ruling. It does not address the standards for directed certification. Such omission could be construed as a waiver of any argument regarding the propriety of directed certification. *Cf. Public Service Co. of New Hampshire* (Seabrook Station, Units 1 and 2), ALAB-734, 18 NRC 11, 14 n.4 (1983).

[8] *Public Service Co. of New Hampshire* (Seabrook Station, Units 1 and 2), ALAB-737, 18 NRC 168, 171 (1983), *quoting Public Service Co. of Indiana* (Marble Hill Nuclear Generating Station, Units 1 and 2), ALAB-405, 5 NRC 1190, 1192 (1977).

[9] TMIA Motion for Directed Certification (Nov. 19, 1984) at 14.

Government Act to bar the testimony presents a legal issue of first impression. In this connection, it contends that the Commission's Rules of Practice (specifically, 10 C.F.R. Part 2, Appendix A) provide for directed certification of novel and important issues when necessary to protect the public interest and to avoid serious prejudice to a party's interest.[10]

Virtually every adverse evidentiary ruling tends to skew the overall evidentiary presentation in favor of one or another party. Such rulings, however, may turn out to have little, if any, effect on a licensing board's ultimate substantive decision. Perhaps more important, even an erroneous, prejudicial ruling of this type can be corrected on appeal at the end of the proceeding. Thus, determinations regarding what evidence should be admitted rarely, if ever, have a pervasive or unusual effect on the structure of a proceeding so as to warrant our interlocutory intercession.[11] The Licensing Board's ruling in this case is no exception.

The fact that the ruling involves a matter that may be novel or important does not alter the strict standards for directed certification. We addressed this issue in our *North Anna* opinion.[12] In seeking directed certification of a ruling adverse to it, the applicant in that case relied on a Commission Policy Statement providing. "If a significant legal or policy question is presented on which Commission guidance is needed, a board should promptly refer or certify the matter to the Atomic Safety and Licensing Appeal Board or the Commission."[13] Concluding that that reliance was misplaced, we explained that the Policy Statement neither explicitly nor implicitly relaxes the standards for directed certification. Rather, "it simply exhorts the licensing boards to put before us legal or policy questions that, in their judgment, are 'significant' and require prompt appellate resolution."[14] The same is true of the comparable lan-

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[10] *Id.* at 13-15. Section V(f)(4) of Appendix A provides, in part: "A question may be certified to the Commission or the Appeal Board, as appropriate, for determination when a major or novel question of policy, law or procedure is involved which cannot be resolved except by the Commission or the Appeal Board and when the prompt and final decision of the question is important for the protection of the public interest or to avoid undue delay or serious prejudice to the interests of a party."

[11] *See Long Island Lighting Co.* (Jamesport Nuclear Power Station, Units 1 and 2), ALAB-353, 4 NRC 381 (1976); *Toledo Edison Co.* (Davis-Besse Nuclear Power Station, Unit 1), ALAB-314, 3 NRC 98 (1976). *See also Cleveland Electric Illuminating Co.* (Perry Nuclear Power Plant, Units 1 and 2), ALAB-675, 15 NRC 1105, 1113 (1982) (error must fundamentally alter the very shape of the proceeding to warrant interlocutory review).

[12] *Virginia Electric and Power Co.* (North Anna Power Station, Units 1 and 2), ALAB-741, 18 NRC 371, 374-75 (1983).

[13] *Statement of Policy on Conduct of Licensing Proceedings*, CLI-81-8, 13 NRC 452, 456 (1981).

[14] *North Anna, supra*, 18 NRC at 375. *See also Long Island Lighting Co.* (Shoreham Nuclear Power Station, Unit 1), ALAB-780, 20 NRC 378, 382 (1984); *Arizona Public Service Co.* (Palo Verde Nuclear Generating Station, Units 2 and 3), ALAB-742, 18 NRC 380, 384 n.10 (1983).

guage in Appendix A to the Rules of Practice.[15] We agree here with the Licensing Board that its ruling does not merit interlocutory review.[16]

TMIA's motion for directed certification is *denied.*[17]
It is so ORDERED.

FOR THE APPEAL BOARD

C. Jean Shoemaker
Secretary to the
Appeal Board

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[15] Our decision to accept a referral of an interlocutory Licensing Board ruling in *Duke Power Co.* (Catawba Nuclear Station, Units 1 and 2), ALAB-687, 16 NRC 460 (1982), *vacated in part on other grounds*, CLI-83-19, 17 NRC 1041 (1983), does not dictate a grant of directed certification here. In accepting the Board's referral in *Catawba*, we relied on the Commission's Policy Statement discussed above. We stressed, however, the generic implications and recurring importance of the legal question there involved (the standards for admitting late contentions). *See also North Anna, supra*, 18 NRC at 375-78. By contrast, neither the Licensing Board nor we see such important, generic considerations inherent in the Ethics in Government Act issue raised by TMIA's motion in this case.

[16] TMIA states that the Licensing Board "acknowledged" that its ruling affected the proceeding in a pervasive manner. TMIA Motion at 14. In fact, the Board only agreed that its evidentiary ruling affected TMIA's case "in an important way," but stated that this was nevertheless not the type of ruling that should be referred to us for interlocutory review. Tr. 27,874.

[17] In denying TMIA's motion, we offer no view on the merits of its claim.

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)

December 12, 1984

The Appeal Board determines that it has jurisdiction to rule on intervenors' motion to reopen the record where the motion raises issues that have a reasonable nexus to other issues still pending before it.

RULES OF PRACTICE: JURISDICTION (10 C.F.R. § 2.206 PETITION)

Issues that cannot properly be raised in adjudication may be presented in a petition filed under 10 C.F.R. § 2.206 with the Director of Nuclear Reactor Regulation (NRR).

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 NRR, 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. *See Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-782, 20 NRC 838, 840-42 (1984); *Metropolitan Edison Co.* (Three Mile Island Nuclear Station, Unit No. 1), ALAB-766, 19 NRC 981, 983 (1984); *Louisiana Power & Light Co.* (Waterford Steam Electric Station, Unit 3), ALAB-753, 18 NRC 1321, 1329-30 (1984); *Florida Power and Light Co.* (St. Lucie Nuclear Power Plant, Unit No. 2), ALAB-579, 11 NRC 223, 224-26 (1980); *Virginia Electric and Power Co.* (North Anna Nuclear Power Station, Units 1 and 2), ALAB-551, 9 NRC 704, 705-09 (1979); *Public Service Co. of Indiana* (Marble Hill Generating Station, Units 1 and 2), ALAB-530, 9 NRC 261, 262 (1979); *Public Service Co. of New Hampshire* (Seabrook Station, Units 1 and 2), ALAB-513, 8 NRC 694, 695-96 (1978).

RULES OF PRACTICE: JURISDICTION (APPEAL BOARD)

The fact that an appeal board's pending inquiry into an issue arises from a motion to reopen, rather than from an appeal from a Licensing Board decision, is of no moment to a determination of its jurisdiction over a related matter. Rather, as was stated in *North Anna, supra,* 9 NRC at 709, the decisive factor is whether, except for those limited issues as to which jurisdiction has been expressly retained, the case has been decided. The focus in determining jurisdiction is on whether and what issues remain before the board, not how they got there.

MEMORANDUM

On November 8, 1984, Joint Intervenors filed their most recent of several motions to reopen the record in this operating license proceeding. The motion, which concerns primarily quality assurance at the Waterford facility, proposes the admission of three new contentions. In its reply to the motion, applicant argues that we lack jurisdiction to rule on the motion and urges that we dismiss it. Applicant's Answer (Nov. 30, 1984) at 4-6.

Joint Intervenors' 62-page motion, supported by 62 exhibits, raises important matters that may take several months to resolve.[1] We therefore believe it desirable to advise the parties and Commission, in advance of our merits decision on the motion, of our view on the jurisdictional question raised by applicant. For the reasons set forth below, we have concluded that we have jurisdiction over the motion.[2]

A. A brief synopsis of the procedural background and current posture of this case is a prerequisite to our discussion of why we have jurisdiction over Joint Intervenors' latest motion.

In ALAB-732, 17 NRC 1076 (1983), we considered Joint Intervenors' appeal from the Licensing Board's principal partial initial decision, which concerned mostly emergency planning and synergism issues. We affirmed the Board's decision. The Commission declined to review ALAB-732, and our disposition of the matters addressed there became "final agency action" on September 7, 1983. Memorandum from S.J. Chilk to Board and Parties (Sept. 14, 1983). There were no perfected appeals from the Licensing Board's second and last partial initial decision, which dealt solely with applicant's emergency planning brochure. Before we completed our customary sua sponte review of that decision, however, Joint Intervenors filed two motions to reopen the record. One concerned the adequacy of the concrete basemat on which the facility rests, and the other sought to relitigate the synergism issue. In ALAB-753, 18 NRC 1321 (1983), we denied the first motion, found we had no jurisdiction to rule on the sec[illegible]d, and completed sua sponte review of the last Licensing Board decision in this proceeding.[3]

Several days after issuing this decision, we received an amendment to Joint Intervenors' motion to reopen on the basemat issue. This filing apparently crossed ALAB-753 in the mail. No party contested our jurisdiction to rule on this pleading, and it was thus treated by all as a new motion to reopen on the adequacy of the basemat. Although applicant replied to the motion in January 1984, preparation of the staff's reply (including work at the site) consumed many months and it was not filed until this past August. After reviewing the motion papers then before us, we determined that still more information from the staff was necessary before we could finally rule on the basemat motion. ALAB-786, 20

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[1] In so characterizing the motion, we do not mean to imply any view whatsoever on its merits.

[2] We have reached this conclusion without the benefit of the views of the NRC staff and Joint Intervenors. As for the latter, because they filed their motion before us, it is safe to assume they would agree with our view of jurisdiction. As for the staff, it may or may not have planned to address the jurisdictional issue in its forthcoming reply, due December 21. We believe that, on balance, however, it is better for us to state our view of our own jurisdiction as promptly as possible rather than to await the staff's possible comments.

[3] The Commission has not yet determined if it will review ALAB-753.

NRC 1087 (1984). The staff's answers to the questions we posed in ALAB-786 are now due December 17. In the meantime, Joint Intervenors have filed their latest motion to reopen on quality assurance. It is our jurisdiction over this motion that applicant challenges.

B. The confusing procedural circumstances of this proceeding, outlined above, present a situation not previously encountered by an appeal board. Although there are several decisions from which we can borrow useful guidance, none is directly on point. Applicant argues that, in general, we lose jurisdiction over a motion to reopen once we have reviewed and affirmed the decisions of the licensing board below. Because our review of the Licensing Board's decisions in this case was complete with the issuance of ALAB-753, applicant contends that we no longer have jurisdiction over the motion to reopen on the quality assurance contention. Applicant distinguishes the motion to reopen on the basemat because the original motion on that subject was filed in July 1983, before our review of the Licensing Board's last decision was completed. Thus, in applicant's view, we have relinquished jurisdiction over this case for all purposes, save one — the adequacy of the basemat. And, according to applicant, that has no reasonable relationship to the three quality assurance contentions Joint Intervenors now seek to raise through their November 8 motion to reopen. Applicant concludes that we must dismiss the motion.

Applicant does not suggest what would be the proper forum for the consideration of the matters raised by Joint Intervenors' motion, if it is not this Board. Because it cannot seriously be argued that no forum exists, the obvious alternative is a petition filed under 10 C.F.R. § 2.206 with the Director of Nuclear Reactor Regulation (NRR). The question before us here, then, is whether the matters raised by Joint Intervenors' quality assurance motion should be resolved within the scope of this adjudicatory proceeding or presented to NRR for more informal disposition.

As noted above, we have addressed somewhat similar issues on numerous prior occasions. The lessons of these decisions are clear. 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. *See Pacific Gas and Electric Co.* (Diablo Canyon

Nuclear Power Plant, Units 1 and 2), ALAB-782, 20 NRC 838, 840-42 (1984); *Metropolitan Edison Co.* (Three Mile Island Nuclear Station, Unit No. 1), ALAB-766, 19 NRC 981, 983 (1984); ALAB-753, *supra*, 18 NRC at 1329-30; *Florida Power and Light Co.* (St. Lucie Nuclear Power Plant, Unit No. 2), ALAB-579, 11 NRC 223, 224-26 (1980); *Virginia Electric and Power Co.* (North Anna Nuclear Power Station, Units 1 and 2), ALAB-551, 9 NRC 704, 705-09 (1979); *Public Service Co. of Indiana* (Marble Hill Nuclear Generating Station, Units 1 and 2), ALAB-530, 9 NRC 261, 262 (1979); *Public Service Co. of New Hampshire* (Seabrook Station, Units 1 and 2), ALAB-513, 8 NRC 694, 695-96 (1978).

The matters raised by Joint Intervenors' motion to reopen on quality assurance have not been previously addressed by either the Licensing Board or us, or by the Commission. And, as in the case of each of the decisions cited above, one issue still commands our attention. The fact that that pending inquiry into the adequacy of the concrete basemat arose from a motion to reopen, rather than from an appeal from a Licensing Board decision, is of no moment to the jurisdictional query posed by applicant. As we stated in *North Anna, supra*, 9 NRC at 709, "the decisive factor is whether, except for those limited issues as to which jurisdiction has been expressly retained, the case has been decided." Moreover, it is not the specific legal mechanism that has occasioned our continued involvement with the proceeding, but rather the nature of our involvement that is determinative.[4]

Our inquiry is thus reduced to whether there is a reasonable nexus between Joint Intervenors' pending basemat motion and their latest motion to reopen on quality assurance. Although the latter motion is substantially broader, there is a clear overlap insofar as Joint Intervenors allege quality assurance deficiencies in connection with the construction of the basemat. *See, e.g.*, Joint Intervenors' Motion to Reopen (Nov. 8, 1984) at 39-44. Further, resolution of certain of the concerns raised by the staff in the so-called Eisenhut Letter of June 13, 1984, will be pertinent to our disposition of both motions to reopen. *See* ALAB-786, *su-*

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[4] In *North Anna, supra*, 9 NRC at 708, we stated that "once an appeal board has wholly terminated its review of an initial decision . . . its jurisdiction over the proceeding comes to an end." *See also* ALAB-753, *supra*, 18 NRC at 1330 n.14. Applicant places undue stress on the references to initial decisions in these opinions, suggesting that the pendency of a licensing board decision before us is the sine qua non to our continued involvement. But neither case contemplates such a mechanical approach. The focus is on whether and what issues remain before us, not how they got there. *North Anna, supra*, 9 NRC at 708, 709. Indeed, in *North Anna*, we had not yet completed sua sponte review of the proceeding when a staff Board Notification triggered our further unsolicited inquiry into yet another matter. *Id.* at 705-06. Surely a party's pending motion to reopen gives us no less a tie to an adjudication than sua sponte review of a licensing board decision.

pra, 20 NRC at 1092-93. In this circumstance, we have no hesitation in finding "a rational and direct link" between the two motions so as to confirm our jurisdiction. *St. Lucie, supra*, 11 NRC at 226.

We conclude that we have jurisdiction over the November 8, 1984, motion to reopen filed by Joint Intervenors.

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. Reginald L. Gotchy
Howard A. Wilber

In the Matter of **Docket Nos. STN 50-454**
STN 50-455

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

December 20, 1984

The Appeal Board affirms the Licensing Board's authorization of the issuance of operating licenses for the two-unit Byron facility. It does so by affirming the Licensing Board's initial decision (LBP-84-2, 19 NRC 36 (1984)) in part and the supplemental initial decision (LBP-84-41, 20 NRC 1203 (1984)) issued by that Board pursuant to the Appeal Board's decision (ALAB-770, 19 NRC 1163 (1984)) on the applicant's appeal of the initial decision.

RULES OF PRACTICE: APPELLATE REVIEW

A party is always free to urge the affirmance of a trial tribunal's result on grounds other than those assigned by that tribunal. *See, e.g., Niagara Mohawk Power Corp.* (Nine Mile Point Nuclear Station, Unit 2), ALAB-264, 1 NRC 347, 357 (1975).

QUALITY ASSURANCE: REQUIREMENTS

Utilities engaged in the construction of nuclear power plants are required by the Commission's regulations to have a quality assurance program that, among other things, verifies that activities affecting the safety-related functions of structures, systems, and components have been performed correctly. 10 C.F.R. Part 50, Appendix B, Criterion I.

QUALITY ASSURANCE: REQUIREMENTS (DELEGATION OF RESPONSIBILITY)

While it must retain ultimate responsibility for full compliance with all quality assurance requirements, an applicant may delegate to its construction contractors the establishment and execution of individual quality assurance programs. *Ibid.*

QUALITY ASSURANCE: REQUIREMENTS (INSPECTOR QUALIFICATIONS)

An integral part of all acceptable construction quality assurance programs is confidence that the individuals carrying out the inspections have the qualifications to fulfill their responsibilities properly.

QUALITY ASSURANCE: REQUIREMENTS (INSPECTOR QUALIFICATIONS)

It is of crucial importance in the assessment of the adequacy of a quality assurance program that there be satisfactory proof of the inspectors' qualifications. Normally, that proof will take the form of quality assurance documentation establishing that the individual in question has the training and experience appropriate to his or her assigned function and has passed any requisite qualifying examinations.

NEPA: NEED FOR POWER AND ALTERNATIVE ENERGY SOURCES

Effective April 26, 1982, the Commission amended its regulations to prohibit the litigation of need for power and alternative energy source issues in operating license proceedings. 47 Fed. Reg. 12,940 (1982). The prohibition currently is found in 10 C.F.R. 51.53(c). *See also* 10 C.F.R. 51.23(e).

ADJUDICATORY BOARDS: DELEGATED AUTHORITY

Within this agency, only the Commission itself has the authority to invalidate one of its own rules or regulations. *See* 10 C.F.R. 2.758(a); *Kansas Gas and Electric Co.* (Wolf Creek Generating Station, Unit 1), ALAB-784, 20 NRC 845, 846 (1984); *Potomac Electric Power Co.* (Douglas Point Nuclear Generating Station, Units 1 and 2), ALAB-218, 8 AEC 79, 89 (1974).

LICENSING PROCEEDINGS: NEED FOR POWER AND ALTERNATIVE ENERGY SOURCES

Undergirding the 1982 amendment prohibiting litigation of need for power and alternative energy sources issues at the operating license stage was the Commission's belief that, as a general matter, no useful purpose is served by considering such matters at that time. *See* 47 Fed. Reg. 12,940.

ATOMIC ENERGY ACT: SEISMIC DESIGN

All nuclear power plants must be designed and built to protect the public from the hazards of radioactive releases should the plant be subjected to movements in the earth's crust. *Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 & 2), ALAB-644, 13 NRC 903, 909 (1981), *quoting Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 & 2), ALAB-519, 9 NRC 42, 45 (1979).

ATOMIC ENERGY ACT: SEISMIC DESIGN

Under the Commission's regulatory scheme, protection from movements in the earth's crust is achieved in part through the requirement that the plant be designed to withstand the maximum vibratory ground motion (in terms of acceleration) that might result upon the occurrence of one of two different possible seismic events: the Safe Shutdown Earthquake (SSE) and the Operating Basis Earthquake (OBE). 10 C.F.R. 100, Appendix A, §§ III(c), (d).

ATOMIC ENERGY ACT: SEISMIC DESIGN (SSE)

The SSE is the most powerful earthquake *ever* expected to occur at a plant site. The plant must be able to withstand the forces of the SSE

without releasing dangerous quantities of radioactivity. *Diablo Canyon*, ALAB-644, *supra*, 13 NRC at 911.

ATOMIC ENERGY ACT: SEISMIC DESIGN (OBE)

The OBE is the strongest earthquake considered *likely* to occur during a plant's operating lifetime. The facility must be designed and built to function through the OBE without creating undue risk to the public health and safety. *Ibid.*

ATOMIC ENERGY ACT: SEISMIC DESIGN (OBE)

The vibratory ground acceleration assigned to the OBE must be at least one-half that assigned to the SSE unless a lesser value is justified. 10 C.F.R. 100, Appendix A, §§ II, V(a)(2); *Diablo Canyon*, ALAB-644, *supra*, 13 NRC at 989-92.

ATOMIC ENERGY ACT: SEISMIC DESIGN

Before selecting the SSE and OBE that are to serve as the design bases for its proposed facility, a utility is required to investigate in sufficient scope and detail, *inter alia*, the structural geologic conditions of the site and surrounding region, including its geologic history. 10 C.F.R. 100, Appendix A, § IV.

ATOMIC ENERGY ACT: SEISMIC DESIGN (FAULTS)

If there is a fault within 200 miles of a site that might be of significance in establishing the SSE, the applicant must further determine whether that fault is "capable." *Ibid.*

ATOMIC ENERGY ACT: SEISMIC DESIGN (FAULTS)

A fault is a large-scale dislocation or distortion within the earth's crust along which differential slippage of the adjacent earth materials has occurred parallel to the fracture plane. *Id.* § III(e).

ATOMIC ENERGY ACT: SEISMIC DESIGN (FAULTS)

A capable fault is defined in 10 C.F.R. Part 100, Appendix A, § III(g) as a fault which has exhibited one or more of the following characteristics:

or environmental issues. *Offshore Power Systems* (Manufacturing License for Floating Nuclear Power Plants), ALAB-689, 16 NRC 887, 890 (1982); *Sacramento Municipal Utility District* (Rancho Seco Nuclear Generating Station), ALAB-665, 14 NRC 799, 803 (1981), *quoting Washington Public Power Supply System* (WPPSS Nuclear Project No. 2), ALAB-571, 10 NRC 687, 692 (1979); *Philadelphia Electric Co.* (Peach Bottom Atomic Power Station, Units 2 and 3), ALAB-509, 8 NRC 679, 683 n.8 (1978).

TECHNICAL ISSUES DISCUSSED:

Quality Assurance Program (and Reinspection Program);
Quality Assurance Inspector Certification and Qualification;
Seismic Design (Operating Basis Earthquake (OBE) and Safe Shutdown Earthquake (SSE));
Capable Faults;
Earthquake Ground Acceleration;
Core Drilling;
Refraction Seismography;
Relative Age Dating of Fault;
Absolute Age Dating of Fault;
Scarp (or escarpment);
Modified Mercalli Intensity Scale;
Richter Scale;
Cable Tray Hangers;
Whole Body Counting and Strontium-90.

APPEARANCES

Michael I. Miller, Chicago, Illinois, for the applicant, Commonwealth Edison Company.

Jane M. Whicher and **Timothy W. Wright, III,** Chicago, Illinois (with whom **Douglass W. Cassel, Jr.,** Chicago, Illinois, was on the briefs), for the intervenors, Rockford League of Women Voters and Dekalb Area Alliance for Responsible Energy/Sinnissippi Alliance for the Environment.

Richard J. Rawson and **Stephen H. Lewis** (with whom **Mitzi A. Young** was on one of the briefs) for the Nuclear Regulatory Commission staff.

1. Movement at or near the ground surface at least once within the past 35,000 years or movement of a recurring nature within the past 500,000 years.
2. Macro-seismicity instrumentally determined with records of sufficient precision to demonstrate a direct relationship with the fault.
3. A structural relationship to a capable fault according to characteristics (1) or (2) of this paragraph such that movement on one could be reasonably expected to be accompanied by movement on the other.

ATOMIC ENERGY ACT: SEISMIC DESIGN (FAULTS)

If there is a capable fault within 200 miles of a plant, it must then be evaluated for its potential for causing vibratory ground motion and surface displacement, and taken into account in establishing the SSE. *Id.* §§ IV(a)(7) and (8), IV(b).

ATOMIC ENERGY ACT: SEISMIC DESIGN (FAULTS)

If an investigation both demonstrates that a particular fault is structurally associated with geologically old structural features (such as many of those found in the eastern region of the United States) and uncovers no affirmative evidence of capability, that fault shall be presumed to be not capable. *Id.* § III(g).

RULES OF PRACTICE: BRIEFS

Failure of a party to brief issues adequately deprives the adjudicatory boards precisely of that assistance which the Rules of Practice are designed to have an appellant provide, i.e., to flesh out the bare bones exceptions with the precise portion of the record relied on in support of the assertion of error, 10 C.F.R. § 2.762(a), and to present the boards with sufficient information or argument to allow an intelligent disposition of the issues. *See Consumers Power Co.* (Midland Plant, Units 1 and 2), ALAB-270, 1 NRC 473, 475 (1975).

RULES OF PRACTICE: *SUA SPONTE* REVIEW

Under its long-standing practice, the Appeal Board reviews, *sua sponte*, any final disposition of a licensing proceeding that either was or had to be founded upon substantive determinations of significant safety

DECISION

This is an operating license proceeding involving the Byron nuclear power facility located in Ogle County, Illinois, about seventeen miles southwest of the City of Rockford. Last January, applicant Commonwealth Edison Company appealed from an initial decision in which the Licensing Board denied the operating license application by reason of determined construction quality assurance deficiencies.[1] Following consideration of that appeal, in ALAB-770[2] we remanded the proceeding to the Licensing Board for a further evidentiary hearing on particular quality assurance issues. In doing so, we (1) retained jurisdiction over the applicant's appeal, and (2) reserved judgment on certain other issues that the Licensing Board had resolved in the applicant's favor.[3]

In compliance with ALAB-770, the Licensing Board took further evidence and, on October 16, 1984, issued a supplemental initial decision in which, on the strength of that evidence, it concluded that the quality assurance deficiencies had been rectified.[4] Accordingly, the Board set aside the result reached in its January 1984 initial decision and authorized the issuance of operating licenses for the two-unit Byron facility.

We have heard the intervenors' challenge to that outcome on an expedited briefing and oral argument schedule. For the reasons that follow, we affirm both (1) the Licensing Board's supplemental initial decision, and (2) its disposition of issues other than construction quality assurance as reflected in its January 1984 initial decision.

I. QUALITY ASSURANCE ISSUES IN CONTROVERSY ON APPEAL

A. Background

Utilities engaged in the construction of nuclear power plants are required by the Commission's regulations to have a quality assurance program that, among other things, verifies that activities affecting the

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[1] LBP-84-2, 19 NRC 36 (1984). As employed in this opinion, the term "quality assurance" encompasses "quality control" as well.

[2] 19 NRC 1163 (1984).

[3] In urging that the result reached in the Licensing Board's January 1984 decision should be affirmed, the intervenors (Rockford League of Women Voters and Dekalb Area Alliance for Responsible Energy/Sinnissippi Alliance for the Environment) challenged the disposition of those issues below. This was, of course, permissible. A party is always free to urge the affirmance of a trial tribunal's result on grounds other than those assigned by that tribunal. *See, e.g., Niagara Mohawk Power Corp.* (Nine Mile Point Nuclear Station, Unit 2), ALAB-264, 1 NRC 347, 357 (1975).

[4] LBP-84-41, 20 NRC 1203.

safety-related functions of structures, systems, and components have been performed correctly.[5] While it must retain ultimate responsibility for full compliance with all quality assurance requirements, an applicant may delegate to its construction contractors the establishment and execution of individual quality assurance programs.[6] This practice was followed at Byron with the applicant providing oversight of its contractors through audits and surveillances of construction work and contractor inspection activities.[7] As part of their quality assurance programs, the contractors were required to use properly qualified individuals to inspect safety-related work so as to provide assurance that no significant construction defects had gone undetected.[8]

In early 1982, when the facility was completed to a significant degree, an NRC Construction Assessment Team (CAT) carried out an in-depth inspection of Byron construction.[9] The purpose of that inspection was to assess the adequacy of certain aspects of quality assurance and construction activities, including the training, qualifications, and certification of contractor quality assurance personnel.[10] While the NRC staff did not identify any serious construction defects, deficiencies were found involving the methods used by the contractors to evaluate the capabilities of prospective inspectors, the documentation of inspector certification, and the criteria for the qualification of inspectors.[11] These deficiencies raised questions regarding the competence of the individuals performing quality assurance inspections of contractor work. Therefore, notwithstanding the fact that the CAT inspection did not itself reveal any serious construction defects, there were concerns that the contractor inspectors may have overlooked such defects.[12]

To determine whether the inspector certification practices at Byron were adequate despite the certification deficiencies identified by the CAT inspection, the applicant developed a program to reexamine a representative sample of the safety-related work previously found acceptable

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[5] 10 C.F.R. Part 50, Appendix B, Criterion I.

[6] *Ibid.*

[7] LBP-84-2, *supra*, 19 NRC at 128-29.

[8] *Id.* at 128.

[9] *Id.* at 196.

[10] Applicant's (App.) Exh. 8 at cover letter and 65.

[11] *Id.* at 67; LBP-84-2, *supra*, 19 NRC at 196-97; Tr. fol. 7801 at 4 (Forney, *et al.*); Tr. 7964.

[12] Obviously, the CAT inspection did not, and could not with a reasonable expenditure of resources, review all of the safety-related work at Byron.

by the inspectors in question.[13] These reexaminations were performed by inspectors who had been properly certified.[14]

All safety-related work inspected in the first ninety-day period by the sampled inspectors was reinspected to the extent possible.[15] If the individual performing the reinspection agreed with at least 95% of the original inspector's decisions for objective attributes and 90% for subjective attributes, the inspector was considered qualified regardless of any deficiencies in certification paperwork.[16] If, on the other hand, the reexamination reflected an unacceptably high error rate in a particular area of inspection (e.g., welding), the inspector's work in that area over the next ninety days was examined. Should the acceptance criterion not have been met for that second period, all of the inspector's remaining work in the area was then reinspected and, for that area, the number of inspectors whose work was subject to reexamination increased by 50%.[17]

As of the end of 1983, the staff (and the Licensing Board) had in hand only a preliminary report on the results of the reinspection program.[18] Rather than await the final results of the program (which became available in February 1984), the Licensing Board elected to issue its initial decision in January 1984, denying the application for an operating license.[19] In explaining that denial, the Board noted that the applicant took advantage of the opportunity, allowed by the regulations, to delegate to its construction contractors the execution of a quality assurance program.[20] The applicant, however, was found by the Board to have "failed in its responsibility to assure that its contractors carried out their delegated quality assurance tasks."[21] The Board was concerned particularly with the applicant's failure to assure that the contractors' quality assurance personnel were properly trained, qualified, and certified.[22]

Although this concern extended to virtually all of the contractors, the Licensing Board's result rested upon the uncertainties respecting the

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[13] Tr. fol. 7549 at 5 (Stanish); Tr. fol. 7760 at 3-4 (Tuetken). The reexamination focused upon work inspected before September 1982. The inspections subsequent to that time were conducted by individuals whose qualifications were established through revised certification practices. Tr. 7964-65, 7978-79.

[14] Tr. fol. 8406 at 20-21 (Del George); Tr. fol. 8408 at 14-17 (Tuetken).

[15] Tr. fol. 7801 at 6 (Forney, *et al.*).

[16] Tr. fol. 7760 at 5-6 (Tuetken). A subjective attribute is one that requires qualitative judgment by the inspector. The only subjective attribute covered in the reinspection program was visual weld examination. In contrast, objective attributes, e.g., as-built dimensions, require little judgment. *Ibid.*

[17] *Id.* at 6.

[18] *See* letter from Bruce D. Becker to Licensing Board (Nov. 3, 1983) with enclosure.

[19] LBP-84-2, *supra*, 19 NRC at 36.

[20] *Id.* at 43.

[21] *Ibid.*

[22] *Ibid.* In its supplemental initial decision, the Licensing Board reiterated that its principal quality assurance concern at Byron was with respect to inspector competence. LBP-84-41, *supra*, 20 NRC at 1273.

qualifications of only those inspectors in the employ of the Hatfield Electric Company (electrical contractor) and Hunter Corporation (piping contractor). This was because, unlike that of the other contractors with quality assurance weaknesses, the work of those two companies was not subject to 100% reinspection.[23]

The Board took pains to stress that, despite its denial of the operating license application, it had not concluded that the applicant was "institutionally unable or unwilling to maintain a reliable quality assurance program."[24] In addition, while expressing reservations about certain aspects of the reinspection program, the Board indicated that this could be a method of resolving its concerns with quality assurance at Byron.[25]

On the applicant's appeal, we held that the Licensing Board correctly declined to authorize the issuance of an operating license when, by reason of lingering questions regarding inspector competence, legitimate uncertainty remained respecting whether the Byron facility had been properly constructed.[26] We further decided, however, that the Board should have awaited the receipt of the final results of the reinspection program before arriving at an ultimate determination regarding the application for an operating license.[27] Accordingly, we concluded:

> In the totality of circumstances, the appropriate course is a further hearing to permit a full exploration of the significance of the program in terms of whether there is currently reasonable assurance that the Byron facility has been properly constructed. Stated otherwise, the focus of the inquiry should be upon whether, as formulated and executed, the reinspection program has now provided the requisite degree of confidence that the Hatfield and Hunter quality assurance inspectors were competent and, thus, can be presumed to have uncovered any construction defects of possible safety consequence.[28]

In this connection, we posed several questions to be addressed by the Board at the remanded hearing. Among other things, the Board was to inquire into whether construction defects identified during the reinspection program had been properly "resolved" — i.e., either rectified or found upon analysis to be without safety significance.[29]

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[23] LBP-84-2, *supra*, 19 NRC at 196-97, 217. As a secondary matter, the Board also found Hatfield and Hunter to be documenting improperly discrepancies identified during the reinspection program. *Id.* at 200, 214-16. This matter is no longer in issue.

[24] *Id.* at 44.

[25] *Id.* at 43-44, 214-16.

[26] ALAB-770, *supra*, 19 NRC at 1169.

[27] *Id.* at 1169-70.

[28] *Id.* at 1178 (footnotes omitted).

[29] *Id.* at 1178-79.

B. Remanded Hearing

As contemplated by ALAB-770, with respect to the reinspection program, the remanded hearing focused upon Hatfield Electric Company and Hunter Corporation. The Licensing Board, however, also looked at the program results for the Pittsburgh Testing Laboratory (PTL) because of that organization's role as an independent testing contractor and its performance in connection with Systems Control Corporation.[30]

All Hatfield, Hunter, and PTL inspectors included in the reinspection program passed the 95% acceptance criterion for objective attributes for their first three months of inspections. For visual weld inspection, Hatfield and Hunter each had one inspector and PTL had three inspectors who, for the first three months, failed to meet the 90% acceptance criterion for subjective attributes. Because these Hatfield and Hunter inspectors, and two of the PTL inspectors, had performed no inspections thereafter, other inspectors underwent reexamination in their stead. The substitute inspectors all met the acceptance criterion. The other PTL inspector who failed for the first three months also did not meet the acceptance criterion for the second three-month period. As a result, the balance of his accessible work was reinspected. Further, the sample of PTL inspectors was expanded to encompass every such inspector who performed accessible visual weld inspections. Each of these additional PTL inspectors passed the 90% acceptance criterion for the first three months of work.[31]

In accordance with our direction in ALAB-770 that evidence be presented to demonstrate that the discrepancies identified during the reinspection program were properly resolved, applicant witnesses described the engineering evaluations of those discrepancies that were performed by Sargent & Lundy.[32] In conducting the evaluations, the discrepancies were first compared to current design parameters and tolerances.[33] Discrepancies found to be outside these design parameters and tolerances were analyzed by engineering judgment or calculations.[34] Evaluations by engineering judgment were performed by comparison of the particular discrepancy with the design margin to ascertain the discrepancy's

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[30] Memorandum and Order (June 8, 1984) (unpublished) at 12-13. We discuss Systems Control Corporation later in this opinion, pp. 1625-27, *infra*.

[31] Tr. fol. 8406 at 27-28 (Del George); Tr. fol. 9510 at 8-10 (Little, *et al.*).

[32] *See generally* Tr. fol. 9044 (French); Tr. fol. 9047 (McLaughlin); Tr. fol. 9051 (Branch). Sargent & Lundy is the architect-engineer for the Byron facility. Staff Exh. 1 (Safety Evaluation Report, Feb. 1982) at 1-6.

[33] Tr. fol. 9044 at 6 (French); Tr. fol. 9051 at 7 (Branch).

[34] Tr. fol. 9044 at 6 (French); Tr. fol. 9051 at 7 (Branch).

significance. All of the identified discrepancies (with the exception of discrepant Hatfield welds that were sampled) underwent evaluation.[35]

None of the discrepancies was determined by Sargent & Lundy to have safety or design significance.[36] Nevertheless, all work subject to the American Society of Mechanical Engineers (ASME) Code and having discrepancies that exceeded its examination acceptance criteria was repaired.[37] All other discrepancies were either repaired or considered acceptable "as is" based on the results of the engineering evaluations.[38] The decision to repair discrepant non-ASME work was made on the basis of work status in the area.[39]

While the reinspection program was developed for the specific purpose of demonstrating inspector competence, a secondary effort was undertaken to analyze the extensive data produced by the program to determine whether inferences could be drawn about the quality of Hatfield and Hunter work in general. Along this line, the applicant presented testimony that applied statistical principles to the reinspection data to arrive at reliability estimates of work quality.[40] The applicant concluded that the quality of work is adequate.[41] It based this view, however, on engineering judgment, independent of the statistical analysis.[42] The staff also considered the results of the reinspection program to have reinforced its positive conclusions about construction quality at Byron.[43] On the other hand, intervenors expressed considerable doubt whether the program was structured in such a manner as to allow inferences to be drawn respecting work quality.[44]

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[35] Tr. fol. 9044 at 6, 9 (French); Tr. fol. 9047 at 7-8 (McLaughlin); Tr. fol. 9051 at 8-14 (Branch); App. Exh. R-4 at VI-2.

[36] Tr. fol. 9044 at 8 (French); Tr. fol. 9047 at 12 (McLaughlin); Tr. fol. 9051 at 8-14 (Branch); Tr. 9282-85. Design significance is a lower threshold than safety significance (i.e., if a deficiency is not design significant, it will not be safety significant). Tr. 9159.

[37] Tr. fol. 8406 at 36 (Del George); Tr. 8719; App. Exh. R-4 at Exh. C-3 and Appendix F (at F-6).

[38] Tr. fol. 8406 at 36 (Del George); Tr. 8719.

[39] Tr. 8825-26.

[40] *See* Tr. fol. 9055 (Singh).

[41] Tr. fol. 8406 at 47-53 (Del George); Tr. fol. 9336 at 13-14 (Behnke).

[42] Tr. 9272-78.

[43] Tr. 9872-73; Tr. fol. 10,135 at 2 (Keppler). The staff testified that the primary purpose of the reinspection program was to determine whether inspectors had overlooked significant deficiencies. Tr. fol. 9510 at 4 (Little, *et al.*). But staff witness Little agreed that determining whether the inspectors had overlooked significant deficiencies was equivalent to determining whether they were competent. Tr. 9582-83. Staff witness Forney had some disagreement with other staff witnesses on the extent that inferences about the qualification of all inspectors and work quality could be drawn from the reinspection program but characterized these differences as "miniscule." Tr. 10,069; Tr. fol. 10,040 (Forney); Tr. 10,063-64.

[44] Tr. fol. 11,045 (Ericksen).

C. Licensing Board Determinations

Upon consideration of the evidence produced at the remanded hearing, the Licensing Board found in its October 16 supplemental initial decision that the sampling scheme for selecting inspectors whose work was to be reexamined was appropriate; that the choice of the first ninety days of an inspector's tenure was a proper time period for verifying the inspector certification process; that the acceptance criteria for establishing whether an inspector was competent were appropriate; and that reasonable assurance had been provided that all of the Hatfield, Hunter, and PTL inspectors in question were competent, even though deficiencies had existed in the certification practices at Byron.[45]

The Licensing Board further found that the Sargent & Lundy engineering evaluations of discrepancies identified during the reinspection program were performed in accordance with proper engineering standards and that the assumptions used in the evaluations were sufficiently conservative. In addition, the Board was satisfied that the identified discrepancies had been properly resolved by either repair or disposition as acceptable "as is" based on engineering evaluations. The Board considered the Sargent & Lundy determination that none of the discrepancies was design significant to be a "strong indication" that the inspectors of concern (i.e., those employed before revised certification practices were implemented) had not overlooked any significant safety-related deficiencies.[46]

With respect to construction work quality, the Licensing Board stressed that this matter was never directly in question during the hearings leading to its initial decision. Rather, the Board's concerns with quality assurance at Byron centered on the failure to demonstrate that the inspectors were properly trained, tested, and certified.[47] The Board further recognized that ALAB-770 emphasized the need to establish inspector competence.[48] Nevertheless, the Board believed it important to take advantage of the extensive data collected from the reinspection program to help assess the safety of the Byron facility.[49] While noting that the reinspection data were a byproduct of an inspector competence program and that their value as a measure of work quality was limited, the Board was impressed by the absence of any design-significant discrepancies in the large number of reinspections (covering a broad range

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[45] LBP-84-41, *supra*, 20 NRC at 1248-49.
[46] *Id.* at 1264-65.
[47] *Id.* at 1273.
[48] *Ibid.*
[49] *Id.* at 1274.

of work).[50] As a result of the evidence produced throughout the entire proceeding, the Licensing Board found that the applicant had demonstrated that the quality of the Hatfield and Hunter work is adequate.[51]

Based on its detailed findings, the Board concluded that the applicant had prevailed on the quality assurance issue. The Board, therefore, set aside its prior denial of the operating license application. Interpreting our remand order to have returned to it full jurisdiction on the quality assurance issue in all substantive respects, the Board authorized the Director of Nuclear Reactor Regulation, upon making the findings on all applicable matters specified in 10 C.F.R. § 50.57(a), to issue full power licenses to Byron Nuclear Power Station, Units 1 and 2, subject to the provisions of 10 C.F.R. § 2.764(f).[52]

D. Intervenors' Claims on Appeal

Except in one limited respect, the intervenors do not attack the Licensing Board's conclusion that the reinspection program was adequate to establish the competence of the quality assurance inspectors. Rather, the main thrust of their challenge to the result reached in the supplemental initial decision is that the reinspection program failed to demonstrate affirmatively that the inspectors had not overlooked construction defects of safety significance. In the intervenors' view, the ALAB-770 remand required a determination that the program satisfactorily served that purpose.

In addition, the intervenors complain of the Licensing Board's refusal to admit into evidence a part or the entirety of the proffered written testimony of four of their witnesses. Still further, the intervenors insist that the Licensing Board went beyond the scope of the remand in considering and making findings on matters of plant design and design margin. Finally, intervenors assert flaws in Sargent & Lundy's evaluation of the safety significance of the discrepancies found during the course of the reinspection.

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[50] *Ibid.*

[51] *Id.* at 1275. It should be stressed that, although our remand required the Licensing Board to focus upon whether the reinspection program established the competence of the quality assurance inspectors (*see* p. 1600, *supra*), ALAB-770 went on to authorize the Board to examine any other question that it deemed relevant to the ultimate issue of whether reasonable assurance existed that the Byron facility was properly constructed. 19 NRC at 1182 n.72.

[52] LBP-84-41, *supra*, 20 NRC at 1294-95.

E. Analysis

1. As just noted, the primary argument advanced by the intervenors in support of their attack on the supplemental initial decision rests upon a specific articulated premise with regard to the ALAB-770 mandate. If we understand it correctly, intervenors' thesis is that our remand required the Licensing Board to determine whether the reinspection program brought about a second look at a sufficiently large percentage of the construction work of assertedly high safety significance to allow an informed judgment that it was unlikely that any of that work was in fact defective. In intervenors' view, the reinspection program did not satisfy this objective, with the purported consequence that the applicant failed to sustain its burden of demonstrating the existence of reasonable assurance that significant construction defects had not eluded discovery at the first inspection.[53]

a. The complete answer to this line of argument is that the intervenors have misread ALAB-770. Our instructions to the Licensing Board were explicit: it was to focus its inquiry upon "whether as formulated and executed, the reinspection program has now provided the requisite degree of confidence that the Hatfield and Hunter quality assurance inspectors *were competent.*"[54] If so, we stated, those inspectors could "be *presumed* to have uncovered any construction defects of possible safety consequence."[55]

The intervenors did not ask us to reconsider this instruction when we issued ALAB-770; nor do they now attempt to argue that it was unjustified. And our own independent reassessment of the matter has given us no cause to alter our thinking on it. To the contrary, we remain fully persuaded that, *in the context of this case,* it was perfectly appropriate to confine the *required* inquiry to a determination as to the *competence* of the Hatfield and Hunter inspectors.

As earlier observed, the genesis of the reinspection program was not the discovery — either in the course of the staff's CAT inspection or on some other occasion — of actual safety-significant construction defects that apparently had escaped the notice of the quality assurance inspectors. Instead, to repeat, what brought about the reinspection program were ascertained quality assurance deficiencies of a quite different stripe — inspector certification.

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[53] Intervenors' Supplemental Brief on Appeal (Nov. 6, 1984) (hereafter, Intervenors' Supplemental Brief) at 6-11.

[54] ALAB-770, *supra,* 19 NRC at 1178 (emphasis supplied).

[55] *Ibid.* (emphasis supplied).

An integral part of all acceptable construction quality assurance programs understandably is confidence that the individuals carrying out the inspections have the qualifications to fulfill their responsibilities properly: if there is any doubt in that regard, there necessarily must also be equal doubt respecting whether the inspectors in fact uncovered all significant construction defects. For this reason, it is of crucial importance in the assessment of the adequacy of a quality assurance program that there be satisfactory proof of the inspectors' qualifications. Normally, that proof will take the form of quality assurance documentation establishing that the individual in question has the training and experience appropriate to his or her assigned function and has passed any requisite qualifying examinations.

The rub here was that such proof was lacking; i.e., it could not be ascertained from the available documentation that the inspectors in question were fully qualified. Accordingly, even though there was no objective indication that those inspectors were unqualified and consequently might have overlooked safety-significant defects, that possibility could not be excluded.

It was this consideration that led to the establishment of the reinspection program. Similarly, the uncertainty as to the inspectors' competence stemming from inadequate documentation of their qualifications — rather than the discovery of any actual overlooked safety-significant construction defects — was at the foundation of the Licensing Board's rejection last January of the operating license application on quality assurance grounds.[56]

It follows from the foregoing that the instruction to the Licensing Board to focus upon whether the reinspection program established inspector competence is fully consistent with the intervenors' own stated concept of "the central issue on remand." That issue, the intervenors insist, is whether "the new evidence [i.e., the results of the reinspection program] sufficiently cured or overcame the quality assurance failures identified in the initial decision such that there is now reasonable assurance that inspectors did not overlook construction defects of 'possible safety significance.' "[57] Once again, the identified "quality assurance failures" upon which the denial of the operating license rested related essentially to the demonstration of the inspectors' qualifications. And, in light of the fact that the CAT inspection did not disclose a previously undetected safety-significant defect, there no longer would be any reason to question the existence of reasonable assurance that the Byron facility

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[56] *See* p. 1599, *supra*.

[57] Intervenors' Supplemental Brief at 6.

had been properly built if those "quality assurance failures" were overcome (i.e., the inspectors' competence was established through the reinspection program). Indeed, it is highly improbable that, had there not been the discovered lack of proper documentation of the inspectors' qualifications, an issue would ever have arisen regarding whether the inspectors might have overlooked significant construction defects.

b. The principal question before us is thus whether the Licensing Board correctly found that "as formulated and executed, the reinspection program has now provided the requisite degree of confidence that the Hatfield and Hunter quality assurance inspectors were competent."[58] No ultimate conclusion on this score can be reached prior to consideration later in this opinion of the intervenors' complaint regarding certain Licensing Board rulings excluding evidence. It can be said at this point, however, that the evidence that was received by the Board gives us no cause to disagree with the result below.

Inasmuch as the structure and fruits of the reinspection program are fully and accurately described in the supplemental initial decision, we need not detail that evidence here. Rather, we can confine our discussion to the one aspect of the program that the intervenors now appear to claim affects its worth as a determinant of *inspector competence*: the selection of an initial sampling period of ninety days.[59] According to the testimony of their witness Dr. Dev S. Kochhar, the overall level of performance of an inspector would not be reflected by a review of his or her work over such a short period. This is assertedly because, with the passage of time, a newly trained inspector will become increasingly bored and, thus, less attentive to the proper execution of what Dr. Kochhar characterized as a "repetitive, dull and unstimulating . . . inspection task."[60]

In the supplemental initial decision, the Licensing Board rejected this "fall-off theory" on the ground, among others, that it

> is irrelevant to the issue pervading our Initial Decision and the proceeding on remand, i.e., whether the reinspection program reliably demonstrated that the inspectors were properly trained and tested and qualified at the beginning of their in-

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[58] *See* p. 1600, *supra*.

[59] *See* p. 1599, *supra*. Although in ALAB-770 (19 NRC at 1178) we raised a question respecting whether the integrity of the reinspection program was affected by the fact that it was carried out by Hatfield and Hunter personnel, the intervenors do not challenge the Licensing Board's answer in the negative. *See* LBP-84-41, *supra*, 20 NRC at 1235-39.

[60] Tr. fol. 10,538 at 8 (Kochhar). Similar testimony was submitted by another intervenors' witness, Dr. William H. Bleuel. That testimony was, however, excluded by the Licensing Board. *See* pp. 1609-10, *infra*.

spection work. The period of interest for that issue is obviously the first few months of their employment as inspectors.[61]

We agree with that conclusion. In addition, although not necessary to reach the point, we share the Board's further view that Dr. Kochhar did not lay an adequate foundation for his theory. As the Board observed, the witness's short-term studies were insufficient to permit an informed judgment respecting whether the ninety-day period would provide a reliable measure of inspector performance.[62]

2. We now move on to the intervenors' complaint about the Licensing Board's exclusion, in whole or in part, of the testimony of four of their witnesses: Dr. William H. Bleuel, Dr. Eugene P. Ericksen, Sargent Podworny, and Charles C. Stokes. The assigned basis (or bases) for the exclusion varied from individual to individual. We find it necessary to consider in each instance two questions. First, was the excluded testimony relevant to the disposition of any crucial issue? Second, if so, was it nonetheless cumulative and, accordingly, its exclusion not prejudicial?

In order to pass the test of relevance, the testimony would have had to bear upon one of the two principal issues that the ALAB-770 remand required the Licensing Board to explore. As just emphasized, one of those issues focused upon the reinspection program and called upon the Board to decide whether that program established the competence of the Hatfield and Hunter quality assurance inspectors. The other issue involved the disposition of any discrepancies brought to light by the reinspection program.[63]

On the latter score, as earlier noted, the essence of the reinspection program was the reexamination by indisputably qualified inspectors of the work that had been previously accepted by the inspectors whose qualifications were in doubt because of lack of proper documentation. Needless to say, in most instances at least, there was not absolute agreement between the original inspector and the reinspector. Total agreement was, of course, not a condition precedent to a conclusion that the original inspector was competent (90 or 95% agreement was sufficient depending upon whether subjective or objective criteria were employed). But where the reinspector did find a deviation from established

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[61] LBP-84-41, *supra*, 20 NRC at 1229.

[62] *Id.* at 1230-31.

[63] As discussed at p. 1625, *infra*, ALAB-770 also called upon the Licensing Board to explore an issue relating to the quality assurance program of the Systems Control Corporation. None of the excluded testimony was, however, directed to that issue.

standards that had not been recorded by the original inspector, the question naturally arose: was that deviation significant and, if so, had it been rectified? In ALAB-770, we directed the Licensing Board to address this question: "Have all identified discrepant conditions, such as poor welding, been properly resolved?"[64] And, in its supplemental initial decision, the Licensing Board answered the question in the affirmative based upon Sargent & Lundy's analysis that demonstrated that none of the identified discrepancies had design significance.

With these considerations in mind, we examine in turn each witness's excluded testimony.

a. Dr. Bleuel is a partner in the consulting firm of Zarkov & Gordon. He was described by the intervenors as a reliability and design assurance engineer with twenty-five years experience in design and quality assurance.[65] On July 24, 1984 (after the start of the hearing on remand), the Board was first notified that he might serve as a witness and his proposed testimony was thereafter filed on August 13, 1984.[66]

That testimony offered three reasons why, in Dr. Bleuel's opinion, the reinspection program did not provide adequate assurance that Byron will be operated safely. The first reason was that a failure modes and effects analysis had not been employed in the formulation of the program.[67] Second, Dr. Bleuel asserted, the engineering evaluation that was performed by Sargent & Lundy should have been performed with either pre-established criteria or by an independent group. Finally, Dr. Bleuel stated that his professional experience contradicted the assumption underlying the program that inspectors would perform least well during the initial three months.[68]

We need not decide here whether the Licensing Board correctly rejected this testimony as untimely.[69] Be that as it may, its rejection was not reversible error.

To begin with, intervenors' counsel explicitly conceded at oral argument that the failure modes and effects analysis called for by Dr. Bleuel did not address the question of inspector competence.[70] Further, there is

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[64] 19 NRC at 1179.

[65] Intervenors' Supplemental Brief at 11-12.

[66] *Id.* at 15.

[67] The intervenors submitted Dr. Bleuel's description of such an analysis: "Failure modes and effects analysis is a tool of reliability engineering. Essentially it entails three steps: first, identifying each of the possible ways (modes) in which a system could fail; second, analyzing the effects of each such failure mode; and third, categorizing the failure modes according to their effects." *Id.* at 12A.

[68] *Id.* at 12.

[69] *See* Tr. 10,743-44.

[70] App. Tr. 27, 33 ("App. Tr." refers to the transcript of the November 29, 1984 oral argument on the intervenors' challenge to the supplemental initial decision).

no apparent connection between the analysis and the Sargent & Lundy evaluation of ascertained deviations. Accordingly, that portion of the Bleuel testimony simply lacked relevance.[71]

Dr. Bleuel's second point — addressed to the Sargent & Lundy evaluation — covered essentially the same territory as a portion of the admitted testimony of intervenors' witness Charles Stokes.[72] In the circumstances, we see no prejudice to intervenors stemming from the fact that Dr. Bleuel was not permitted to rehearse that testimony. The same lack of possible prejudice attaches to the exclusion of so much of Dr. Bleuel's proposed testimony as mirrored Dr. Kochhar's assertion respecting the decline in inspector performance over a period of time. Apart from the consideration that the reinspection program was properly designed to determine inspector *competence* (i.e., capability) and not *performance,* Dr. Bleuel's foundation for offering his opinion on the subject was no firmer than that of Dr. Kochhar.[73]

b. Dr. Ericksen is a senior sampling statistician for Mathematica Policy Research, Incorporated and a member of the Temple University faculty. He holds degrees in sociology, mathematical statistics, and mathematics. Those portions of his testimony that were excluded did no more than criticize one aspect of the structure of the reinspection program — (i.e., they did not relate to the Sargent & Lundy evaluation to any extent).

At oral argument, intervenors' counsel expressly conceded that the criticism had no bearing upon the efficacy of the program as a vehicle for determining inspector competence.[74] Thus, whether or not the Licensing Board was right that Dr. Ericksen was unqualified to appraise the program,[75] his criticism was wholly irrelevant.

c. The same lack of relevance attends upon the excluded proposed testimony of Mr. Podworny, an Authorized Nuclear Inspector in the employ of the Hartford Steam Boiler Inspection and Insurance Company. That testimony related primarily to practices utilized by Hartford in determining compliance with the ASME Code. At oral argument, intervenors' counsel expressly conceded that it would not "shed light" on the inspector competency issue.[76] And, manifestly, it had nothing to do with the Sargent & Lundy evaluation.

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[71] *See* p. 1608, *supra.*
[72] *See* p. 1618, *infra.*
[73] *See* pp. 1607-08, *supra.*
[74] App. Tr. 29.
[75] Tr. 11,026.
[76] App. Tr. 40.

d. Mr. Stokes is a nuclear engineering consultant with a newly formed firm, P/S Associates. He holds a degree in civil engineering and has worked professionally as a civil and mechanical engineer for approximately ten years, principally in the design area.[77]

Mr. Stokes's testimony was submitted in question and answer form.[78] Although certain other answers were similarly treated, the intervenors' complaint to us is directed solely to the exclusion of the answers to questions 19 and 29-33.[79]

Question 19 probed Mr. Stokes's concerns about a broad range of Sargent & Lundy's design criteria applicable to such Byron components as safety-related pipe hangers.[80] In response to the question, Mr. Stokes criticized some of those criteria on the ground that they either failed to take into account certain stresses or made incorrect assumptions regarding the weight distribution of the component parts.[81]

As intervenors conceded at oral argument,[82] this criticism had nothing to do with the determination as to inspector competence. Nor is there anything to indicate that Mr. Stokes's concerns on this score bear specifically upon Sargent & Lundy's disposition of the discrepancies revealed by the reinspection program. Indeed, while their brief advances the naked assertion of such a link, the intervenors have shed no light upon what they deem the connection to be. Moreover, it is worthy of note that, in their proposed supplemental initial decision below, the intervenors accepted the applicant's proposed finding that "in response to the issue added by the Board concerning [a]pplicant's repair of defects, the Board finds that all discrepancies were either repaired or dispositioned as acceptable 'as-is' based on engineering evaluation results, thereby resolving this issue."[83]

In these circumstances, the answer to question 19 was not relevant to any issue on remand. The same may be said with regard to the excluded answers to questions 29-33.[84] In a word, those questions related to the reinspection of welding performed by Blount Brothers Corporation, the general contractor responsible for concrete work, post-tensioning, and

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[77] Tr. fol. 10,770 at 1-3 (Stokes).

[78] *See generally* Tr. fol. 10,770 (Stokes).

[79] Intervenors' Supplemental Brief at 26-28.

[80] Tr. fol. 10,770 at 13 (Stokes). As far as we can tell, these criteria were early developed by Sargent & Lundy in its role as the architect-engineer for the Byron project, and not in the course of its engineering evaluation following the reinspection program.

[81] *Ibid.*

[82] App. Tr. 38.

[83] Intervenors' Proposed Supplemental Initial Decision (Sept. 18, 1984) at 85.

[84] *See* Tr. fol. 10,770 at 20-22 (Stokes).

containment structural steel.[85] As ALAB-770 makes clear, however, our remand to the Licensing Board did not extend to Blount because its quality assurance program had been found adequate.[86]

3. In its supplemental initial decision, the Licensing Board did not confine itself to determining whether the results of the reinspection program demonstrated inspector competence. As earlier noted, it also concluded that those results (together with certain other evidence) affirmatively established the quality of the work performed by Hatfield and Hunter.[87] In reaching that conclusion, the Board made and relied upon, *inter alia*, findings regarding the safety margins included in the general design of the Byron facility.[88] According to the intervenors, that design was not in issue on the remand and thus was improperly invoked by the Licensing Board.[89]

It is quite true that the general design was not open to challenge on the remand. To the contrary, any questions with regard to it had to be litigated in the hearings preceding the initial decision last January.[90] But it scarcely follows that the plant design and its associated safety margins, to the extent not successfully attacked in the prior hearings, could not be relied upon by the Licensing Board on the remand. Be that as it may, the underpinnings of the Board's findings regarding the affirmative evidence as to construction work quality are not of present importance. Once again, we determined in ALAB-770 that all the Board need determine in that regard was that the quality assurance inspectors were competent — if competent, the quality of the work could be presumed.

It should only be added in this connection that the intervenors were permitted to adduce evidence on the subject of design criteria and safety margins to the extent relevant to the other principal issue on remand: the Sargent & Lundy disposition of the deficiencies disclosed by the reinspection.[91] This being so, they have no basis for complaint as to the scope of the Licensing Board's inquiry into design matters.[92]

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[85] *See* Affidavit of Kenneth T. Kostal (Aug. 18, 1984), appended as Attachment A to Motion to Exclude Testimony of Mr. Charles C. Stokes (Aug. 19, 1984). *See also* LBP-84-2, *supra*, 19 NRC at 149.

[86] 19 NRC at 1170 n.23.

[87] *See* pp. 1603-04, *supra*.

[88] LBP-84-41, *supra*, 20 NRC at 1261-64, 1274.

[89] Intervenors' Supplemental Brief at 23-26.

[90] As will shortly be seen, at least questions relating to the seismic design were in fact so litigated. *See* pp. 1616-24, *infra*.

[91] LBP-84-41, *supra*, 20 NRC at 1262 n.10. *See* Tr. 10,668; Tr. fol. 10,770 at 16-20 (Stokes).

[92] In its supplemental brief (at 26), the intervenors note in passing their disagreement with the Licensing Board's denial, in an unpublished November 2, 1984 order, of their September 12, 1984 motion to reopen the record on design issues. In a September 19, 1984 unpublished order, we expressed doubt that the motion came within the scope of the ALAB-770 remand inasmuch as "*design* quality assurance issues [are] separate and distinct from *construction* quality assurance issues." For this reason, we felt

(Continued)

4. In determining whether a particular deficiency identified during the reinspection had design significance, Sargent & Lundy sometimes employed what it characterized as "engineering judgment."[93] The intervenors complain that that organization failed to "define" in advance the criteria to be used in making such judgments.[94] They insist that, given that failure, the evaluation should not have been performed by Sargent & Lundy but, instead, by an organization not previously associated with the project.[95] This thesis was advanced in both the accepted testimony of Mr. Stokes and the excluded testimony of Dr. Bleuel.[96]

We agree with the Licensing Board's rejection of the intervenors' position. Our examination of the record has disclosed no evidence to suggest either that Sargent & Lundy's engineering judgments were flawed or that the organization allowed its evaluations to be influenced by its prior association with Byron.[97] In this connection, although Mr. Stokes performed a detailed review of "many" of the evaluations, on cross-examination he was able to describe only one purported example of a relevant lack of objectivity by Sargent & Lundy: an alleged inconsistency between its structural engineering and mechanical engineering groups in the treatment accorded fatigue loading.[98] But, as the Licensing Board observed, no such inconsistency existed.[99] This was because the two groups were looking at different components and each adhered to the portions of the ASME and American Institute of Steel Construction (AISC) Codes applicable to those components under its examination.[100] Consequently, it is not surprising that, notwithstanding their appellate claims, the intervenors acknowledged below that the record did not support the need for an independent evaluation effort because of Sargent & Lundy's association with the applicant.[101]

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constrained to authorize explicitly the Licensing Board to entertain the motion. In these particular circumstances, if dissatisfied with the denial of the motion, the intervenors should have noted an appeal from it. They did not and, therefore, all that is now properly before us is the Licensing Board's disposition of the remanded *construction* quality assurance issues.

[93] Tr. fol. 9044 at 6 (French); Tr. fol. 9051 at 7 (Branch); App. Exh. R-4 at VI-1, VI-2.

[94] Intervenors' Supplemental Brief at 29A.

[95] *Id.* at 29.

[96] Tr. fol. 10,770 at 4-6 (Stokes); p. 1609, *supra*.

[97] We have earlier discussed the evaluation methodology. *See* pp. 1601-02, *supra*.

[98] Tr. fol. 10,770 at 4, 18-19 (Stokes); Tr. 10,893-94.

[99] LBP-84-41, *supra*, 20 NRC at 1264.

[100] Tr. fol. 11,158 at 8-9 (Erler).

[101] Intervenors' Proposed Supplemental Initial Decision at 85.

II. OTHER ISSUES IN CONTROVERSY ON APPEAL

As previously noted, in its response to the applicant's appeal from the January 1984 Licensing Board decision the intervenors challenged the Board's resolution of several non-quality assurance issues. In a June 13, 1984 memorandum and order (unpublished), we rejected one of those challenges — directed to the Licensing Board's refusal to allow the intervenors to litigate their contention that the applicant was not financially qualified to operate the facility. (The text of that memorandum and order is contained in the Appendix to this decision, *infra*, pp. 1627-29.) We now consider the intervenors' remaining claims, which we conclude to be without merit.

A. Need for Power and Alternative Energy Sources

Effective April 26, 1982, the Commission amended its regulations to prohibit the litigation of need for power and alternative energy source issues in operating license proceedings.[102] The prohibition currently is found in 10 C.F.R. 51.53(c).[103]

In unpublished memoranda and orders issued on August 5 and 26, 1982, the Licensing Board denied the intervenors' petitions seeking a waiver of or an exception to the prohibition. The Board pointed out that, under the terms of 10 C.F.R. 2.758(b), relief may be granted only upon a demonstration "that special circumstances with respect to the subject matter of the particular proceeding are such that application of the rule or regulation (or provision thereof) would not serve the purposes for which the rule or regulation was adopted." In the Board's view, the intervenors had failed to make a *prima facie* showing in this regard.

Before us, the intervenors not merely challenge this conclusion but, more fundamentally, maintain that 10 C.F.R. 51.53(c) contravenes the National Environmental Policy Act of 1969, 42 U.S.C. 4321, and therefore is unlawful. The latter claim is, of course, addressed to the wrong forum: within this agency, only the Commission itself has the authority to invalidate one of its own rules or regulations.[104] And we find nothing in the intervenors' assertions that might possibly establish the existence

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[102] 47 Fed. Reg. 12,940 (1982).

[103] *See also* 10 C.F.R. 51.23(e).

[104] *See* 10 C.F.R. 2.758(a); *Kansas Gas and Electric Co.* (Wolf Creek Generating Station, Unit 1), ALAB-784, 20 NRC 845, 846 (1984); *Potomac Electric Power Co.* (Douglas Point Nuclear Generating Station, Units 1 and 2), ALAB-218, 8 AEC 79, 89 (1974).

of the "special circumstances" required for a waiver of or exception to the section 51.53(c) mandate.

Undergirding the 1982 amendment was the Commission's belief that, as a general matter, no useful purpose is served by considering need for power and alternative energy sources issues at the operating license stage. As the Commission put it in the statement of consideration accompanying the amendment:

> [W]hile there is no diminution of the importance of these issues at the construction permit stage, the situation is such that at the time of the operating license proceeding the plant would be needed to either meet increased energy needs or replace older less economical generating capacity and that no viable alternatives to the completed nuclear plant are likely to exist which would tip the NEPA cost-benefit balance against issuance of the operating license.[105]

Neither the intervenors' filings below nor their brief to us presents nearly enough specific facts (as opposed to broad, unparticularized averments) to persuade us that the present and projected energy situation in Commonwealth Edison's service area is sufficiently special that that rationale is inapplicable here.

Stated otherwise, the laying by intervenors of a proper foundation for their waiver or exemption request necessitated a substantial concrete demonstration that, notwithstanding the enormous economic investment in Byron, the NEPA cost-benefit balance might now tip in the direction of abandoning this essentially completed facility. For, assuredly, that proposition is far from self-evident. There may well be room for legitimate doubt regarding whether warrant exists to undertake the erection of a particular nuclear facility — i.e., whether the need for the electricity that the facility would generate is sufficient to justify assuming the environmental and other costs associated with its construction and operation. Thus, as the Commission pointed out, need for power and alternative energy sources issues remain of importance at the construction permit stage. But it is difficult to perceive many sets of circumstances that might lead one to a reasoned conclusion that the environmental costs of operating an already built facility would exceed the benefit to be derived from utilization of the electric power that the facility is capable of producing.[106] Accordingly, it does not seem unfair to expect a thresh-

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[105] 47 Fed. Reg. 12,940.

[106] Needless to say, that the need for a facility's generating capacity (either to meet increased demand or to provide replacement electric power) might not be sufficient to justify building the plant does not perforce mean that, if the plant has already been constructed, it should be abandoned. Nor does a present judgment that the construction of, e.g., a coal-fired facility might have been preferable to the construction of the nuclear facility have much significance in determining whether, having been built, the nuclear plant should be allowed to operate.

old particularization on the part of a party claiming the presence of such circumstances and, therefore, an entitlement to litigate whether NEPA requires that the facility be mothballed or dismantled. Once again, such particularization was absent here.

B. Seismic Design

All nuclear power plants must be designed and built to protect the public from the hazards of radioactive releases should the plant be subjected to movements in the earth's crust.[107] Under the Commission's regulatory scheme, this protection is achieved in part through the requirement that the plant be designed to withstand the maximum vibratory ground motion (in terms of acceleration) that might result upon the occurrence of one of two different possible seismic events: the Safe Shutdown Earthquake (SSE)[108] and the Operating Basis Earthquake (OBE).[109] The SSE is the most powerful earthquake *ever* expected to occur at the plant site.[110] The plant must be able to withstand the forces of the SSE without releasing dangerous quantities of radioactivity.[111] The OBE is the strongest earthquake considered *likely* to occur during a plant's operating lifetime.[112] Tne facility must be designed and built to function through the OBE without creating undue risk to the public health and safety.[113] The vibratory ground acceleration assigned to the OBE must be at least one-half that assigned to the SSE[114] unless a lesser value is justified.[115]

Before selecting the SSE and OBE that are to serve as the design bases for its proposed facility, a utility is required to investigate in sufficient scope and detail, *inter alia*, the structural geologic conditions of the site and surrounding region, including its geologic history.[116] If there is a fault[117] within 200 miles of the site that might be of significance in estab-

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[107] *Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 & 2), ALAB-644, 13 NRC 903, 909 (1981), *quoting Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 & 2), ALAB-519, 9 NRC 42, 45 (1979).

[108] 10 C.F.R. 100, Appendix A, § III(c).

[109] *Id.* § III(d).

[110] *Diablo Canyon*, ALAB-644, *supra*, 13 NRC at 911.

[111] *Ibid.*

[112] *Ibid.*

[113] *Ibid.*

[114] 10 C.F.R. 100, Appendix A, § V(a)(2).

[115] *Id.* § II; *Diablo Canyon*, ALAB-644, *supra*, 13 NRC at 989-92.

[116] 10 C.F.R. 100, Appendix A, § IV.

[117] A fault is a large-scale dislocation or distortion within the earth's crust along which differential slippage of the adjacent earth materials has occurred parallel to the fracture plane. *Id.* § III(e).

lishing the SSE,[118] the applicant must further determine whether that fault is "capable."[119] If so, it must then be evaluated for its potential for causing vibratory ground motion and surface displacement, and taken into account in establishing the SSE.[120] In this connection, if the investigation both demonstrates that a particular fault is structurally associated with geologically old structural features (such as many of those found in the eastern region of the United States) and uncovers no affirmative evidence of capability, that fault shall be presumed to be not capable.[121]

1. The Byron site is located in the Central Stable Region tectonic province — an area that extends from the Rocky Mountains east into New York State and south to Oklahoma. It is a region characterized, in general, by a relatively low level of seismicity.[122]

Approximately six miles southwest of the Byron site lies the Sandwich Fault Zone, encompassing a noncapable fault. The existence of the Zone was known at the time the construction permit for the plant was issued. It was then thought to be the nearest major fault zone to Byron.[123] There are minor but no capable faults underlying the site itself.[124]

Maximum accelerations of 0.2*g* for the SSE and 0.09*g* for the OBE were adopted as part of the design bases for the plant.[125] These values were determined to be sufficiently high based on an examination of the intensities and recurrence rates for earthquakes in the Central Stable Region.[126]

Subsequent to the issuance of the construction permit, a study undertaken by the Illinois State Geological Survey (ISGS) identified the existence of the Plum River Fault Zone just 5.3 miles northwest of Byron,

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[118] *Id.* § IV.

[119] A capable fault is defined in 10 C.F.R. Part 100, Appendix A, § III(g) as a fault which has exhibited one or more of the following characteristics:

1. Movement at or near the ground surface at least once within the past 35,000 years or movement of a recurring nature within the past 500,000 years.
2. Macro-seismicity instrumentally determined with records of sufficient precision to demonstrate a direct relationship with the fault.
3. A structural relationship to a capable fault according to characteristics (1) or (2) of this paragraph such that movement on one could be reasonably expected to be accompanied by movement on the other.

[120] *Id.* §§ IV(a)(7) and (8), IV(b).

[121] *Id.* § III(g). For purposes of this regulation, "old" means at least "pre-Quaternary." *Ibid.* The Quaternary period starts with the Pleistocene (glacial) age, roughly one million years ago.

[122] LBP-84-2, *supra*, 19 NRC at 241.

[123] LBP-74-87, 8 AEC 1006, 1036 (1974).

[124] LBP-75-64, 2 NRC 712, 716-17 (1975).

[125] Tr. fol. 479 at 3 (Singh); Tr. fol. 760 at 3-4 (Rothman); Staff Exh. 1 (SER) at 2-24. Earthquake acceleration is measured in units of gravity, or "*g*." One *g*, the acceleration of a free falling body due to gravity, is equal to an acceleration of 32.17 ft/sec/sec.

[126] Staff Exh. 1 at 2-26 to 2-28; LBP-75-64, *supra*, 2 NRC at 718.

which was earlier thought to be another type of geologic structure. Principally on the basis of the information developed by the ISGS study, the applicant and the NRC staff determined that the Plum River Fault Zone was not capable.[127]

2. At the hearing below, the intervenors contested the seismic design of the plant.[128] In particular, they disputed the acceptability of the ground acceleration values selected for the plant's SSE and OBE, claiming that there was not sufficient information pertaining to either the causes of earthquakes in northern Illinois or the Plum River Fault Zone to arrive at those values. The Licensing Board rejected this claim and found the plant's seismic design to be in compliance with Commission regulations.[129]

Before us, the intervenors renew their challenge to the adequacy of the plant's seismic design. They maintain that the Licensing Board erred in finding that the Plum River Fault Zone was not capable and in endorsing the 0.09*g* value for the OBE. On the latter score, the intervenors contend that the applicant did not show good cause for deviating from the requirement that the value assigned to the OBE be at least one-half of the value given the SSE. According to the intervenors, the OBE value should be at least 0.1*g* and not the 0.09*g* employed for seismic design purposes.[130]

At the hearing, the only dispute concerning whether the Plum River Fault Zone is capable related to the first criterion for determining a capable fault: whether there had been movement at or near the ground surface at least once during the last 35,000 years or movement of a recurring nature within the past 500,000 years.[131] In this regard, both the applicant and the staff presented considerable evidence supporting the absence of such movement. The intervenors insisted, however, that that evidence was inadequate to reach any conclusion respecting the fault's capability.

The intervenors continue to press that position before us. They maintain that the Licensing Board's finding that the Plum River Fault Zone was not capable rested upon information acquired by "inaccurate" and "indirect" methods (i.e., by core drilling and seismic refraction) "while

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[127] LBP-84-2, *supra*, 19 NRC at 242-44.

[128] In actuality, it was only the League of Women Voters that pressed the matter before the Licensing Board. But because the other intervenors have joined the seismic arguments presented by the League to us, for convenience we are using the term "intervenors" throughout this discussion.

[129] *Id.* at 247-50.

[130] Brief of Intervenors (March 12, 1984) at 55-57.

[131] *See* note 119, *supra*. The other two criteria for determining a capable fault were never seriously raised by the intervenors as issues in the proceeding.

[132] Brief of Intervenors at 56.

an accurate and direct method (excavation and direct observation of the fault itself) is available."[132] But the intervenors neither explain why the core drilling and seismic refraction methods produced unsatisfactory results nor refer us to any evidence in the record that might support such an assertion. This being so, the intervenors could not have complained had we elected to treat as abandoned their challenge to the Licensing Board's Plum River Fault Zone findings.[133]

We have chosen, however, not to take that route but, rather, to consider the intervenors' claim. Our review of the record persuades us that it is without merit.

One means of determining the age of a fault is the relative age dating method.[134] Basically, it consists of examining the material that overlies the fault and ascertaining when this material was deposited. The fault is then dated by tracing it upward through each stratum (or layer) of material to the point where the fault stops. An undisturbed stratum above the fault indicates that the fault is older than the overlying material.[135] Although not conclusive, an absence of signs of disturbance of the overlying material also provides some indication of the lack of fault movement since the time of deposit of the overlying materials.[136] On the other hand, evidence of displacement could indicate movement of the underlying fault since that time.[137]

The Plum River Fault Zone was extensively studied by the ISGS,[138] which is the repository for all geological information gathered in Illinois and is staffed by well-recognized experts on the geology of that state.[139] Indeed, the intervenors' own expert on geology, Dr. Henry H. Woodard, Chairman of the Geology Department, Beloit College, Wisconsin,

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[133] *See Consumers Power Co.* (Midland Plant, Units 1 and 2), ALAB-270, 1 NRC 473, 475 (1975). True, the intervenors in that case failed to file any brief in support of their appeal. While the intervenors here did file one, nonetheless the observation we made in *Midland* applies to them as well: a failure to brief issues adequately

> deprives us precisely of that assistance which the Rules of Practice are designed to have an appellant provide, *i.e.*, to flesh out the bare bones exceptions "with the precise portion of the record relied on in support of the assertion of error," 10 C.F.R. § 2.762(a), and to present us "with sufficient information or argument to allow an intelligent disposition of [the] issue[s]."

[134] 10 C.F.R. 100, Appendix A, § IV(a)(7) n.3; Tr. fol. 432 at 4 (Yonk). The other basic method (known as absolute age dating) employs radiometric studies of naturally occurring radioisotopes and their daughter products. Unlike the relative age dating method, it was not used in the ISGS study because of the absence of proper mineralogy at the site. Tr. fol. 432 at 3-4 (Yonk).

[135] *Id.* at 4.

[136] Tr. 567-68, 597-98, 762-64, 820-21.

[137] Tr. 816-17.

[138] The study is reported in Plum River Fault Zone of Northwestern Illinois, ISGS Circular 491 (hereafter ISGS Circular). *See also* Tr. fol. 753 at 3, 5 (Alterman); Tr. 791; Staff Exh. 1 at 2-22 to 2-24; Tr. 802-03, 822, 824.

[139] Tr. 436.

credits the ISGS with being the "foremost state geology group in the United States."[140]

In using the relative age dating method, the ISGS study examined data acquired from field observations, existing well records, and cores obtained from the area of the fault zone. In addition, the ISGS made use of a limited amount of refraction seismography data pertaining to the area of the fault zone, principally to locate anomalies in the bedrock surface and determine the position of the zone.[141] After that determination was made, two holes were drilled, one on each side of the fault zone, as interpreted from the refraction seismographic data. A core extending twenty feet into the bedrock was taken from one hole; a twenty-five foot core from the other. The underlying materials and bedrock obtained from the two drillings were analyzed and the relative position of layers of materials compared.[142] No displacement of the overlying materials, consisting of soils of the Illinoian and pre-Illinoian ages (200,000 to 500,000 years ago) at the top of the bedrock, was observed.[143] The fault zone itself was determined to have been formed sometime in the interval between the Niagaran and Pleistocene periods.[144] The ISGS thought it likely that the fault zone was formed around the Pennsylvanian period.[145]

The ISGS study was reviewed by, among others, Alan K. Yonk, a geologist retained by the applicant,[146] and Dr. Ina B. Alterman, an NRC staff geologist.[147] Relying on his own observations and investigations and the results of the ISGS study, Mr. Yonk concluded that there had been no movement of any fault near the Byron site for at least 200,000 years and no movement of a recurrent nature for 500,000 years. In his opinion, therefore, the Plum River Fault Zone was not capable within the meaning of the Commission's seismic regulations.[148] Dr. Alterman reached the same conclusion.[149] Apart from the information provided by

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[140] Tr. 582.

[141] ISGS Circular at 2, 16; Tr. fol. 753 at 5 (Alterman); Tr. 568-69, 791. Refraction seismography basically involves the use of seismographs at specific locations to record sound waves set off in the ground by explosives. The sound waves pass through the soil and rock and their arrival times are recorded. Calculations can then be made of the depths and structure of the various underlying formations. Tr. 792-93.

[142] ISGS Circular at 15; Tr. 569-70.

[143] Tr. 815, 822; ISGS Circular at 16; Tr. fol. 753 at 2-4 (Alterman); Staff Exh. 1 at 2-22 to 2-24.

[144] ISGS Circular at 17; Tr. fol. 432 at 7 (Yonk). Roughly, the interval between the Niagaran and Pleistocene times translates into a period from 400 million to about one million years ago.

[145] ISGS Circular at 17. The Pennsylvanian period was roughly 290 million years ago. Tr. fol. 753 at 7 (Alterman).

[146] Tr. fol. 432 at 5-6 (Yonk).

[147] Tr. fol. 753 at 3, 5 (Alterman).

[148] Tr. fol. 432 at 2, 6-8 (Yonk).

[149] Tr. fol. 753 at 3 (Alterman).

the ISGS study,[150] she was influenced by the fact that there is no known seismicity associated with the fault zone, by the absence of any scarp at the fault zone, and by the tectonic history of the surrounding area indicating that any faulting in Illinois is no younger than sixty-five million years.[151]

The only witness presented by the intervenors on this issue was Dr. Woodard. His position appeared to be that any conclusion that the Plum River Fault Zone was not capable was premature because of the absence of information "one way or the other."[152] He conceded that he knew of no evidence of fault movement within the past 35,000 years or movement of a recurring nature within the past 500,000 years.[153] But, as he saw it, that was not determinative because "critical information" had not been obtained. According to Dr. Woodard, the overlying material should have been excavated "right across the fault zone." This would have permitted "direct observation" respecting whether the material overlying the fault is or is not displaced.[154] In his view, the method followed by the ISGS did not provide this "critical information" because of the "relative inaccuracies" of the technique.[155] Dr. Woodard admitted, however, that his proposed method, like core drilling and seismic refraction, in and of itself would not provide absolute proof of fault movement.[156]

The Licensing Board was not persuaded on the need for the "excavation" and "direct observation" insisted upon by Dr. Woodard. According to the Board, the evidence already in the record on the Plum River Fault Zone was "considerable and convincing," justifying the conclusion that the Plum River Fault Zone was not capable. As it explained:

> The Board relied principally on testimony presented by the [s]taff based on and supported by the observation and analysis of data by the ISGS and reported in its Circular 491. These arguments by the [s]taff, leading to the conclusion that the overlay of till has not been disturbed in recent geologic times, include the absence of an escarpment at the fault, the equality of the elevation of the bedrock strata bordering the fault even though those strata are of different ages, and the tectonic history of the region which includes no record of local seismicity. Additionally, the finding of no fault in northern Illinois which has displaced overlying Illinoian-age soil and that

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[150] The NRC staff routinely relies on state groups such as the ISGS because they are generally recognized as experts on the geology of their own states. Tr. 835-36.

[151] Tr. 818. Scarp, or escarpment, is a steep face frequently presented by the abrupt termination of stratified rocks. Its presence over a fault is an indication of vertical fault movement. Tr. 821.

[152] Tr. 565, 599.

[153] Tr. 561.

[154] Tr. 565-68, 574.

[155] Tr. 571.

[156] Tr. 568.

there are no known capable faults in the United States east of the Rocky Mountains assisted the Board in concluding that the noncapability of the Plum River Fault Zone has been sufficiently demonstrated to support our decision that no movement has occurred at Plum River within the past 0.13 to 0.40 MY [million years].[157]

On the record before us, we see no basis for the rejection of the Board's analysis of the matter. The Plum River Fault Zone had been studied in detail by the agency undoubtedly most familiar with the geology of the area, which found no evidence suggesting that the fault might be capable. Similarly, studies of the area by the applicant's and staff's experts uncovered no such evidence. In the circumstances, the Licensing Board had an ample foundation for its conclusions, contrary to the opinion of Dr. W. dard, that the Plum River Fault Zone had been adequately investigated and that the Zone contained no capable faults.

3. As noted earlier (p. 1616, *supra*), a nuclear power plant must be designed to withstand the ground acceleration that might occur as a result of an SSE and OBE. To arrive at the SSE for the Byron facility, the applicant studied the seismic history of the area and ascertained that the greatest intensity earthquake to have occurred in that area was a Modified Mercalli (MM) VII-VIII earthquake at Anna, Ohio in 1937.[158] Although no earthquake of that intensity had ever been recorded closer to the Byron site, for conservatism (and at the request of the staff) the applicant postulated a MM VIII earthquake and associated ground acceleration of $0.2g$ as the basis for the Byron SSE.[159] It then confirmed the appropriateness of that value for the Byron site conditions. For this purpose, it utilized the data from an existing study conducted in connection with the establishment of the SSE for the Tennessee Valley Authority's Sequoyah Nuclear Power Plant located near Chattanooga, Tennessee.

As for the OBE for Byron, its value was arrived at following a study of the earthquakes known to have occurred in a 250-mile radius from the site during a ninety-year period.[160] On the basis of that study, it was determined that the largest earthquake that could be expected to affect

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[157] LBP-84-2, *supra*, 19 NRC at 245.

[158] Tr. fol. 479 at 4-7 (Singh); Staff Exh. 1 at 2-24. Earthquakes are generally reported in terms of intensity (on the so-called Modified Mercalli Intensity Scale) or magnitude (on the so-called Richter Scale.) The Modified Mercalli Scale is based on sensed ground motion and observed damage to buildings, etc. The Richter magnitude is generally related to the total amount of energy released by the earthquake and is determined by movement on a standard seismometer. These movements are then corrected for distance from the epicenter of the earthquake. *See* R. Foster, Physical Geology (1971) at 311-14.

[159] Tr. fol. 479 at 4-7 (Singh); Staff Exh. 1 at 2-24 to 2-27.

[160] Tr. 491-92. The ninety-year period ran from 1880 to 1970. *Ibid.*

the Byron site during the operating life of the facility would have an intensity of MM VI with a corresponding ground acceleration of less than 0.07*g* at the site.[161] For conservatism, the peak acceleration value was increased to 0.09*g*.[162]

Both the applicant and (on behalf of the NRC staff) the Lawrence Livermore Laboratory independently calculated the likelihood of the occurrence of an earthquake that might produce a 0.09*g* acceleration at the site. The applicant's analysis indicated such an earthquake would occur once in every 2150 years;[163] the Livermore conclusion was a recurrence rate of once in every 200 to 1000 years.[164] Although not undertaken for Byron but rather as part of a general study, probabilistic estimates of earthquake hazards in the central United States were performed by Dr. Robert B. Herrmann of St. Louis University. His calculations showed a return period in the order of once every 1000 years for peak accelerations of about the 0.09*g* level in the site area.[165]

On the basis of this evidence, the Licensing Board found the ground acceleration values of 0.2*g* for the SSE and 0.09*g* for the OBE to be appropriate. The intervenors do not challenge the former finding (except as discussed with respect to the Plum River Fault Zone) but do argue that sufficient justification has not been shown to support the Board's endorsement of a 0.09*g* value for the OBE.[166] As best as we can understand it, the gist of their argument is that the OBE was not correctly determined because its value was based on the Sequoyah study. That study could not be used for that purpose, according to the intervenors, for the reason that it was not "Byron specific" and, additionally, did not take into proper consideration the ground acceleration that resulted from a 1982 earthquake at Enola, Arkansas.[167]

The short and complete answer to the intervenors' argument is that the Sequoyah study was never used for purposes of the OBE. Instead, it was employed only in connection with the formulation of the SSE value and, even then, solely to confirm the adequacy of the 0.2*g* value after it

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[161] Staff Exh. 1 at 2-27 to 2-28.

[162] *Ibid.*

[163] Tr. 757; Tr. fol. 760 at 4 (Rothman). The site for purposes of the calculation was considered to be an area with an 18-mile radius from the plant. Tr. 493.

[164] Tr. fol. 479 at 6-7 (Singh). The difference in the estimates, according to Dr. Robert L. Rothman, NRC staff seismologist, is most probably caused by different techniques used and the assumptions made in performing the study. Tr. 757-58; Tr. fol. 760 at 5 (Rothman).

[165] Tr. fol. 760 at 5 (Rothman); Tr. 757-58.

[166] Brief of Intervenors at 57. The intervenors apparently recognize that Commission regulations permit exceptions to this requirement. ALAB-644, *supra*, 13 NRC at 989-92. Their only disagreement lies in the factual basis for the Licensing Board's approval of the exception here.

[167] Brief of Intervenors at 57.

had been established on the basis of data from a study of the seismological history of the Byron region and local site conditions.[168]

In sum, we reject the intervenors' attack upon the 0.09*g* ground acceleration value assigned to the Byron OBE. In common with the Licensing Board, we conclude that that value has sufficient record support.

III. *SUA SPONTE* REVIEW

For the reasons set forth above, we have found the intervenors' challenges to the initial decision and supplemental initial decision to be without merit. Pursuant to our long-standing practice of reviewing, *sua sponte*, "any final disposition of a licensing proceeding that either was or had to be founded upon substantive determinations of significant safety or environmental issues,"[169] we have also examined the balance of the two decisions. We have found no error requiring corrective action.[170]

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[168] In any event, we find the intervenors' claim regarding the Enola earthquake without merit. According to Dr. Woodard, that earthquake recorded ground acceleration of 0.59*g*, far higher than the ground acceleration values adopted for the SSE and OBE. Tr. fol. 548 at 3-4 (Woodard). He thus maintains that, until ground acceleration data are available for any of the earthquakes that have occurred recently in northern Illinois, the effect on the Byron structure of potential earthquakes ranging in intensity from MM IV to VIII remains unknown. *Ibid.*

We disagree. As explained earlier (*see* p. 1622, *supra*), the 0.2*g* value for the SSE was based on studies of the intensities of earthquakes that had occurred in the Byron area. Tr. fol. 479 at 4-6 (Singh). The earthquake characteristics developed for the 0.2*g* Byron SSE were then confirmed by comparison with characteristics determined from real accelerograms of earthquakes of magnitudes of approximately 5.8 (equivalent to MM VIII earthquakes) at a site having features similar to those at Byron. Tr. fol. 760 at 2-3 (Rothman). We do not believe that the 0.59*g* value obtained from a single recording compromises the validity of the SSE and OBE. More than 20,000 small earthquakes have occurred in the Enola area and apparently only that one recorded a ground acceleration of 0.59*g*. *Id.* at 6. Another seismograph, cosited with the first, recorded a ground acceleration of 0.19*g*. *Ibid.* The Tennessee Earthquake Information Center, which monitored the earthquake, attributed the 0.59*g* acceleration to "installation effect." *Ibid.* And most significant, the earthquake was of short duration (three seconds), had a ground motion of high frequency, and caused no damage to the shed in which the seismograph involved was located. *Id.* at 6-7. This suggests an earthquake with little energy and motion that would be well encompassed by the design of a nuclear plant. *Id.* at 7.

[169] *Offshore Power Systems* (Manufacturing License for Floating Nuclear Power Plants), ALAB-689, 16 NRC 887, 890 (1982); *Sacramento Municipal Utility District* (Rancho Seco Nuclear Generating Station), ALAB-665, 14 NRC 799, 803 (1981), *quoting Washington Public Power Supply System* (WPPSS Nuclear Project No. 2), ALAB-571, 10 NRC 687, 692 (1979); *Philadelphia Electric Co.* (Peach Bottom Atomic Power Station, Units 2 and 3), ALAB-509, 8 NRC 679, 683 n.8 (1978).

[170] Although not affecting the Licensing Board's decision to authorize the issuance of operating licenses for the plant, we note an incorrect statement made by the Licensing Board in its findings on the applicant's occupational radiation program for the Byron plant. In discussing the potential risks of radiation exposures during pregnancy, the Board concluded that "[p]re-conception internal accumulations of strontium-90 would have been detected by whole-body counting." LBP-84-2, *supra*, 19 NRC at 94. The typical industrial whole body counter cannot detect Sr-90. Nevertheless, our review of the record confirms that other types of monitoring and bioassay procedures used by the applicant would detect Sr-90 in the workplace and in the worker in the event such exposures were to occur. *See generally* Tr. fol. 1157 at 25-27 (Rescek); Tr. 1195-1212; Tr. fol. 1707 at Exh. 8 (Van Laere).

Only one issue warrants any further discussion. That issue relates to the quality assurance program of the Systems Control Corporation (SCC), a supplier of various electrical equipment for the Byron plant, and the actions of the applicant in overseeing that program.[171]

Serious quality assurance failures at SCC led the applicant to establish in 1980 an independent inspection program of SCC's work. In its January initial decision, the Licensing Board observed that the quality assurance program of SCC "broke down" but concluded that "100 percent reinspection of Systems Control work may remove the matter from a direct safety concern."[172] Subsequent to the rendition of that decision, however, we received information from the applicant and staff indicating that the 100% reinspection predicate to that Board's safety conclusion may not have been correct.[173]

At our urging, the matter was extensively explored further at the hearing on remand. It developed that the applicant had not conducted a 100% inspection of the SCC equipment but, rather, had looked at only a sample.[174] Because of deficiencies found in the equipment and the limited scope of the sampling employed, the staff required the applicant to undertake an evaluation and reinspection program sufficient to demonstrate that all equipment supplied by SCC was capable of withstanding required loads in conformance with applicable codes.[175]

A number of witnesses were heard on the applicant's efforts in that respect.[176] Testifying were a representative of the Westinghouse Electric Corporation, which had evaluated the structural adequacy of the main control panels supplied by SCC; and representatives of Sargent & Lundy, which had both (1) evaluated the adequacy of the DC fuse panels, cable trays, cable tray hangers, and local instrument panels and (2) performed a statistical analysis of those evaluations.[177] Testimony was also received from the Manager of Projects (who was also a mechanical engineer) for Torrey Pines Technology (TPT), which had performed an independent third-party review of the various aspects of SCC's work.[178] In addition, three members of the NRC staff testified

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[171] *See* ALAB-770, *supra*, 19 NRC at 1179-80.
[172] LBP-84-2, *supra*, 19 NRC at 135, 216.
[173] *See* ALAB-770, *supra*, 19 NRC at 1179-80.
[174] Tr. fol. 10,319 at 4 and Attachment A (Marcus); Tr. fol. 10,478 at 6 (Hayes, *et al.*).
[175] Tr. fol. 10,478 at 8 (Hayes, *et al.*).
[176] LBP-84-41, *supra*, 20 NRC at 1278.
[177] *Id.* at 1278-79.
[178] *Id.* at 1278. For each kind of SCC equipment, TPT collected and evaluated pertinent records, performed an engineering evaluation of the technical bases used to substantiate the acceptability of SCC work, reinspected samples of SCC work, and documented discrepancies found during such reinspection. *Id.* at 1279; *see also* Tr. fol. 10,294 at 9-12 (Johnson).

with regard to their own review of the reinspection and evaluation programs.[179]

On the basis of the evidence adduced at the remanded hearing, the Licensing Board concluded in its supplemental initial decision that, except for cable tray hangers,[180] which were then still undergoing reinspection and analysis, the SCC-supplied equipment was adequate to accept design loads without exceeding the stresses allowed by applicable codes.[181] All the parties agreed with this assessment. Without objection of any party, the Board left to the staff the responsibility for assessing and reviewing the adequacy of the inspection program relating to the cable tray hangers.[182]

As staff counsel reported at oral argument last month, that program is now completed.[183] It originally called for the inspection of all accessible welded connections on cable tray hangers and two specified types of welded connections that were accessible only by removal of obstructions such as fireproofing material or block walls.[184] The program was later expanded to include additional types of hangers that also had to be made accessible, with the result that only 816 out of 31,583 SCC welded connections on cable tray hangers were not reinspected.[185] Of the more than 30,000 welded connections that were reinspected, it was determined that only 83 had missing portions of welds, and that none had design significance.[186]

We have no reason to disagree with the Licensing Board's ultimate conclusion respecting the adequacy of SCC-furnished equipment. Specifically, we believe that the serious deficiencies that existed earlier with respect to SCC's quality assurance program, and the applicant's failure to

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[179] LBP-84-41, *supra*, 20 NRC at 1279.

[180] Cable tray hangers are used to support the trays that, in turn, support and protect electrical cables. *Ibid.*

[181] *Ibid.*

[182] *Id.* at 1282. This inspection program is the third stage of applicant's program for verifying the adequacy of the cable tray hangers. The first was a computer analysis of the load capacity of three hangers, of 80 hangers inspected, which had the greatest reduction in load capacity due to discrepant welds. This analysis showed that all three hangers could bear at least two times design load without exceeding code-allowable stresses. *Id.* at 1280; Tr. fol. 10,159 at 14-15 (Kostal); Tr. 10,241. The second stage was a program of inspection and repair of about 3000 (out of 5637 hangers) selected hanger connections for missing portions of welds. Because at least one of these hanger connections was found to have load capacity reductions beyond the specified amount, the third stage of the program was instituted to inspect all of the remaining accessible connections plus others that could reasonably be made accessible. LBP-84-41, *supra*, 20 NRC at 1280-82.

[183] App. Tr. 84-85.

[184] LBP-84-41, *supra*, 20 NRC 1281; Tr. 10,489.

[185] Letter from L.O. Del George to the Regional Administrator, NRC Region III (Sept. 26, 1984), attached to letter from M.C. Furse to Licensing Board (Sept. 28, 1984).

[186] *Ibid.*

oversee it properly, have been cured. We base that belief upon the extensive reinspection program, the engineering evaluations and analyses of various equipment, and review of all of the types of SCC's work by an independent party and the NRC staff — in totality they provide reasonable assurance that the SCC-furnished equipment is acceptable. This conclusion applies equally to cable tray hangers. From the results of the reinspection program, there is nothing to suggest that the few uninspected welded connections have any deficiency of safety significance.

For the foregoing reasons, both (1) the Licensing Board's October 16, 1984 supplemental initial decision and (2) the portion of that Board's January 13, 1984 initial decision concerned with issues not covered by the ALAB-770 remand are *affirmed*.

FOR THE APPEAL BOARD

C. Jean Shoemaker
Secretary to the
Appeal Board

APPENDIX

June 13, 1984 Appeal Board Memorandum and Order in *Byron* proceeding.

[Caption Omitted]

In ALAB-770,[1] we remanded the record in this operating license proceeding to the Licensing Board with instructions to conduct a further evidentiary hearing on the quality assurance issues and to render a supplemental initial decision. In footnote 73 of our decision, we announced that:

> With a single exception, our consideration of all non-quality assurance issues raised by the intervenors will abide the event of the rendition of the supplemental initial decision. The exception is the financial qualifications issue. The Licensing Board precluded the intervenors from pressing a contention that the applicant was not financially qualified to operate the facility. It did so because, effective March 31,

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[1] 19 NRC 1163 (1984).

1982, the Commission had amended its regulations to remove financial qualifications issues from, *inter alia*, licensing proceedings such as this one. 47 *Fed. Reg.* 13750 (March 31, 1982). Last February, however, the Court of Appeals for the District of Columbia Circuit held the amended rule was not supported by its accompanying statement of basis and purpose, as required by the Administrative Procedure Act. Accordingly, the court remanded the rule to the Commission for further proceedings consistent with its opinion. *New England Coalition on Nuclear Pollution v. Nuclear Regulatory Commission*, No. 82-1581, [727] F.2d [1127] (D.C. Cir. February 7, 1984).

The court's mandate having been issued, we solicited the views of the parties respecting the course that now should be followed on the financial qualification question in this case. In addition, we expect generic Commission guidance to be forthcoming shortly. Once it has been received and considered, we will issue a further order on the matter.

On June 7, 1984, the Commission issued its generic guidance in the form of a Financial Qualifications Statement of Policy.[2] Noting that, in response to the Court of Appeals' decision, it had "initiated a new financial qualification rulemaking to clarify its position on financial qualification reviews for electric utilities," the Commission stated that it anticipated

that the new rule eliminating financial review at the operating license stage only will soon be in place. While there are no construction permit proceedings now in progress, there are several ongoing operating license proceedings to which the new rule will apply. It would not appear reasonable to construe the Court's opinion as requiring that the Commission instruct its adjudicatory panels in these proceedings to begin the process of accepting and litigating financial qualifications contentions, a process which would delay the licensing of several plants which are at or near completion, only to be required to dismiss the contentions when the new rule takes effect in the near future.

Accordingly, the March 31, 1982 rule will continue in effect until finalization of the Commission's response to the Court's remand. The Commission directs its Atomic Safety and Licensing Board Panel and Atomic Safety and Licensing Appeal Panel to proceed accordingly.[3]

Given this clear directive, all we need now consider is the intervenors' claim that they made a *prima facie* showing below of "special circumstances" warranting the conclusion that the application of the 1982 financial qualifications rule in the proceeding at bar "would not serve the purposes for which the rule . . . was adopted."[4] We agree with the Licensing

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[2] 49 Fed. Reg. 24,111 (1984).

[3] *Ibid.* (emphasis supplied).

[4] *See* 10 C.F.R. 2.758(b) and (c).

Board that the intervenors have not fulfilled their burden on that score: there is simply nothing in their averments that *materially* distinguishes this proceeding from any other in which a party might wish to put in issue the sufficiency of the applicant utility's economic resources. Hence, no cause exists to certify to the Commission the matter of whether the 1982 rule should be waived insofar as it precludes an inquiry into this applicant's financial qualifications.[5]

It follows that, absent some future development having the effect of reinstating the entitlement to raise financial qualifications questions in operating license proceedings, the intervenors' contentions addressed to that subject are not litigable. The hearing on the ALAB-770 remand will thus continue to be restricted to quality assurance issues.

It is so ORDERED.

FOR THE APPEAL BOARD

Barbara A. Tompkins
Secretary to the
Appeal Board

[5] *See* 10 C.F.R. 2.758(d).

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)

December 24, 1984

The Appeal Board denies intervenors' application for a stay of the authorization of the low-power license issued in this operating license proceeding for Unit 1 of the Catawba facility. The Board determines that the stay criteria set forth at 10 C.F.R. 2.788(e) have not been satisfied.

RULES OF PRACTICE: STAY OF AGENCY ACTION

The established criteria to be applied in passing upon stay requests in NRC adjudicatory proceedings are set forth in 10 C.F.R. 2.788(e):

> (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.

RULES OF PRACTICE: STAY OF AGENCY ACTION

The NRC's stay criteria are the same as those 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 (LENGTH OF REQUEST)

Under NRC Rules of Practice, stay applications may not exceed ten pages in length. *See* 10 C.F.R. 2.788(b).

RULES OF PRACTICE: STAY OF AGENCY ACTION (IRREPARABLE INJURY)

The second factor contained in section 2.788(e) of 10 C.F.R., irreparable harm, is often the most important in determining the need for a stay. *Philadelphia Electric Co.* (Limerick Generating Station, Units 1 and 2), ALAB-789, 20 NRC 1443, 1446 (1984), and cases cited.

APPEARANCES

Robert Guild, Columbia, South Carolina, and **Jesse L. Riley,** Charlotte, North Carolina, for the intervenors Palmetto Alliance and Carolina Environmental Study Group.

J. Michael McGarry, III, Anne W. Cottingham and **Mark S. Calvert,** Washington, D.C., and **Albert V. Carr, Jr.,** Charlotte, North Carolina, for the applicant Duke Power Company, *et al.*

George E. Johnson for the Nuclear Regulatory Commission staff.

MEMORANDUM AND ORDER

Before us are appeals from three partial initial decisions rendered by the Licensing Board in this operating license proceeding involving the two-unit Catawba nuclear facility. The first of these decisions, issued last June 22, determined a wide variety of questions, principally in the area

of quality assurance.[1] In doing so, it paved the way for the Director of Nuclear Reactor Regulation's July 18 authorization to the applicants to load fuel into Unit 1 and to conduct pre-criticality testing of that unit.[2] The second decision, issued on September 18, disposed of all emergency planning questions.[3] The third, issued on November 27, resolved favorably to the applicants the single remaining question and brought to an end the Licensing Board's jurisdiction over the proceeding.[4] It was followed by the NRR Director's issuance on December 6 of a license allowing the operation of Unit 1 at levels up to five percent of rated power.[5]

On December 11, intervenors Palmetto Alliance and Carolina Environmental Study Group filed an application under 10 C.F.R. 2.788 for a stay of the authorization for a license contained in the several partial initial decisions pending the completion of all appellate review (administrative and judicial) of those decisions.[6] According to the intervenors, all four of the established criteria to be applied in passing upon stay requests support the grant of such relief here.[7] The applicants and NRC staff disagree and urge that a stay be denied.

1. In arguing that there is a "strong likelihood" that they will prevail on the merits of their appeals, the intervenors cite a number of assertedly incorrect Licensing Board rulings and actions, both substantive and procedural. Although intervenors are emphatic in the statement of their belief that serious error has been committed, virtually all of their scattergun charges are put before us in the most cursory form. In any event,

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[1] LBP-84-24, 19 NRC 1418 (1984).

[2] The construction of Unit 2 is not as yet completed and it is our understanding that that unit is not scheduled for fuel loading for at least another year.

[3] LBP-84-37, 20 NRC 933 (1984).

[4] LBP-84-52, 20 NRC 1484 (1984).

[5] The Commission must itself approve the authorization of Unit 1 operation at higher power levels. *See* 10 C.F.R. 2.764(f). To date, it has not completed the so-called "immediate effectiveness" review that necessarily precedes the grant of such approval.

[6] Intervenors' Application for a Stay Pending Administrative and Judicial Review (Dec. 11, 1984) (hereafter Stay Application). Previously, the intervenors had submitted successive oral stay applications to both the Licensing Board and this Board. In each instance, the application was denied after a telephone conference involving the Board and all parties -- our denial being without prejudice to the subsequent filing of a written stay request. *See* Licensing Board December 3, 1984 order (unpublished); Appeal Board December 4, 1984 order (unpublished).

The justification offered by the intervenors for seeking stay relief orally was their understanding that the applicants planned to have Unit 1 achieve criticality within a matter of a few days. For reasons of no present moment, however, the applicants have now deferred that event until at least January 10, 1985.

[7] Those criteria are set forth in 10 C.F.R. 2.788(e):

> (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).

none is supported by enough analysis to comprise the required *strong* showing[8] that one or more of the three partial initial decisions likely will be reversed in response to the intervenors' appeals.

We appreciate, of course, that stay applications may not exceed ten pages in length.[9] This being so, the intervenors perhaps should have concentrated their attack upon those purported Licensing Board errors they deemed to be of particular gravity. Moreover, it is worthy of passing note that, to a considerable extent, the intervenors' fire is directed to the June 22 partial initial decision. Although the intervenors might have filed the brief in support of their appeal from that decision some time ago, they elected to obtain from us a deferral of all appellate briefing in this proceeding until after the rendition of the final (i.e., November 27) Licensing Board decision. Because of other asserted demands on their limited resources, this was a perfectly legitimate choice on their part. But they should not now be heard to complain that they have been deprived of the opportunity to place a full development of their position on the June 22 partial initial decision before us.[10]

2. As we very recently reiterated, "the second factor, irreparable harm, is often the most important in determining the need for a stay."[11] We thus have examined with particular care the underpinnings of the intervenors' insistence that they will suffer irreparable injury if a stay is not granted.

In this regard, the intervenors maintain that (i) the "irreversible radioactive contamination of the facility" will pose a "definite and significant" health and safety risk to workers and the public in the form of "routine releases, exposures and accidents"; (ii) the final agency decision will be prejudiced "in favor of licensing" by an "irretrievable commitment of resources"; (iii) intervenors will be deprived of their right of appeal because operation of the facility will risk "mooting any appeal since the *status quo ante* will be forever beyond reach"; and (iv) the National Environmental Policy Act (NEPA) will be violated because a decision will have been made "without taking into account the environmental impacts claimed by intervenors."[12] In support of their first point, the intervenors offer the affidavits of Dr. Michio Kaku, a Professor of

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[8] *See* note 7, *supra*.

[9] *See* 10 C.F.R. 2.788(b).

[10] To avoid any possible misunderstanding, we stress that all we now decide is that the stay application does not establish a likelihood that the intervenors will prevail on the merits of their appeals. After full briefing, it may turn out that the intervenors will persuade us that one or more of the partial initial decisions is fatally infected with error.

[11] *Philadelphia Electric Co.* (Limerick Generating Station, Units 1 and 2), ALAB-789, 20 NRC 1443, 1446 (1984), and cases cited.

[12] Stay Application at 9.

Nuclear Physics at the City University of New York, and David A. Schlissel, a consulting engineer with degrees in astronautical engineering (as well as one in law).[13] The other three points are merely stated without any attempt at elaboration either in the stay application itself or in a supporting affidavit.

a. We turn first to the asserted threat to the public health and safety said to be established by the Kaku and Schlissel affidavits. For its part, Dr. Kaku's affidavit is essentially a collection of broad statements respecting (i) the potential consequences of nuclear power plant accidents; and (ii) the radiation exposure that plant personnel would receive during routine operations. Apart from a few passing references to Catawba's containment design and hydrogen mitigation system, the affidavit offers nothing that could not be equally said with regard to virtually every nuclear power facility now in operation.[14] Further, it is totally lacking in specificity with respect to both (i) the manner in which the postulated accidents might be created and the probability of their occurrence; and (ii) the significance of the asserted occupational exposure. For these reasons, the Kaku affidavit does not aid intervenors' cause.

The thrust of Mr. Schlissel's affidavit is that, under certain conditions, intergranular stress corrosion cracking of stainless steel piping might develop if corrosives are introduced into the facility's primary system. But this scarcely is a startling revelation; indeed, the Licensing Board itself took note of that undisputed fact.[15] The difficulty with the affidavit is that it does not go on to explain how the corrosives might enter that system; all we are told by Mr. Schlissel is that the intergranular stress corrosion cracking phenomenon "has occurred in previously unanticipated locations through previously unanticipated pathways." This plainly will not suffice to establish that the intervenors' members would be irreparably injured were Unit 1 to be allowed to go into operation. Further, the Schlissel affidavit is equally unilluminating with regard to how rapidly the assumed corrosive environment might produce an imminent threat to safety — i.e., whether there is any possibility of such a threat prior to the disposition of the intervenors' appeals.

b. The intervenors' other irreparable injury claims merit little discussion. There is simply no basis for the assertion that the outcome of their

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[13] Those affidavits are appended to the stay application as Exhibits 3 and 4, respectively. Each is followed by the affiant's biographical statement.

[14] As a matter of fact, Catawba's ice condenser containment and associated hydrogen mitigation system are not totally unique. They are to be found, for example, at Duke Power Company's McGuire facility. In affirming the Licensing Board's authorization of operating licenses for McGuire, we discussed the hydrogen mitigation system at considerable length. *See Duke Power Co.* (William B. McGuire Nuclear Station, Units 1 and 2), ALAB-669, 15 NRC 453, 459-72 (1982).

[15] LBP-84-52, *supra*, 20 NRC at 1505-06.

appeals might be unduly influenced were Unit 1 to be allowed to operate *pendente lite*. To the contrary, that factor cannot and will not be given any recognition in the consideration of the issues presented by the appeals.[16] Nor is there substance to intervenors' insistence that the commencement of facility operation might serve to moot their appeals. Should those appeals be successful, we will have full authority to order a halt to operation or such other relief as might be appropriate in the totality of circumstances. True, the precise *status quo ante* will no longer be restorable once the reactor has achieved criticality. But that consideration is of no avail to intervenors, given the fact that they have failed to establish that their members might suffer irreparable harm from the achievement of criticality, low-power operation, or early-stage operation at full power.

3. In light of the foregoing, we need not dwell long on whether a stay would cause serious injury to the applicant. Nor need we delve deeply into public interest considerations. Suffice it to say that, even when viewed in its most favorable light, the intervenors' presentation on those factors does not approach balancing the shortcomings of its case on the other two factors. Indeed, standing by itself, the intervenors' failure to demonstrate that they might be irreparably injured in the absence of a stay is enough to call for the denial of their application.

The intervenors' application for a stay *pendente lite* is *denied*.
It is so ORDERED.

FOR THE APPEAL BOARD

Barbara A. Tompkins
Secretary to the
Appeal Board

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[16] In this connection, intervenors have failed to explain what "irretrievable commitment of resources" they believe would be associated with Unit 1 operation. Similarly, their bare assertion, without more, that the National Environmental Policy Act is violated clearly does not establish irreparable injury.

Atomic Safety and Licensing Boards Issuances

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Cite as 20 NRC 1637 (1984) LBP-84-54

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

John H Frye, III, Chairman
Dr. Harry Foreman
Gustave A. Linenberger

In the Matter of **Docket No. 50-70-OLR**
(ASLBP No. 83-481-01-OLR)

GENERAL ELECTRIC COMPANY
(GETR Vallecitos) **December 17, 1984**

Licensing Board denies request for readmission to a proceeding filed by petitioner to intervene which failed to respond to the Board's orders reactivating the proceeding after several years of inactivity and consequently was dismissed.

RULES OF PRACTICE: RESPONSIBILITY OF PARTIES

Parties may not step into and out of NRC proceedings at will. *United States Department of Energy* (Clinch River Breeder Reactor Plant), ALAB-761, 19 NRC 487, 493 (1984); *Consumers Power Co.* (Midland Plant, Units 1 and 2), ALAB-691, 16 NRC 897, 907 (1982). Where a party does not offer a sufficient excuse for its failure to respond to Board orders reactivating a proceeding (which failure led to its dismissal), it must satisfy the criteria related to untimely petitions to intervene in order to be readmitted.

RULES OF PRACTICE: CHANGE OF ADDRESS

A party appearing *pro se* must notify the secretary of any change of its address.

RULES OF PRACTICE: SERVICE OF DOCUMENTS

Service of documents upon a party is complete upon deposit in the United States Mail, properly stamped and addressed.

MEMORANDUM AND ORDER
(Ruling on CalPIRG's Request for Readmission)

In this Memorandum and Order, we rule on the request of the California Public Interest Research Group (CalPIRG) for readmission to this proceeding. CalPIRG was one of the petitioners to intervene responding to the Commission's 1977 notice which commenced this proceeding. However, it did not respond to this Board's orders entered in the Fall of 1982 reactivating this proceeding and as a consequence was dismissed from the proceeding in our April 8, 1983 unpublished Memorandum and Order.

BACKGROUND

On September 15, 1977, there was published in the *Federal Register* (42 Fed. Reg. 46,427) a notice that the NRC had under consideration applications to renew the operating license for the General Electric Test Reactor (GETR) at the Vallecitos Nuclear Center and the special nuclear materials (SNM) license of the Vallecitos Nuclear Center. That notice provided an opportunity for interested persons to file requests for hearing by October 17, 1977.

A timely request and petition to intervene was filed by Jed Somit, Esq., on behalf of Nancy L. Lyon, Jack Turk, Alameda County Citizens Against Vallecitos, Joseph Buhowsky, Jr., East Bay Women for Peace, and California Public Interest Research Group (CalPIRG). Applicant, General Electric Company (GE), and NRC Staff filed responses to this petition. This Atomic Safety and Licensing Board was established to rule on the petition on October 21, 1977, and orally granted the petition at a Prehearing Conference of March 16, 1978 (Tr. 6-7). However, no written ruling was issued following that conference, nor were acceptable contentions identified. In a document entitled "Substitution of Intervenor

in pro per for Attorney of Record" which was served on June 22, 1981, Mr. Somit withdrew from his representation of CalPIRG. This document was signed by Jerry Skomer on behalf of CalPIRG as well as Mr. Somit.

On October 24, 1977, the NRC Staff issued an Order to Show Cause to GE which raised issues concerning the proper seismic and geologic design bases for the GETR and concerning whether modifications could be made to the GETR in light of these design bases. Neither CalPIRG nor Mr. Turk sought to intervene in the Show-Cause proceeding, although others did petition and participated in the ensuing hearing. The Show-Cause proceeding was terminated by an Initial Decision (LBP-82-64, 16 NRC 596 (1982)) which was affirmed (ALAB-720, 17 NRC 397 (1983)). During the Show-Cause proceeding, this license renewal proceeding was held in abeyance.

Following the issuance of LBP-82-64, this Board[1] reactivated this proceeding.[2] In the ensuing months, GE indicated its intent to proceed with the GETR license renewal application and Mr. Turk indicated his continuing interest in being a party to that proceeding. None of the other petitioners responded to the Board's orders. Consequently, on April 8, 1983, we issued a Memorandum and Order in which we admitted Mr. Turk as a party, subject to the acceptance of at least one contention, and denied the petition to intervene with respect to the remaining petitioners, including CalPIRG.

After Mr. Turk filed his contentions on November 28, 1983, a conference among Mr. Turk, GE, and Staff was held. As a result of this conference, these parties agreed that the proceeding on GE's application for renewal of its SNM license should be dismissed. Acting upon these parties' request, the Board dismissed the proceeding on the SNM license on January 20, 1984, and on May 10, 1984, Staff renewed this license for a 5-year period expiring May 31, 1989. GE and Staff filed papers opposing Mr. Turk's contentions on January 30 and February 10, 1984, respectively. Mr. Turk replied to these papers on April 16, 1984.

On June 8, 1984, CalPIRG filed a request for readmission to this proceeding. GE and Staff opposed this request on June 25 and July 13, respectively. Pursuant to this Board's Order of July 3 (unpublished), CalPIRG replied to GE and Staff and filed its contentions on July 30.

It was against this background of events that a prehearing conference was held in San Francisco on August 9 and an unpublished Prehearing Conference Order issued on August 20, 1984. In light of the proximity

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[1] This Board was most recently reconstituted on October 14, 1982. *See* 47 Fed. Reg. 46,916 (Oct. 21, 1982).

[2] *See* unpublished Memoranda and Orders of October 21, November 12, and November 19, 1982.

in time between the prehearing conference and the filing of the CalPIRG contentions, that Order required that further written submissions be made. In its submission, CalPIRG was to set out the chronology of the events relative to its involvement in this proceeding beginning with the 1977 petition to intervene. CalPIRG also was to address the five factors set out in 10 C.F.R. § 2.714(a)(1) in order to cover the possibility that we might conclude that it is necessary to treat its request for readmission as a tardy petition to intervene. Additionally, CalPIRG was to furnish the address of at least one member who has authorized it to represent his or her interest in this proceeding.

Following CalPIRG's submission, GE and Staff were to respond addressing CalPIRG's contentions as well as the points raised in CalPIRG's submission. CalPIRG was afforded an opportunity to reply to all points raised by the responses. CalPIRG filed its initial submission required by the Prehearing Conference Order, but has not taken advantage of the opportunity to respond to GE's and Staff's responsive filings.

DISCUSSION

In its June 8, 1984, request for readmission, CalPIRG stated:

> Pursuant to 10 C.F.R. Part 2.714, CalPIRG hereby requests that the U.S. NRC ASLB (Atomic Safety and Licensing Board) readmit our organization to the status which we were granted by the U.S. NRC ASLB on March 16, 1978. We had then established our standing and we were designated "Petitioners/Intervenors" status. Apparently, last year you voted to dismiss our petitions, yet we were not informed of your decision until very recently. This past week our State Board first learned about the NRC's renewed interest in relicensing the GETR reactor in Alameda County, after a lapse of nearly seven years, and our Board voted unanimously to continue CalPIRG's participation in this proceeding which was begun when we filed our petition in 1977. Because the NRC shutdown the reactor in 1977, the relicensing proceedings had been dormant for many years.

Following GE's and Staff's opposition to its request, CalPIRG responded to the formers' objections under 10 C.F.R. § 2.714 and questions regarding CalPIRG's asserted ignorance of the activity commenced in this proceeding in October and November of 1982. With respect to the latter point, CalPIRG stated that "[i]t was not until July 16, 1984, that CalPIRG received a copy of the NRC Board's Orders of November 12 and 19, 1982, and of April 8, 1983. CalPIRG's address had been changed prior to the issuance of these orders."[3] Accompanying Cal-

[3] CalPIRG's Response dated July 30, 1984, at 3.

PIRG's response is a "Statement of Correct Address" dated July 31, 1984, which states:

> The Docketing and Service Section of the Office of the Secretary of the Nuclear Regulatory Commission is hereby given notice that the correct addresses for service to the California Public Interest Research Group (CalPIRG) in this proceeding are:
>
> Glenn Barlow, Project Coordinator
> c/o CalPIRG, Santa Cruz
> Activities A-Frame
> University of California, Santa Cruz
> Santa Cruz 95060
>
> Jerry Skomer, Executive Director
> c/o CalPIRG
> 46 Shattuck Square, Room 11
> Berkeley, CA 94704

During the August 9 prehearing conference there was some discussion regarding CalPIRG's correct address. In that discussion Jerry Skomer, CalPIRG's Executive Director, stated that on August 1, 1982, CalPIRG had moved from the address furnished to the Commission Secretary by its attorney, Mr. Somit, on the occasion of the latter's withdrawal from the proceeding, and that CalPIRG had not advised the Secretary of its new address.[4]

GE, Staff, and apparently CalPIRG have overlooked the fact that this Board's October 21 and November 12, 1982, Memoranda and Orders were properly served by the Secretary on CalPIRG at 46 Shattuck Square, Berkeley, California 94704, marked for the attention of Jerry Skomer. This is, according to CalPIRG's "Statement of Correct Address," a correct address for service on CalPIRG. Subsequent memoranda and orders were, following an exchange of correspondence between the Board Chairman and CalPIRG's former attorney, served on the address which CalPIRG vacated on August 1, 1982.[5]

It is thus evident that CalPIRG was properly notified under the Rules of Practice that this proceeding had been reactivated. The October 21 Memorandum and Order called on GE to indicate whether it intended to pursue its applications, and the November 12 Memorandum and Order

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[4] Tr. 112-13. On June 22, 1981, Jed Somit (CalPIRG's attorney who had filed the petition to intervene) wrote the Docketing and Service Section, Office of the Secretary, indicating the address of each of the petitioners to intervene and requesting that they be added to the service list.

[5] *See* our unpublished Memorandum and Order of November 19, 1982. After Mr. Somit advised us that he had notified the Secretary of the correct addresses on June 22, 1981, we requested the Secretary to update the service list. Unfortunately, the address given by Mr. Somit for CalPIRG was the one CalPIRG vacated on August 1, 1982.

called on the petitioners/intervenors (which included CalPIRG) to comment on GE's response. It was obvious that, in order to preserve its status, a petitioner/intervenor should respond to the comments called for by the November 12 Memorandum and Order.

CalPIRG maintains that it did not receive this Board's memoranda and orders until July 16, 1984.[6] We think, however, that it is more likely that the initial two orders were received and simply forgotten in the 18 months that transpired between service of those documents and the occasion of CalPIRG's reawakened interest in this proceeding. Moreover, the Rules of Practice provide that, with respect to those two documents, service was complete upon deposit in the United States mail, properly stamped and addressed.[7]

Common sense, as well as the Commission's Rules of Practice,[8] dictates that anyone with a continuing interest in a dormant proceeding would take the simple step of notifying the Secretary of any change of address. CalPIRG candidly admits that it did not take this step. Its failure in this respect alone is sufficient ground to treat its request for readmission as a tardy petition to intervene.[9] And it reinforces the conclusion that at the time this proceeding was reactivated, CalPIRG had no interest in it.

It appears that CalPIRG's interest was rekindled by the occurrence of the Morgan Hill earthquake in April 1984. That event prompted the members of its Santa Cruz chapter, according to Mr. Skomer, CalPIRG's Executive Director, to request the CalPIRG Board of Directors "to reintervene, or to obtain intervention status and to move forward to intervene against the relicensing of the Vallecitos project."[10]

Staff and GE correctly point out that it is well settled that parties may not step into and out of NRC proceedings at will.[11] *United States Depart-*

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[6] CalPIRG's July 30 Response to GE and Staff at 3; Tr. 115-16; CalPIRG's September 7 Response to Prehearing Conference Order at 1. CalPIRG also maintains that the NRC should have made some effort to verify its correct address. (*See* CalPIRG's September 7 Response to Prehearing Conference Order at 2.) While we reject the notion that any such obligation exists on the part of the NRC, we note that such an effort was made in this case and resulted in the correct service of the October 21 and November 12 Memoranda and Orders by the Secretary. *See* footnote 2 to the Board's November 12, 1982 Memorandum and Order.

[7] 10 C.F.R. § 2.712(d)(3).

[8] 10 C.F.R. §§ 2.708(e), 2.712(b), and 2.713(b).

[9] *Tennessee Valley Authority* (Hartsville Nuclear Plant, Units 1A, 2A, 1B, and 2B), ALAB-398, 5 NRC 1152 (1977).

[10] Tr. 120; CalPIRG's September 7 Response to Prehearing Conference Order at 10. It is interesting that the petition to intervene indicated that CalPIRG sought to participate on behalf of its membership at the University of California at Berkeley. Its request for readmission was filed as a result of a request from its members at the University of California at Santa Cruz. There is no indication that the Berkeley members maintain any continuing interest in this proceeding although CalPIRG, in its response to GE and Staff of July 30, 1984, notes that they are among its members residing within 40 miles of the GETR.

[11] GE's Response to CalPIRG's Request for Readmission of June 25, 1984, at 5-6; Staff's Answer to CalPIRG's Request for Readmission at 11 n.16.

ment of Energy (Clinch River Breeder Reactor Plant), ALAB-761, 19 NRC 487, 493 (1984); *Consumers Power Co.* (Midland Plant, Units 1 and 2), ALAB-691, 16 NRC 897, 907 (1982). We conclude that that is precisely what CalPIRG is attempting to do in this proceeding. For this reason, as well as because of CalPIRG's unexplained failure to have advised the Secretary of the Commission of its new address, we conclude that CalPIRG's request for readmission must be treated as a tardy petition to intervene. Therefore, we move to a consideration of the five criteria required by 10 C.F.R. § 2.714(a) to be weighed in considering tardy petitions.

The first criterion is whether there is good cause for the tardy filing. CalPIRG's submission on this factor makes the following assertions:

1. Its original petition was timely;
2. Its original petition caused Staff to issue its Order to Show Cause which halted operation of the facility; and
3. Staff has consistently opposed public participation in this proceeding.

In its October 10 response (at 6-7) Staff points out that the timeliness of CalPIRG's original petition is not here at issue. We agree. Having failed to participate in this proceeding even to the minimal extent of informing the Secretary of its address, CalPIRG must now establish good cause why its belatedly rekindled interest in this proceeding should be favorably received. It has wholly failed to do so.

The second criterion is whether there is a lack of other available means to protect petitioner's interest. CalPIRG's presentation on this point consists of its assertion that "[t]here are no other means to protect the public interest, which CalPIRG represents, other than having public hearings and allowing CalPIRG to participate,"[12] and that Staff has not done its job. We agree with GE and Staff that this presentation misses the mark. CalPIRG's attempt to wrap itself in the mantle of the public interest does not answer the question of how it might protect the interest of its members outside of participation in this proceeding. Further, we agree with GE that CalPIRG could have sought to partially protect that interest through participation in the Show-Cause proceeding. For these reasons we must weigh this factor against CalPIRG.

CalPIRG asserts, in response to the third criterion requiring a showing of the extent to which its participation will contribute to the development of a sound record, that it will present expert testimony and has

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[12] CalPIRG's September 7 Response at 5.

retained a staff person with extensive technical expertise in NRC proceedings and a background in Vallecitos. CalPIRG's assertion with regard to expert witnesses is clearly inadequate. What is required is a detailing with as much particularity as possible of the precise issues to be covered and the prospective witnesses who will testify on those issues together with a summary of their testimony. *Washington Public Power Supply System* (WPPSS Nuclear Project No. 3), ALAB-747, 18 NRC 1167, 1177 (1983).

CalPIRG's assertions with regard to its staff person (presumably Mr. Barlow) are somewhat stronger. Mr. Barlow participated on behalf of an intervenor in the Show-Cause proceeding and therefore must be presumed to have specialized background in the seismic aspects of the GETR. To the extent that seismic contentions are litigable in this proceeding, that background would assist in the development of the record. However, CalPIRG has made no showing, as required by ALAB-747, *supra*, as to how that background would assist with regard to other contentions. We conclude that this factor weighs slightly in CalPIRG's favor.

CalPIRG asserts in response to the fourth criterion that Mr. Jack Turk will not represent its interests because the latter represents only himself and his family, his resources are extremely limited, and he clearly does not have the expertise which CalPIRG can provide. Our observation of both CalPIRG and Mr. Turk cause us to question these assertions. While it is true that Mr. Turk represents only himself and his family, we agree with GE that he has demonstrated greater expertise than has CalPIRG and that there is no indication that his resources are less than CalPIRG's. However, we must also note, like Staff, that CalPIRG's contentions are broader than Mr. Turk's and conclude that because of this, this criterion weighs slightly in CalPIRG's favor.

The fifth criterion questions whether grant of the petition will broaden the issues and delay the proceeding. CalPIRG asserts that its participation will broaden the issues, a result which CalPIRG thinks necessary, but that it will not delay the restarting of the GETR. This criterion must be weighed against CalPIRG. By its own admission, its participation will broaden the issues which the parties have diligently sought to narrow. It is not relevant that the broadening of the issues might not delay reactor operation. Rather, the question is whether "the late petition is not apt to be a contributor to delay in the progress and completion of a hearing on the license application."[13] Here CalPIRG's request clearly would be a contributor to such delay. This factor weighs against CalPIRG.

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[13] *WPPSS, supra*, ALAB-747, 18 NRC at 1180.

CalPIRG has wholly failed to establish good cause for its readmission. In these circumstances, CalPIRG was required to make a compelling showing on the remaining criteria in order to be successful. *Mississippi Power & Light Co.* (Grand Gulf Nuclear Station, Units 1 and 2), ALAB-704, 16 NRC 1725, 1730 (1982); *Cincinnati Gas & Electric Co.* (William H. Zimmer Nuclear Power Station, Unit 1), LBP-83-58, 18 NRC 640, 662-63 (1983). Only the third and fourth criteria weigh in CalPIRG's favor, and then only slightly. Consequently, CalPIRG's request for readmission to this proceeding must be denied.[14]

Order

In consideration of the foregoing, it is, this 17th day of December 1984,

ORDERED

1. CalPIRG's request for readmission to this proceeding is denied; and

2. CalPIRG may appeal this ruling by filing a notice of appeal and supporting brief with the Atomic Safety and Licensing Appeal Board within ten (10) days after service of this Memorandum and Order.

Dr. Foreman concurs but was unavailable to sign this Memorandum and Order.

FOR THE ATOMIC SAFETY AND
LICENSING BOARD

Gustave A. Linenberger
ADMINISTRATIVE JUDGE

John H Frye, III, Chairman
ADMINISTRATIVE JUDGE

December 17, 1984
Bethesda, Maryland

[14] Because of the result we reach, we find it unnecessary to consider GE's and Staff's other arguments against CalPIRG's participation.

Cite as 20 NRC 1646 (1984) LBP-84-55

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)

December 18, 1984

In this Memorandum, the Licensing Board decides certain welding issues.

EVIDENCE: CREDIBILITY

Significant inconsistencies in testimony and confidential background information are grounds for discounting the credibility of witnesses.

VIOLATIONS OF CONSTRUCTION PROCEDURES: INDEPENDENT SIGNIFICANCE

Systematic violations of construction procedures may have independent significance regardless of their safety implications. When violations of procedures are tolerated, this adversely affects workers' perceptions of the seriousness of complying with other procedures.

WELDING PREHEAT REQUIREMENTS

Permitting welders to determine whether there is adequate preheat by employing a "hand warm" test may not be an adequate procedure to assure compliance with the preheat requirements.

TECHNICAL ISSUES DISCUSSED

Weave welding
Downhill welding
Weld rod control
Welding of misdrilled holes
Repair welding (misdrilled holes)
Preheat, welding
Welding preheat.

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MEMORANDUM
(Concerning Welding Issues)

In this Memorandum, we decide issues raised by Darlene and Henry Stiner. Mr. Stiner was a welder at Comanche Peak. Mrs. Stiner, his wife, was both a welder and quality control inspector at the plant.

Because these witnesses have direct knowledge of the plant, we have taken their testimony with great seriousness, involving many hours of hearing time. In deliberating on what we have heard, we have reluctantly come to the conclusion that neither of the Stiners is a credible witness.

Our conclusion about the Stiners' credibility is more fully explained in the body of our opinion. Part of the basis for our conclusion came from our realization that both of the Stiners misunderstood the technical foundation for the weave welding procedure which was the crux of a substantial portion of their complaint about the plant. Furthermore, we find that Henry Stiner had a long-standing absentee problem at work and that he was discharged from the plant because of his absenteeism, not because he gave information to a QC inspector about a gouge in a pipe preceding the 3-day absence that precipitated his termination. As a result of reaching this conclusion about the Stiners' credibility, we have

found it appropriate to use Applicants' proposed partial initial decision as the framework within which to write our decision.

Despite the Stiners' general lack of credibility, they have raised questions about some welding practices that are of concern to us and that the Commission's Staff continues to investigate. To the extent that these concerns are corroborated by others, issues raised by the Stiners may later be found to be meritorious. For the time, however, these issues are the Staff's concern. We expect a Staff report following which we will make a determination concerning whether these should be issues in this case.

I. BACKGROUND

This is the third decision concerning allegations regarding welding at the Comanche Peak Steam Electric Station ("CPSES"), Units 1 and 2, raised by two witnesses of intervenor Citizens Associations for Safe Energy ("CASE"), Darlene and Henry Stiner. The first, LBP-83-43, Proposed Initial Decision, 18 NRC 122, 137-45 (1983), resolved all but four issues related to their allegations, *viz.*, weave welding, downhill welding, weld rod control and welding of misdrilled holes.[1] The second decision, LBP-83-60, Memorandum and Order (Emergency Planning, Specific Quality Assurance Issues and Board Issues), 18 NRC 672 (1983), discussed weave welding, repair of plug welds, downhill welding and weld rod control.

In response to objections to the July 29, 1983 Proposed Initial Decision (LBP-83-43, *supra*), filed on August 27, 1983, by Texas Utilities Electric Company, *et al.* ("Applicants"), by Memorandum and Order of September 23, 1983, LBP-83-60, *supra*, 18 NRC at 687-88, the Board closed the issue of weave welding raised by the Stiners in favor of Applicants. Subsequently, in a February 10, 1984 Licensing Board Order (unpublished), the Board reopened the weave welding issue.

To resolve these remaining open issues, hearings were held on February 23, March 19-23, and April 24, 1984. During these hearings, the Board expanded the issues to be addressed to include allegations made by Mr. Stiner regarding preheat of weld joints (CASE Exhibit 919 at 9; Tr. 10,799, 10,802, 10,825). In sum, the welding issues raised by the

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[1] This first decision was based on testimony presented at hearings held on September 13, 1982, e.g., Testimony of Henry Stiner (CASE Exhibit 666) and Darlene Stiner (Case Exhibit 667) received into evidence at Tr. 4202 and 4124, respectively; Rebuttal Testimony of C. Thomas Brandt, *et al.* (Applicants' Exhibit 141), received into evidence at Tr. 4655; and NRC Staff Exhibits 13 (at 98-99) and 178, both received into evidence at Tr. 2336.

Stiners which are the subject of this Partial Initial Decision relate to weave welding, downhill welding, weld rod control, welding of misdrilled holes and preheat.

II. FINDINGS OF FACT – CONTESTED ISSUES

A. Witnesses and Testimony

1. CASE

Mr. and Mrs. Stiner each testified on welding issues addressed in the July 29, 1983 Partial Initial Decision, LBP-83-43, *supra*, i.e., CASE Exhibits 666 and 667, respectively. In addition, they jointly sponsored testimony introduced at the second round of hearings on this issue (CASE Exhibit 919, received into evidence at Tr. 9979). However, major sections of this testimony were stricken, including Attachment B of their testimony referencing a welding handbook (*see, e.g.*, Tr. 9937, 9960, 10,262, 10,282, 10,325, 10,494, 11,069).

The Stiners were offered as expert witnesses with regard to welding activities at Comanche Peak. Mr. Stiner was first hired on December 5, 1979, and shortly thereafter was trained as a welder. He was qualified as a structural welder on February 11, 1980. During his first period of employment at Comanche Peak, he worked 41 weeks during which he was absent a total of 6 weeks and worked 30 hours or less during an additional 8 weeks. Mr. Stiner's last day of work (for his first term of employment) was November 26, 1980. However, he was rehired and was again qualified as a structural welder on June 22, 1981. He welded for approximately 3 weeks before he was again terminated, following a 3-day absence from work.

Mrs. Stiner was in a qualified welding position (though not welding the entire time) from February 27, 1979 to August 3, 1980. (Applicants' Exhibit 177 at 5.) During the Summer of 1980, Mrs. Stiner began work as a welding QC inspector. Tr. 4130.

The Stiners stated that they were "certified to weld to both ASME and AWS D1.1" (CASE Exhibit 919 at 1-2). More specifically, they were qualified to two production welding procedures (Procedures 11032 and 10046), one relating to a portion of the ASME Code and one to a portion of the AWS D1.1 Code. These procedures qualified them to weld with the shielded metal arc process only on low-carbon-steel material such as pipe supports, and not on pressure piping joints, stainless steels or with other processes such as gas tungsten arc. (Tr. 9981-82.) Mr. and Mrs. Stiner's testimony was found to be qualified as expert welders within the limited areas of their qualifications. In addition,

based on Mrs. Stiner's experience in quality control inspection of welding at CPSES (CASE Exhibit 667 at 7-14), she was accepted as an expert witness concerning quality control.

Neither Mr. nor Mrs. Stiner was offered as an expert in metallurgy or any phase of engineering (Tr. 10,255, 10,774, 11,047), and the Board gives no weight to their testimony with regard to issues relating to those disciplines (Tr. 10,283, 10,776).

2. *Applicants*

Applicants presented ten witnesses (as described below) to respond to the allegations of Mr. and Mrs. Stiner. These witnesses jointly sponsored testimony during the second round of hearings on these allegations. (Applicants' Exhibit 177, received into evidence at Tr. 9976.)

Messrs. S. Fernandez, I. Pickett, and A.M. Braumuller are three welders still employed at CPSES who were on Mr. Stiner's crews. Each welder has at least 4 years of welding experience at CPSES, and Mr. Braumuller has a total of 28 years' experience as a welder. (*Id.* at 3-4.)

Messrs. F.E. Coleman and C.R. Brown are two welding foremen assigned to Mr. Stiner's crews during his employment at CPSES. The welding foreman was a nonsupervisory technician who would constantly monitor and assist the work of the five to fifteen welders on his crew. Mr. Coleman also worked as a welder in the same areas as Mrs. Stiner, and Mr. Brown welded in the same areas as Mr. Stiner during Stiner's first term of employment. Messrs. Coleman and Brown have each been employed at CPSES for over 4 years in welding-related positions. Both are currently QC Level II inspectors. (*Id.* at 2.)

Messrs. J. Green and E. Hallford were the foreman and general foreman, respectively, over Mr. Stiner's crew during Stiner's second term of employment. Both have been employed at CPSES for approximately 5 years. (*Id.* at 3.)

Mr. C.T. Brandt is the QA Staff Engineer at CPSES. He was formerly Mechanical/Civil QA/QC Supervisor responsible for all non-ASME Mechanical and Civil Quality Control Activities and had overall responsibility for training, staffing and personnel development of Civil and Mechanical inspectors and QA personnel, including Mrs. Stiner. He has been employed at CPSES in QA/QC-related work for 4 years. Mr. Brandt is also a member of the American Welding Society. (Applicants' Exhibit 141, Attachment A.)

Mr. W. Baker, Senior Project Welding Engineer at CPSES for 6 years, has over 28 years of diversified experience in the welding industry. His experience encompasses 15 years of pressure vessel and power plant

construction. He is a member of the American Welding Society and currently a Senior Project Welding Engineer at Brown & Root. (Applicants' Exhibit 177, Attachment A.)

Mr. M. Muscente has 25 years' experience associated with the design, engineering, fabrication, material selection, and examination and erection of engineered equipment and systems, including pressure vessels, pumps and piping. Mr. Muscente is a member of the American Welding Society, the American Society of Mechanical Engineers and is a registered Professional Engineer in Quality Engineering in California. He is currently the Manager of Materials Engineering at Brown & Root. (*Id.*, Attachment B.)

Applicants' witnesses Brown, Braumuller, Fernandez, Pickett, Coleman, Brandt and Baker are recognized by the Board as expert welding witnesses. Applicants' witnesses Baker and Muscente are recognized by the Board as expert witnesses in the area of metallurgy. Applicants' witnesses Brandt, Coleman and Brown are recognized by the Board as experts in quality control.

3. NRC Staff

The NRC Staff presented the testimony of Messrs. W. Collins, L. Gilbert, D. Smith and R. Taylor. These witnesses jointly sponsored testimony provided during this second round of hearings on welding allegations. (NRC Staff Testimony on Welding Fabrication Concerns Raised by Mr. and Mrs. Stiner ("NRC Staff Testimony") and Addendum to Page 27 of NRC Staff Testimony on Welding Fabrication Concerns Raised by Mr. and Mrs. Stiner ("Staff Addendum"), both received into evidence at Tr. 12,146.)

Mr. Collins is a Senior Metallurgical Engineer with the Office of Inspection and Enforcement, U.S. Nuclear Regulatory Commission. He has approximately 25 years' experience in metallurgy, 16 of which have been as a technical adviser in the area of metallurgy and metallurgical problems relating to construction, testing and operation of nuclear power plants. (NRC Staff Testimony at 1 and Attachment 1.)

Mr. Gilbert is expert in welding and nondestructive examination and is a Reactor Inspector responsible for inspecting nuclear power plants located in Region IV. He has 14 years' experience in welding and 7 years' experience as a Reactor Inspector. Mr. Gilbert is a registered Professional Engineer in Quality Engineering in the State of California. (*Id.* at 2 and Attachment 1.)

Mr. Smith is a materials engineer responsible for the review of materials and fabrication processes used in the construction of nuclear power

plants, as well as the evaluation of material and weldment failure in nuclear power plants. He has 17 years' experience as a materials engineer, including 4 years with the Materials Engineering Branch of the NRC. (*Id.* at 2-3 and Attachment 1.)

Mr. Taylor is employed by the NRC as a Reactor Inspector in the Division of Reactor Safety and Projects, Region IV. In this position, he coordinates all safety-related inspection efforts relative to the NRC Region and the site. He was assigned to Comanche Peak as Senior NRC Resident Inspector for Construction. Mr. Taylor is a registered Professional Engineer in the State of California. Prior to this, from 1976 to 1978, Mr. Taylor was the construction project reactor inspector at the South Texas Project. (Staff Exhibit 9.)

B. Credibility

Prior to the hearings, the Board determined that there were direct conflicts in the testimony of witnesses for CASE and the Applicants regarding important factual allegations. Accordingly, in an attempt to elicit accurate factual information with regard to compliance with welding procedures and the quality assurance program involving welding, the Board directed limited sequestration of all witnesses who would provide testimony on craft activities at CPSES regarding these issues. The purpose of this sequestration was to prohibit communication between the witnesses so that they would not know what one another had said at the time each testified. (Tr. 9916-17.)

Due to the extensive direct conflicts of factual evidence, the credibility of each witness was weighed carefully in evaluating the evidence in the record. Applicants' witnesses provided credible and consistent testimony on direct and in response to the cross-examination questions of all parties. In addition, in response to cross-examination questions Applicants' witnesses stated that they were instructed to tell the absolute truth when testifying and that if their testimony reflected problems with the plant, it would not adversely impact their employment at the plant (Tr. 11,518-19, 11,652, 11,703, and 11,744-45). In short, the Board finds no inconsistencies from Applicants' witnesses which would call into question their credibility. The Board makes a similar finding with respect to the Staff's witnesses.

However, the Board finds that Mr. and Mrs. Stiner's allegations must be considered in light of inconsistencies in their testimony and demonstrated lack of credibility.

1. Henry Stiner

Information regarding certain aspects of Mr. Stiner's background were received into evidence by the Board (Applicants' Exhibits 181, 182, 183; CASE Exhibit 965; Tr. 10,578, 10,579) and duly considered.

Mr. Stiner's testimony also indicates that he has had a tendency to elaborate on testimony adverse to Applicants as the proceeding progresses. For example, in earlier testimony filed in this proceeding, Mr. Stiner stated that he performed welds on misdrilled holes several times (CASE Exhibit 666 at 18). In subsequent testimony Mr. Stiner changed from several repair welds on misdrilled holes to at least twenty or thirty such welds (CASE Exhibit 919 at 22) and during redirect examination Mr. Stiner testified that he performed hundreds of "plug welds" throughout the plant (Tr. 10,672). Mr. Stiner subsequently testified that he had performed twenty or thirty plug welds in a single day (Tr. 10,699-70).

Mr. Stiner sometimes gave conflicting testimony. For example, during previous hearings, Mr. Stiner testified that he never left his weld rods out of the can (Tr. 4301-02). When asked this question again during the March 1984 hearings he directly contradicted his previous testimony by stating that he did leave weld rods out of the can as much as any other welder did (Tr. 10,856). In attempting to explain the obvious inconsistency in his testimony, the following discussion occurred:

BY MR. REYNOLDS:

Q. Do you have an explanation [for the inconsistency]?

A. Yes, I do. I believe at the time the line of questioning and the manner that it was being — the line of, I call it interrogation, was being handled, I think maybe I just misunderstood what you were trying to get to and in what reference you were trying to actually set me up or whatever. And that's probably the reasons for the inconsistencies in the testimony there and now.

JUDGE BLOCH: Mr. Stiner, your job is never to figure out what the lawyer is trying to get to. If he asked you "do you put things into a rod can," you just answer what the truth is. You have no business trying to figure out what he's trying to get to.

I don't understand that explanation.

Did you or did you not put these things into the — leave your rods out of the rod can?

THE WITNESS: I did leave them out.

JUDGE BLOCH: Why do you think you said you didn't in the last testimony?

THE WITNESS: Like I say, I was in such a fog when I was up here testifying the first time, that I'm liable to have actually said anything. That's why I try to go back and find all these inconsistencies. But I'm sure that I did skip over some of them that I didn't catch, like that one instance. I would have clarified it if I saw it when I read through the transcript.

It's not that I intentionally lied. It's just a case where at the time of the questioning it was not in my mind to grasp.

The Board Chairman noted at the time "that this seriously affects his credibility" (Tr. 10,861).

As another example of an inconsistency, Stiner stated in his prefiled testimony that his work always looked good to QC and they almost always ended up "buying it off" (CASE Exhibit 666 at 34; Tr. 10,674). However, during Mr. Stiner's cross-examination he stated that many of his welds were rejected (Tr. 11,009).

As another example, Mr. Stiner initially testified that workers violated weld rod control procedures regarding retention of rods because "they are under so much pressure to get the work done and get the hangers up that they try to do anything they can do to speed up work" (CASE Exhibit 919 at 19). However, in response to an inquiry that appeared to bring into question the logic of such a position, Mr. Stiner reversed himself and testified that he did not hold out rods because he was under time pressure (Tr. 11,126-28).

As another example, Mr. Stiner testified that under the direction of Cliff Brown and Jimmy Green, he performed a downhill weld on a particular hanger in a limited access area (Tr. 10,622). Significantly, when Mr. Stiner was confronted with conflicting testimony regarding whether Mr. Brown could direct him to perform a weld, he testified that Mr. Brown did not direct him to make this downhill weld; rather Mr. Brown made the weld himself (Tr. 10,967-75, especially 10,967 (which references Tr. 10,622) and 10,975).

As another example, Mr. Stiner testified that, while he was "illegally" repair-welding misdrilled holes, Messrs. Brown, Coleman and Green stood watch for QC (Tr. 10,685-86). Later however, he testified under cross-examination that only Fred Coleman had stood watch for him while he was repairing misdrilled holes (Tr. 11,031). Mr. Stiner testified that Mr. Brown never stood watch for him for QC inspectors in any respect (Tr. 11,031). Mr. Stiner after being informed by Applicants' counsel of an inconsistency with previous testimony then stated that Mr. Brown did stand watch for him once (Tr. 11,032).

Mr. Stiner also testified that it would take him approximately 2 minutes to perform a repair weld on a 1¼-inch hole in a 2-inch-thick plate.

excluding blending of the weld and base metal surface (Tr. 10,698). Further, Mr. Stiner stated that it would only take two weld rods to perform such a repair (Tr. 11,158). Staff's witnesses testified that based on simple volumetric calculations it was not possible to do what Mr. Stiner stated. They testified that disregarding all other factors, such as cleaning the weld surface, changing weld rods, or turning the member, it would take no less than 20 minutes and twenty to twenty-five weld rods to complete the weld on the misdrilled hole cited by Mr. Stiner. (Staff Testimony at 26; Tr. 12,250-51.) Based on independent testing, Applicants verified the Staff's testimony (Tr. 11,767-68).

Mr. Stiner testified that it was faster to weave weld than to perform a stringer (line) weld, and accordingly, supervisors directed welders to weave weld to accelerate production (Tr. 10,863, 10,896). However, in response to cross-examination of earlier testimony, Mr. Stiner stated first that it took approximately the same length of time to perform a stringer and weave weld; next, that the stringer weld took longer; and finally, that the weave weld took much longer (Tr. 4361-63).

In explaining how he knew that he was allegedly performing an illegal "plug weld" on ASME hangers, Mr. Stiner changed his position in mid-sentence as illustrated by the following discussion:

JUDGE BLOCH: Do you ever know of having done one [illegal "plug weld"] that was an ASME support?

THE WITNESS: Yes, sir.

JUDGE BLOCH: How do you know it was an ASME support?

THE WITNESS: Because it was a Class 3.

JUDGE BLOCH: How did you know it was Class 3?

THE WITNESS: The package numbers will indicate on the end of the package number, A35R or A33R, an A32R.

JUDGE BLOCH: They brought this material to you, which was an illegal weld, together with the package that legally went with it, just to show you that it was an ASME weld?

THE WITNESS: No, not to show me that the package – I mean most of the time you know when you're working in a particular area, according to what class of hanger you're working on.

[Tr. 10,673-74.]

Mr. Stiner's testimony concerning the relationship of "arc blow" to downhill welding is illustrative of bias, consisting of his willingness to provide adverse testimony to Applicants without sensitivity to whether

the matter is beyond his expertise. Mr. Stiner testified that downhill welding is useful to compensate for the "arc blow" caused by the magnetization of the welded metal. Tr. 4246-47, CASE Ex. 666 at 45. Metal, according to Mr. Stiner, becomes "magnetized" when cut with a welding torch. Tr. 4246. This assertion, however, indicates total lack of metallurgical expertise. "Arc blow" is the phenomenon resulting in the deflection of the arc due to a deformation in the magnetic field. Applicants' Exhibit 177 at 15 (Baker, Muscente). This deformation in the magnetic field is caused not by "cutting with a welding torch," but by welding close to ground or into obstructed areas such as corners. *Ibid.* Small amounts of arc blow are beneficial to the welder because it helps him form the bead shape, control molten slag, and achieve proper penetration. *Ibid.* Arc blow is a potential problem only when using amperage rates in excess of 250 amps, for rate more than double that specified (90-120 amps) for welders at CPSES. *Ibid.*

2. *Darlene Stiner*

With regard to her testimony, Mrs. Stiner apparently relied heavily on what her husband told her. For example, Mrs. Stiner relied on Attachment B to her testimony in responding to several questions concerning why she believed and testified that weave welding caused excessive heat input that would result in damage to the parent metal (*e.g.*, Tr. 10,305-10). However, in subsequent cross-examination she revealed that she had not even read Attachment B, but rather her husband had discussed it with her and she agreed with his views on the subject. She stated that the Attachment related to her husband's testimony, not her testimony (Tr. 10,542-45).

Mrs. Stiner responds to questions by significantly overstating the facts. For example, she testified that her supervisor told her that she "would be fired" if she didn't accept a certain hanger (Tr. 10,276). However, in responding to another question, she related the substance of the conversation, which did not include a threat to fire her (Tr. 10,276-77). The Board cautioned Mrs. Stiner to not overstate the facts (Tr. 10,277). As another example she stated that a QC inspector had the authority to order that a hanger be cut down. However, based on other questions she admitted that she didn't know if an inspector had that authority (Tr. 10,278-79). As another example, she testified that her supervisor had not given Tom Brandt certain weld rods that she had found; subsequently, she admitted that she did not know (Tr. 10,474-75). As another example, Mrs. Stiner testified that "she is sure" that Mr. Brown does not monitor his welders and watch them make their

welds so that he would know if they were weave welding contrary to procedures (Tr. 10,200). However, on cross-examination she testified that Mr. Brown was never her foreman, she did not know he was a foreman and she was simply speculating (Tr. 10,291).

Mrs. Stiner testified that welders did not generally have and could not easily obtain pencil grinders (Tr. 10,285-86). Other welders and foremen (Messrs. Pickett, Braumuller, Fernandez, Coleman, Brown and even Mr. Stiner) testified that they had pencil grinders and, when asked, they testified that pencil grinders were readily accessible in the areas in which they were working (Tr. 10,614, 11,469, 11,547, 11,621-22, 11,643, 11,666). On this direct conflict of testimony, we find that Mrs. Stiner lacks credibility.

In her testimony, Mrs. Stiner made one specific allegation regarding excessive weave welding by one of Applicants' witnesses, Mr. Braumuller. However, this testimony was inconsistent and lacking in credibility. Significantly, when testifying, Mrs. Stiner had notes allegedly made at around the same time as the events in question. (The notes were not admitted into evidence.) The Board notes below only a few of the inconsistencies in this testimony:

- Mrs. Stiner testified that on March 24, 1981, while inspecting a companion hanger, she first noticed Mr. Braumuller making excessive weave welds on hanger TWX-0397-14A35R (Tr. 10,161, 10,183-85). She testified that she inspected the hanger for a final inspection on March 26 and again saw Mr. Braumuller weave welding on the hanger (Tr. 10,156, 10,164). However, in earlier testimony she had stated that her initial inspection was on March 26 and the final inspection occurred later (CASE Exhibit 667 at 25; Tr. 10,185). Mrs. Stiner provided a long explanation attempting to reconcile the difference (Tr. 10,185-89). At bottom, however, her earlier testimony was, at best, incomplete. Mrs. Stiner testified that after her inspection on March 26, she returned on March 27 and wrote an NCR on the hanger (Tr. 10,173). Again, conflicting earlier testimony was presented that the NCR was not written until several days after the "initial" inspection of March 26. CASE Exhibit 667 at 25. This time Mrs. Stiner just admitted that the earlier testimony was wrong (Tr. 10,196). To summarize, at the conclusion of the hearing on February 23, 1984, Mrs. Stiner's story was that she had seen Braumuller weave welding on the hanger on March 24 and 26, 1981, and had written an NCR on March 27. (Tr. 10,196.) When the hearing reconvened over 3 weeks later, Mrs. Stiner, responding to a Board question precipitated by an inconsistency, testified that she had not seen Mr. Braumuller welding on the hanger on March 24; indeed, the first time she noted weave welding on the hanger was on March 26, 1981 (Tr. 10,454-56).

- Mrs. Stiner testified on many occasions that she had never approved the hanger due to her concern over the alleged weave welding (Tr. 10,273). Yet, Applicants presented an Inspection Report dated April 8, 1981 that was signed by her (Tr. 10,266) indicating that the hanger was satisfactory (Tr. 10,263-64).

Mrs. Stiner testified that while she doesn't remember signing it, she may have (Tr. 10,273). She testified that she must have signed it under threat of being fired (Tr. 10,265, 10,261). Later however, she admitted that there was no direct threat of firing (Tr. 10,276-77).

- Mrs. Stiner testified that the NCR she had written had been voided and Applicants had no record of it. The Board reminded Mrs. Stiner that even voided NCRs are given numbers. Mrs. Stiner did not know and could not find the number even though she kept a log of her significant work activities and stated that she had written it down. (Tr. 10,144-45.) On the Inspection Report for this hanger, that we conclude was signed by Mrs. Stiner on April 8, however, she had written "not applicable" under the section for listing outstanding NCRs. (Tr. 10,267.) She reconciled the testimony by stating that the NCR had been voided and she had no number to put in the box. However, she earlier testified that she had not known what had happened to the NCR. (Tr. 10,267.) Mrs. Stiner could not provide a satisfactory explanation as to why she wrote "not applicable" in this section of the Inspection Report if she had reported an NCR which, to the best of her knowledge, had not been dispositioned (Tr. 10,267-68).

- Mrs. Stiner's notes purported to be contemporary records of events taking place at the plant. However, key entries about the disputed hanger were in blue pen. These were the only entries in blue pen. Mrs. Stiner was unable to explain this aberration in a convincing way. We conclude that these blue-penned entries were not contemporaneous but were made at a later date to support Mrs. Stiner's testimony. (Tr. 10,172-74; *see also* Tr. 10,520.)

The record demonstrates that Mr. and Mrs. Stiner are individuals who possess memories that produce different versions of the same facts when questioned at different times and possess selective recall of facts and details favorable to their claims, accompanied by a failure of memory as to other facts regarding those claims.[2]

C. Contested Issues

The welding issues raised by CASE and addressed in this Partial Initial Decision relate to weave welding, downhill welding, weld rod control, weld repair of misdrilled holes and preheating of welds. In addressing each of these issues in the context of the quality assurance contention raised by the intervenor, the Board examined and weighed the testimony presented to determine if it reflected systematic or significant violations of the QA/QC program indicative of a breakdown in the program. In addition, in that resolution of many of the issues involved balancing con-

[2] While many additional inconsistencies are contained in their testimony (*see, e.g.*, Tr. 10,744-58, 11,153), the Board will not take the time to detail them. However, some additional inconsistencies in their testimony are noted below in discussions of specific allegations.

flicting testimony raising credibility issues, the Board attempted to address the probable impact on plant safety, assuming the allegations were well founded.

1. Weave Welding

Weave welding as defined by § IX of the ASME Code is a weld with significant transverse oscillation (NRC Staff Testimony at 4; Applicants' Exhibit 177 at 7). The AWS D1.1-1975 Code also defines a weave weld as a type of weld bead made with transverse oscillation.

Weave welding may be distinguished from a stringer bead, which is defined as a type of weld made without appreciable transverse oscillation. (NRC Staff Testimony at 5; Tr. 12,153.) Neither the ASME Code nor the AWS Code prohibits weave welding (Applicants' Exhibit 177 at 7; NRC Staff Testimony at 5; Tr. 11,222). Further, weave welding is not in itself contrary to applicable welding procedures used at Comanche Peak unless the final weave width is in excess of 4 times the diameter of the weld rod being used. For example, if the welding material specified to be used is 1/8-inch-diameter electrode, it would be acceptable to use an oscillating weld technique up to ½-inch wide (4 times the diameter of the weld rod). (Applicants' Exhibit 177 at 7-8.)

CASE's concerns regarding weave welding were based on Mr. and Mrs. Stiner s allegations that although excessive weave welding[3] was contrary to procedures at CPSES, it was common practice and foremen even directed welders to use improper weave welds (Tr. 4147-48, 4210-11, 11,098-103; CASE Exhibit 919 at 9-10). Mr. and Mrs. Stiner were concerned that weave widths in violation of procedures could result in excessive heat input into the weld joint (CASE Exhibit 919 at 5; Tr. 10,305, 10,591, 10,785).[4]

As discussed more fully below, the record reflects that the allegations raised by Mr. and Mrs. Stiner regarding weave welding are not reflective of systematic or significant violations of the QA/QC program. In this regard, no specific instances where violations were alleged to have occurred were substantiated. Furthermore, the record reflects that even if

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[3] The record reflects that Mr. and Mrs. Stiner's initial allegations were based on a belief that all weave welding, no matter how slight, was unauthorized (Applicants' Exhibit 177 at 7-9; Tr. 9991, 10,589-90). Henry Stiner subsequently acknowledged that weave welding was not impermissible at Comanche Peak if the bead width did not exceed four core diameters. *See* Tr. 10,590 (H. Stiner); CASE Exhibit 919 at 6 (H. Stiner). He then stated that his concern had always been for excessive weave welding (Tr. 10,590 (H. Stiner)). However, we find that the earlier testimony is lacking in credibility, thereby seriously questioning the basis for CASE's allegations regarding weave welding.

[4] During the hearing, the Board determined that the issue of weave welding included the impact of heat input during weave welding (Tr. 9947).

Mr. and Mrs. Stiner had violated procedures by welding in excess of weave width procedural requirements as they alleged, excessive heat input in the welds they made would not have had a significant adverse impact on plant safety.

a. Allegations of Weave Welding Do Not Reflect a Breakdown in the QA/QC Program

Henry and Darlene Stiner testified that excessive weave welding in violation of procedures was a widespread problem at CPSES (CASE Exhibit 919 at 6, 9, 14).

Mr. and Mrs. Stiner testified that under the direction of their supervisors they had welded and had observed others welding with weave widths in excess of procedural requirements. While they stated that such violations routinely occurred, they were only able to identify a few specific hangers where they believed unauthorized weave welding occurred. The two specific incidents identified[5] involved A. Braumuller, one of Applicants' witnesses who had previously testified that he had never performed weave welding in violation of procedures. (Applicants' Exhibit 177 at 9; Tr. 11,675.) (The two specific incidents identified are addressed below.)

In response to these allegations of widespread weave welding in violation of procedural requirements (i.e., where the weave width was over 4 times the diameter of the weld rod used), Messrs. Fernandez,[6] Pickett and Braumuller (welders still remaining at CPSES who were on Mr. Stiner's crews) testified that they had never welded or seen another person weld using a weaving pattern in excess of the bead width specified in welding procedures. Further, they testified that they had never heard a foreman or supervisor direct a welder to perform such illegal welds. (Applicants' Exhibit 177 at 9.) All welders (including the Stiners) apparently

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[5] Mr. Stiner also alleged that Fred Coleman directed him to beat the flux off a rod, insert it into a weld gap and weave weld over it (CASE Exhibit 919 at 9). However, he was not able to identify a specific hanger or weld which could be investigated. In any event, Mr. Coleman presented contradictory testimony (Tr. 11,538). Further, other welders who were under Mr. Coleman on the same crew as Mr. Stiner, stated that Mr. Coleman had not given them similar instructions and they had never heard of this being done at CPSES (Applicants' Exhibit 177 at 9).

[6] Mr. Stiner testified that Mr. Fernandez was not on his crew and had never welded in the same area as Mr. Stiner (Tr. 10,589). Subsequently, when asked if Mr. Fernandez ever performed an illegal weld, Mr. Stiner stated that Fernandez had; Stiner knew because he was welding in the same area (Tr. 10,675-76). In any event, Messrs. Fernandez and Brown (Mr. Stiner's welding foreman) testified that Mr. Fernandez was on the same crew under Mr. Brown (Tr. 11,857, 11,673).

knew that intentional violation of procedures could result in termination (Tr. 11,729).[7]

In addition, Messrs. Brown, Coleman, Green and Hallford (supervisors on crews over Mr. Stiner and/or welders in areas where Mrs. Stiner welded) stated that they had never heard any supervisor direct a welder to perform illegal weave welding (Applicants' Exhibit 177 at 9-11). Significantly, Messrs. Brown and Coleman (welding foremen on H. Stiner's crews) testified that they monitored each welder on their crews (including Mr. Stiner) several times a day (Tr. 11,464, 11,534, 11,541) and if any welders were using excessive weave welding as a practice (as alleged by Mr. and Mrs. Stiner), they would have known about it (Applicants' Exhibit 177 at 10; Tr. 11,587).

Mr. Baker testified that he was unaware of any instances of excessive weave welding which had not been identified and appropriately dispositioned, and that if a welder was using excessive weave welding as a practice, Mr. Baker would have found out about it. Mr. Baker based his testimony on his personal observations of and discussions with welders coupled with the monitoring programs he administered in welding construction, e.g., welding technicians who all reported to him and the welder inspection program. Mr. Baker testified that welding technicians (assigned to each area of the plant where welding was taking place) continuously monitor the welders they are assigned. Mr. Baker stated that if any welder used excessive weave welding as a practice, it would have been detected by these technicians and reported to him. (Applicants' Exhibit 177 at 12-13.)

Further, Mr. Baker testified that welding engineering (apart from QA/QC) also conducted unannounced inspections of each active welder approximately every 14 days. (For example, Mr. Baker testified that during the short time Mr. Stiner was actively welding, he was inspected 15 times, and Mrs. Stiner was inspected at least 28 times during the period she welded.) During the inspection, numerous areas are checked, including the filler material, the acceptability of the welding, progression of travel (uphill or downhill), bead width, and weld rod control. Mr. Baker testified that to his knowledge, none of the inspections identified any concerns regarding excessive weave welding.

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[7] Mr. and Mrs. Stiner alleged that welders routinely violated procedures under the direction of their foreman even though they knew that they could be terminated if they were caught (Tr. 10,284, 10,287-88, 10,312-14). Mr. Stiner stated that the guidance he was given by his foreman was not to get caught (Tr. 10,680, 10,897). In addition, they stated that foremen and other welders kept a look out for QC to warn welders if QC was coming (Tr. 11,030-32, 11,103). This is in direct conflict with testimony of welders presented as witnesses by Applicants who, when asked by the Board, stated that, in essence, it did not make sense to intentionally violate procedures if you knew you could lose your job (Applicants' Exhibit 177 at 11; Tr. 11,729).

Further, Mr. Brandt testified that he was unaware of any instances of excessive weave welding which were not identified and dispositioned appropriately, and if a welder did excessive weave welding as a practice (as alleged by Darlene and Henry Stiner), QC would have found out about it and taken appropriate actions. Mr. Brandt's testimony was based on his observations of welders in the plant, and his discussions with numerous QC inspectors (who are monitoring the welders) regarding this issue. (*Ibid.*)

The NRC Staff investigated the allegations made by Mr. and Mrs. Stiner regarding weave welding (NRC Staff Exhibit 178 at 11-13). Based on the investigation, the Staff concluded that there was no evidence to support Mr. and Mrs. Stiner's allegations (NRC Staff Testimony at 11-12).

While testimony reflected that all welders were trained on the appropriate weave width that could be used (*see, e.g.*, Applicants' Exhibit 177 at 9, 13; Tr. 9991, 11,297), Mr. Stiner testified that he was never told that weave welding in any fashion (even less than 4 times the diameter of the weld material) was authorized (Tr. 4211 and 10,590). However, Mr. Stiner contradicted himself by stating that one of his training instructors (Kenneth Golden) told him that weave welding was acceptable and even at times preferable (CASE Exhibit 666 at 9). In addition, in March 1980 Mr. Stiner attended a training class on CPM-6.9 (*id.* at 8) which requires a maximum bead width of 4 times the weld rod diameter (NRC Staff Testimony at 6). In short, despite the contradictory testimony of Mr. Stiner, the Board finds that welders were properly trained on acceptable bead width.[8]

MR. STINER'S SPECIFIC ALLEGATION

On cross-examination, Mr. Stiner could recall only one instance where he had witnessed excessive weave welding. Tr. 10,592. According to Mr. Stiner, he noticed that the hanger on which a welder named Armand Braumuller was welding had turned blue approximately 4-5 inches from the weld joint. CASE Ex. 919 at 8. In Mr. Stiner's view, the blue discoloration was due to overheating of the base metal caused by excessive weave welding. Tr. 10,592.

The steel used at CPSES to construct hangers, A36 steel, has a carbon content of less than 0.3% and is considered "low-carbon" steel. Staff

[8] Applicants testified that the bead width weld specified as acceptable in some welding procedures may have been confusing (Tr. 9991). Accordingly, these procedures are being changed to remove confusion (Tr. 9992). However, it appears that the confusion, if any, was not widespread. Further, any confusion would have resulted in welders conservatively using less of a weave pattern than they could have used.

Testimony at 6-8 (Taylor, Gilbert). Low-carbon steel, which changes color during oxidation (*id.* at 8, Tr. 10,020 (Baker)) "turns blue on the surface at 600°F." Tr. 10,020 (Baker). This surface discoloration is not an indication of embrittlement, or a loss of ductility or tensile strength. Tr. 10,020-24 (Baker, Muscente). Thus, the fact that Mr. Stiner may have observed a blue discoloration on the hanger at issue does not mean that the bead width of the weld made by Mr. Braumuller exceeded four core diameters.

It is noteworthy that Mr. Braumuller, a welder with 28 years' experience (Applicants' Ex. 177 at 4), denied that Mr. Stiner ever assisted him on a welding job and had no recollection of the incident described by Mr. Stiner. Tr. 11,694-95. Mr. Coleman, who was Mr. Stiner's foreman at the time, stated that Mr. Stiner was a welder "like all the rest," Tr. 11,539, and denied that Mr. Stiner was assigned the task of walking around correcting other welders' work. *Ibid.* Clifford Brown, who was a member of Mr. Stiner's welding crew, also controverted Mr. Stiner's statement that he and Mr. Stiner were roving repairmen, responsible for getting "bad welds" bought off by QC. *Compare* Tr. 11,467 (Brown) *with* Tr. 10,606; Tr. 10,622-23 (H. Stiner). Indeed, Mr. Stiner admitted on cross-examination that Mr. Coleman's and Mr. Brown's testimony on this point is correct. Tr. 10,974-75.

Mr. Stiner visited Comanche Peak with the Board Chairman to indicate the hanger that contained the improper weave weld made by Armand Braumuller. Tr. 11,118. Mr. Stiner identified hanger CT-1-017-005-Y35R as the offending hanger. Tr. 11,023. The weld package for hanger CT-1-017-005-Y35R, however, indicates that neither Mr. Stiner nor Mr. Braumuller ever welded on hanger CT-1-017-005-Y35R. Tr. 11,023.

The Staff inspected hanger CT-1-017-005-Y35R and the two adjacent hangers to determine whether any had excessive weave welds. Staff Testimony at 13 (Taylor). The welds did not appear to have been ground down and thus the longitudinal ridges and valleys of welds could be observed. *Ibid.*; Tr. 12,224 (Taylor). The ridges and valleys of these welds were "indicative of properly-made stringer beads well within the four rod diameter limitation." Staff Testimony at 14 (Taylor).

The Staff also reviewed the construction package for hanger CT-1-017-005-Y35R to determine whether it had been removed or replaced subsequent to the July-August 1980 time period that Mr. Stiner claims he and Mr. Braumuller welded on it. The construction package indicates that welding took place only in June 1979, January 1981, and October 1983, and nothing in the construction package or in the Staff's inspection of the hanger indicates that it has ever been removed or replaced. *Ibid.*

One of the adjacent hangers did have the weld symbols of both Mr. Braumuller and Mr. Stiner, suggesting the possibility that this was the hanger Mr. Stiner had described. However, the documentation for this additional hanger showed that Mr. Braumuller and Mr. Stiner had welded on that particular support several months apart. (Tr. 11,024; CASE Exhibit 968, received into evidence at Tr. 11,180.) So the documentation contradicts Mr. Stiner's testimony. Further, since the hangers pointed out by Mr. Stiner did not require Charpy impact testing (NRC Staff Testimony at 13), the existence of excessive weave welding on these supports would merely have indicated an isolated violation of a procedure without an adverse safety consequence. *See* Staff Testimony at 5, 7 (Collins, Smith); Tr. 9998 (Muscente).

We conclude that Mr. Stiner did not establish the existence of even one illegal weave weld. However, this incident does cast doubt on Mr. Stiner's credibility. When he was forced into pinpointing the location of a mysterious problem he stated positively that he knew existed, he failed to do so.

MRS. STINER'S SPECIFIC ALLEGATION

Mrs. Stiner testified that she saw Mr. Braumuller and Mr. Stiner weave welding on an Auxiliary Building hanger, TWX-034-714-A35R (elevation 790) on March 24, 1981 and March 26, 1981 (Tr. 10,161, 4149; Case Exhibit 667 at 24). This issue is discussed in § II.B, above, as it relates to the credibility of Mrs. Stiner. While this discussion casts substantial doubt on her credibility as a witness as well as the accuracy of this specific allegation, documentation reflects that, in any event, Mr. Braumuller used a total of two rods on the hanger on March 24 and five rods on the hanger on March 25, 1981 (Tr. 11,790-91). (We find, based on the documentation, that Mr. Stiner did not weld on the hanger on March 26, 1981 as alleged (Tr. 11,791).)[9] Significantly, Mrs. Stiner testified that seventeen to eighteen weld rods would not have completed even one weld on the hanger (Tr. 10,149). Accordingly, if Mr. Braumuller had weave welded on the hanger as Mrs. Stiner had alleged, he could

[9] During cross-examination, CASE questioned Mr. Baker as to the adequacy of weld filler material documentation for this and other Class 5 hangers. Specifically, CASE was concerned that because weld filler material log sheets were not numbered for Class 5 hangers (as they are for Class 1, 2 and 3 hangers), there would be no way of telling if any sheets were missing (Tr. 11,942-43). Mr. Baker testified that this hanger package was taken from official company records and he had no reason to believe that it (as well as any other Class 5 hanger package) was not complete (Tr. 11,978-79). Further, he testified that there are no Code requirements regarding retention of such documentation for Class 5 hangers (Tr. 11,983). Further, Mr. Baker stated that after the filler material is used, the weld filler material log sheets for Class 5 hangers serve no safety function (Tr. 11,981-83). CASE presented no conflicting testimony.

not have weave welded for very long. In any event, the welds on the hanger did not require Charpy impact testing and would, therefore, have been constructed safely even if there had been weave welding.

We conclude that whether or not Mr. Braumuller may have weave-welded on this particular hanger, there is at most proof of one isolated instance of a violation of procedures. The violation, if it occurred would not have safety consequences. Consequently, Mrs. Stiner's testimony does not establish any serious shortcomings in welding practices with respect to weave welding.

Based on the evidence, the Board finds that CASE's allegations regarding weave welding do not reflect significant violations of procedural requirements, and thus, do not reflect even a minimum breakdown in the QA/QC program at CPSES. There also is no reason for concern about safety consequences of the alleged practices.

In making these findings, the Board notes that the testimony regarding this issue is in direct conflict. On the one hand Applicants' witnesses testified that they were not aware of any unreported weave welding in violation of procedures. These witnesses included welders who worked in the same areas as Mr. and Mrs. Stiner and who would have experienced the same working conditions that they did. Indeed, each of these welders has been at CPSES longer than either Mr. or Mrs. Stiner. In addition, Applicants' witnesses included two of Mr. Stiner's welding foremen and two of his other supervisors, all of whom would have monitored him and others on his crew. Finally, Applicants' witnesses included Messrs. Baker and Brandt who testified as to direct and substantial oversight of welding by the welding engineering department and QC personnel. Significantly, while each of Applicants' witnesses was sequestered and thus did not hear the testimony of the others before testifying, there were no inconsistencies of any moment in any of Applicants' witnesses' testimony.

b. Safety Implications of Allegations of Excessive Weave Welding

In the course of the foregoing discussion, we reached certain conclusions about the safety significance of Mr. and Mrs. Stiner's allegations, had we found them to have been true. In this portion of our opinion we discuss that conclusion in greater depth.

Mr. and Mrs. Stiner stated that their primary concern regarding weave welding was that it would result in excessive heat input into the parent metal resulting in damage (CASE Exhibit 919 at 5; Tr. 10,784).

With regard to CASE's concern, Messrs. Muscente and Baker testified that the type of steel Mr. and Mrs. Stiner were qualified to weld on was

low-carbon steel with a carbon content below 0.3% (Tr. 9997-98). Applicants testified that the vast majority of all carbon steel used at CPSES is low-carbon steel. Further, Applicants testified that this material is extremely ductile, not susceptible to cracking or embrittlement, and not susceptible to reduction in strength from excessive heat input. (Tr. 9998-99.)[10] Applicants testified that heat input during welding on these materials is only a factor when welding on materials that require Charpy impact testing (Tr. 10,012). Applicants testified that excessive heat on such materials may alter the fine grain structure (Tr. 10,012). The NRC Staff testimony was consistent with Applicants' in this regard (NRC Staff Testimony at 7; Tr. 12,156, 12,178-82).

Applicants testified that the main steam and feedwater systems were the only two systems installed by Brown & Root in which there were any portions that required Charpy impact testing (Tr. 9996, 10,100). Mr. and Mrs. Stiner's qualifications would have restricted them to welding structural attachment welds on these systems (Tr. 9996). To determine whether Mr. or Mrs. Stiner welded on these systems, Applicants conducted a computer search of the welding documentation of the sections of the main steam and feedwater systems requiring Charpy impact considerations (Tr. 9996, 10,013). To verify that this documentation contained all pertinent attachments to the systems, Applicants also conducted a cross-check of all the drawings for the main steam and feedwater systems and identified all of the hangers attached to portions of those systems that required Charpy impact testing (Tr. 11,765). From these reviews, Applicants determined that neither Mr. nor Mrs. Stiner welded on materials requiring Charpy impact testing (Tr. 9996, 10,012). Another computer check by Applicants of all systems welded on by Mr. and Mrs. Stiner supported this conclusion (Tr. 9996). While Mr. Stiner stated that he was sure that he welded on systems requiring impact testing, he could not remember the hanger numbers or exact locations (CASE Exhibit 919 at 7-8). On the basis of this record the Board finds that neither Mr. nor Mrs. Stiner welded on material requiring Charpy impact testing.

To illustrate worst-case heat input conditions, Mr. Stiner testified that he observed hangers on which the weld was in excess of 4 times the diameter of the weld rod and the parent metal was heated so hot that 4 or 5 inches out from the weld it was "blue tempered" (*id.* at 8). Applicants testified that this coloration was a surface condition which occurred

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[10] Applicants testified that these characteristics were present in low-carbon steels, including A-36. Further, Applicants testified that due to the fabrication process for SA-500 tube steel (also a low-carbon, unalloyed steel), excessive heat input may cause some change in the mechanical properties and perhaps tensile strength. However, the characteristics would be essentially the same. (Tr. 11,926-27.)

at 600°F (Tr. 10,020). Applicants attempted to simulate this condition using the material Mr. Stiner alleged to have seen, 6-inch by 8-inch tube steel, ¼-inch thick (Tr. 10,021). (In that this material was tube steel, it was SA-500 low-carbon steel (Tr. 11,927).) Applicants welded on this material continuously for 37 minutes using excessive weave beads. During the test, there were interpass temperatures of over 650°F, which exceeds the 500°F specified by the procedure. The result was a blue ring on the surface 1¼ inches from the top of the weld. (Tr. 10,022.) Applicants testified that the excessive heat would not have had an impact on the characteristics of the base material (Tr. 10,021-25). Judge Bloch summarized Applicants' testimony in this regard as follows: "first, it is impossible to get that wide a blueness and second, if it did, it wouldn't matter anyway" (Tr. 10,025, *citing* Applicants' Exhibits 178, 179). NRC Staff testimony supported Applicants' position in this regard (NRC Staff Testimony at 8).

Applicants also performed a test on low-carbon SA-36 material where interpass temperatures of 750°F (250°F in excess of the maximum interpass temperature) were achieved (Tr. 10,015). Specimens were cut from the test plate and tested. These tests confirmed the acceptability of the material's important properties (Applicants' Exhibits 178, 179; Tr. 10,018).

From the testimony, the Board finds that, even if Mr. and Mrs. Stiner had made some weave welds in violation of procedures, as alleged, it would not have had an adverse impact on safe operation of the plant.

2. Downhill Welding

Downhill welding is an industry term with its expected common meaning. It refers to vertical welds made by progressing from the top of the weld toward the bottom of the weld.

Downhill welds are accepted for many applications. Neither the ASME nor AWS Codes exclude any particular direction of progression. Rather, both Codes would allow the contractor to specify direction of travel. While the Codes do not exclude uphill or downhill welding, the Codes do state that regardless of which direction of progression is selected the welder must be qualified to weld in that direction.

Brown & Root welding procedures do not authorize downhill welding. However, welding procedures of other contractors on site do authorize downhill welding. (Applicants' Exhibit 177 at 15-16.)

CASE's concerns regarding downhill welding were based on Mr. Stiner's allegations that (1) "once metal has been welded on and cut on with

a torch, it builds up a magnetic field which causes arc blow" and to correct arc blow "lots of times, people will run a downhill weld instead of doing it correctly, because then you're going in the direction of the magnetic field" (Tr. 4246-47) and (2) because of limited access conditions welders were at times directed to make downhill welds instead of uphill welds (CASE Exhibit 191 at 15). Mr. Stiner contended that such downhill welds were contrary to procedures and could potentially result in trapped slag and lack of fusion (Tr. 4247).

As discussed more fully below, the record reveals that the allegations raised by CASE regarding downhill welding have not been substantiated. In any event, even if isolated instances of downhill welding occurred, as alleged, the likelihood that it would have an adverse impact on plant safety is remote.

a. CASE's Allegations Regarding Downhill Welding Do Not Substantiate a Breakdown in the QA Program

Mr. Stiner alleges that downhill welds were routinely made to correct for arc blow[11] and, as directed by supervisors, in limited access conditions (CASE Exhibit 919 at 15). While Mr. Stiner stated that unauthorized downhill welding was common practice at CPSES, he was only able to identify two specific instances where he alleged downhill welding occurred (Tr. 10,607, 10,622).[12]

With regard to arc blow, Applicants testified that contrary to Mr. Stiner's assertions, welding on metal or cutting it with a torch will not result in a magnetic field on the base material. In any event, arc blow is not caused by the base material being magnetized. Applicants testified that, if proper grounding is present, arc blow is a problem only at elevated amperage rates, usually above 250 amps. (Applicants' Exhibit 177 at 14-15.) Applicants further stated that because of the method of grounding used at CPSES, and the small-diameter electrodes and low amperage ranges used in the field for vertical welding (90-120 amps), arc blow for vertical welding is not a problem at CPSES (*ibid.*; Tr. 10,085-86). However, Applicants testified that due to a separate grounding system in the

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[11] Applicants testified that arc blow is a phenomenon sometimes encountered in D.C. arc welding where the arc is deflected due to the deformation of the magnetic field which is present in some form in all arc welding (Applicants' Exhibit 177 at 15).

[12] In addition to the two specific instances, Mr. Stiner states generally that Messrs. Coleman, Brown and Green (and other unnamed foremen) directed him to perform, or themselves made, downhill welds in limited access conditions (CASE Exhibit 919 at 5; Tr. 10,607-20, 10,622, 10,624-26, 11,489). Messrs. Coleman, Brown and Green denied these allegations. (Tr. 11,488, 11,716; Applicants' Exhibit 177 at 19.) Mr. Brown, however, testified that in restricted positions he had made welds that Mr. Stiner could not make, but such welds were not downhill (Tr. 11,488).

welding training facility, at one time arc blow was a problem in the training facility, but not in the plant (Tr. 10,085-88). Mr. Stiner did not take issue with this testimony.

With regard to Mr. Stiner's allegations that downhill welding was routinely performed in limited access situations under the direction of a supervisor, Messrs. Fernandez, Pickett and Braumuller (welders remaining at CPSES from Mr. Stiner's crews) testified that they had not welded or seen others weld downhill in violation of procedures. Further, they testified that welders knew downhill welding was unauthorized and there was no incentive to do it; if caught it could mean the loss of the welder's certification or perhaps termination. (Applicants' Exhibit 177 at 18.) In this regard, Applicants testified that the welders at CPSES are trained that downhill welding is not authorized. In addition, the weld technique sheets used by all welders specify an upward progression. (Tr. 10,130.)

Messrs. Brown and Coleman (welding foremen on Mr. Stiner's crews) testified that they had never welded or seen others weld downhill in violation of procedures. They testified that due to their close monitoring of welders on their crews (including Mr. Stiner), if a welder welded downhill as a practice, they would have known about it. (Applicants' Exhibit 177 at 19.)

Mr. Baker testified that based on his personal observations in combination with numerous interviews with welders, welding technicians (including the results of the periodic unannounced welder inspections), fitters, welding foremen, and construction supervision, he is unaware of any information which would indicate that unauthorized downhill welding on safety-related or Class 5 supports occurred at CPSES. Based on his personal observations of welders and his review of pertinent records as well as discussions with numerous welders, foremen, fitters and QC inspectors, Mr. Brandt also testified that he was unaware of information that would indicate that such unauthorized downhill welding occurred at CPSES. (*Id.* at 16-18.)

Significantly, Applicants testified that there was no situation where it was easier to do a downhill weld than an uphill weld (Tr. 11,488-89, 11,854-57). NRC Staff testimony of Messrs. Gilbert and Taylor supports Applicants' testimony (NRC Staff Testimony at 22).

The Board now turns to the two specific incidents of alleged downhill welding raised by Mr. Stiner. The first involved another welder, Mr. Roy Combs, who allegedly welded stainless steel lugs to a pipe using a downhill weld (CASE Exhibit 919 at 15). Applicants testified that they performed a computer search of all stainless steel welds made by Mr. Combs (who is no longer working at CPSES) and performed a record search to assure that in all instances where he welded stainless steel lugs

to a pipe, proper QC inspections had been conducted. In addition, all welds that had not been ground down for nondestructive examination were again visually inspected to assure that there were no indications of downhill welds. (Tr. 10,036.) Based on this sample, which is the best available under the circumstances, we conclude that this alleged incident provides no support for Mr. Stiner's allegations.

In the second incident, Mr. Stiner testified that under the direction of Cliff Brown and Jimmy Green, he performed a downhill weld on a particular hanger in a limited access area (Tr. 10,613, 10,622).[13] However, when Mr. Stiner was confronted with conflicting testimony regarding whether Mr. Brown could direct him to perform a weld, he reversed himself and testified that Mr. Brown did not direct him to make this downhill weld, but rather Mr. Brown made the weld himself (Tr. 10,967-75). An example of Mr. Stiner's inconsistency in this regard:

BY MR. REYNOLDS:

Q. Mr. Stiner, on page 10,622 you state that you were instructed to downhill weld by Jimmy Green and Cliff Brown?

A. What paragraph?

Q. This is lines 10 through 13.

A. That's correct.

Q. Yet, you say on lines 19 and 20 that you didn't even know Brown was a foreman? Is that correct?

A. I think when I said "instructed" I should have said "they told me to."

That'd probably have been the —

JUDGE BLOCH: As I understand the testimony, am I correct, Mr. Brown had a kind of a responsibility to get things fixed up so they could be bought-off. Is that correct? That's your testimony?

THE WITNESS: That is correct.

JUDGE BLOCH: And that you sometimes had that responsibility, too?

THE WITNESS: Yes, sir.

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[13] The Board notes that while Mr. Stiner relates this incident in vivid detail in his oral testimony (Tr. 10,612), in his earlier testimony (CASE Exhibit 666) Mr. Stiner did not mention this downhill weld. Since Mr. Stiner's earlier testimony discussed this hanger in detail (although not this downhill weld), the Board questions why Mr. Stiner failed to relate this incident earlier (*id.* at 35-36).

JUDGE BLOCH: Now, when you had that responsibility, you sometimes told other welders how to help you do that?

THE WITNESS: Yes, sir.

* * *

THE WITNESS: No, I never had the authorization to actually instruct a welder to go to another support and do something.

JUDGE BLOCH: Okay.

Did Mr. Brown ever have that authorization, to your knowledge?

THE WITNESS: Not at the time I worked there.

JUDGE BLOCH: So what was he doing telling you what to do?

THE WITNESS: Like I say, the reason why he came down there was because I couldn't crawl into the area; I couldn't crawl into the space due to the — my chest cavity being too big; and he was much thinner than I am; and they went to get him to come down there and do it.

And he tell me, he said, "Well you can do it, just run a downhill path."

And I said, "Well, I can't even get to it." So, you know, he went out and did it.

That's what I mean by he "instructed" me is when he told me, "Well, you can do it, you know" —

[Tr. 10,967, 10,975.]

In any event, Messrs. Brown and Green testified that they did not instruct Mr. Stiner to perform a downhill weld nor had they ever heard any foreman direct any welder to perform a downhill weld in violation of procedures (Tr. 10,037, 11,715-16, 11,753). In addition, pursuant to plant procedures, all such welds were required to receive a QC inspection. Furthermore, the NRC Staff inspected the hanger in question and testified that without cutting the hanger down and removing the paint it would be impossible to determine if a downhill weld was made However, the Staff has testified that it will require the Applicants to evaluate the hanger and provide assurance that it is satisfactory for service. (NRC Staff Testimony at 22-23.) In short, due to the inconsistencies in Mr. Stiner's testimony this incident provides no support for CASE's position. The Board finds that the Staff action noted above is acceptable to provide reasonable assurance that even if this isolated incident did occur, there will be no compromise of public health and safety.

Based on the record, the Board finds that CASE's allegations regarding downhill welding are not substantiated. In addition, the Board finds either that the specific incidents of downhill welding alleged by Mr. Stiner did not occur or, in any event, that there is reasonable assurance that isolated violations that may have occurred would have no adverse impact on safe plant operation.

In making these findings, the Board is cognizant of the direct conflicts in testimony between Applicants' witnesses and Mr. Stiner. Based on the substantial inconsistencies in Mr. Stiner's testimony regarding this and other issues, as well as other factors set forth in § II.B, above, the Board finds Applicants' witnesses to be more credible.

b. Safety Implications of Downhill Welding

Mr. Stiner testified that his concern regarding downhill welding was that slag may be trapped and there may be a lack of fusion in the weld (Tr. 4247).

While Applicants testified that the likelihood of downhill welding in violation of procedures is extremely remote, they further testified that even if it occurred the probability that it would have an adverse impact on the plant is virtually zero. Applicants testified that if a welder experienced in downhill welding made the weld, it would in all likelihood be acceptable from a structural standpoint. (As previously noted, downhill welding itself is not contrary to any welding code.) However, if a welder was inexperienced, Applicants testified that his mistakes would in all likelihood result in obvious unacceptable visual indications which would be detected by either the welding technician/foreman (before QC inspection) or by the QC inspector during his inspection. (Applicants' Exhibit 177 at 18-20.) The NRC Staff supported this conclusion (NRC Staff Testimony at 20-21).[14]

Mr. Stiner attempted to refute this testimony by raising one instance where downhill welding may have adversely impacted the structural integrity of a weld, i.e., the weld which he alleged first that he performed and later that Mr. Brown performed, as discussed above. While Mr. Stiner's testimony on this weld is of questionable reliability in the first

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[14] In cross-examination of Applicants' and Staff's witnesses, CASE attempted to show that downhill welds could be made faster than uphill welds, and because of such speed there was a greater chance for lack of fusion and slag entrapment (*e.g.*, Tr. 11,841-46). However, the Board notes that Mr. Stiner's allegations regarding downhill welding only related to instances where uphill welding could not be performed due to limited access or because of arc blow. In these instances, there would not be any accelerated welding speeds on downhill welds. Accordingly, such cross-examination is irrelevant to the issues before the Board.

instance, in any event, as previously noted, the Staff will satisfy itself that there is reasonable assurance that the hanger is acceptable.

Accordingly, from the record the Board finds that even if there were some downhill welds as alleged by Mr. Stiner, there is reasonable assurance that they would not adversely impact plant safety.

3. *Weld Rod Control*

CASE's concerns regarding weld rod control are based on allegations by Mr. and Mrs. Stiner. Mrs. Stiner alleged three specific instances of weld rod control violations:

(1) she wrote an NCR on a welder whom she alleged had used two weld rods that had been checked out and not returned the day before (Tr. 4166);
(2) she alleged that on one weld seventy-five rods were reported to have been used when it should have only taken three to four rods (Tr. 4164); and
(3) she found two bundles of rods laying in the plant which she alleges were turned over to a QC supervisor who did not investigate the incident but simply threw the rods in the trash (Tr. 4164).

In addition, Mr. Stiner raised one specific instance of alleged inappropriate weld rod control, i.e., that he welded hangers with rods that were checked out to others in the crew (Tr. 4220-21). From these specific instances and other general observations, Mr. and Mrs. Stiner alleged that weld rod control violations were common practice at CPSES.[15]

At the start of each shift, the foreman signs and issues to each welder one or more weld filler material log ("WFML") sheet(s). (Prior to 1979, the form used was called a filler material requisition form; it contained essentially the same information as the WFML.) Each WFML specifies, among other things, (1) the specific item or joint to be welded on, (2) the weld rod material type and quantity requested to perform the work, (3) the welding procedure to be used, and (4) the identification symbol of the welder doing the work. The welder then takes the WFML to the appropriate issue station to draw the weld rod material for each specific work item. The distribution station attendant enters on the WFML the amount of material issued and the heat number of the material. The attendant also checks the welder's symbol against the welder qualification matrix to assure that the welder is qualified for the welding procedure listed and verifies that the material requested is the correct

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[15] The issue of unplugged weld rod containers was also raised. However, in the July 29, 1983 Partial Initial Decision, LBP-83-43, *supra*, 18 NRC at 142, the Board ruled that this issue would "not affect the safe operation of the plant."

type for use with the procedure. In a separate accountability log, the station attendant lists the welder's symbol and the container numbers that have been issued.

After obtaining the filler material, the welder goes to a work station to weld. It should be noted that before a welder uses a weld rod, he checks it to assure that it is not damaged. Damaged and used rod stubs are retained by the welder.

At the conclusion of each shift, each welder is required to return to the issue station to turn in any unused or damaged filler material and to turn in all remaining rod stubs. The amount of unused and undamaged filler material is entered on the WFML. Unused rods, rod stubs and damaged electrodes are counted and where this count does not equal the number of rods issued, this information is entered on a welder's log which is periodically tracked by the distribution station attendant and reviewed by welding engineering to assure that there is no trend of excessive rod stubs unaccounted for. If a welder does not turn in his filler material at the end of the shift, this can be a basis for firing the welder.

In short, regardless of what area the welder is welding in, at the beginning and end of each shift each welder must go to the issue station to disposition the material he is using. In this way, filler material used is accounted for at the beginning and end of each shift. If a welder fails to turn in his filler material at the end of his shift, an investigation is conducted to determine where it is. It should be noted that this weld rod control program exceeds all ASME or AWS Code requirements for control programs.

Finally, the Welding Engineering Department inspects the rod distribution stations for compliance with these procedures every 2 weeks.

As discussed more fully below, the record reveals that CASE's allegations regarding weld rod control violations are not reflective of a systematic or significant breakdown in the QA/QC program. In this regard, specific instances where violations were alleged to occur were either unsubstantiated or were previously detected by QC and corrected. In any event, the record reflects that even if violations had occurred as alleged, the likelihood of an adverse impact on safe plant operation is remote.

a. Allegations of Weld Rod Control Violations Do Not Substantiate a Breakdown in the QA/QC Program

Applicants presented testimony describing the weld rod control program which the Board adopts in these findings of fact, as follows (Applicants' Exhibit 177 at 21-23):

The Brown & Root weld rod control program at CPSES is governed by a construction procedure. The program is based on a daily system of accountability where each welder is accountable for all weld material he uses on each shift.

In response to Mr. and Mrs. Stiner's allegations that violations of the weld rod control program at CPSES are widespread, Applicants presented Messrs. Fernandez, Pickett and Braumuller (welders on Mr. Stiner's crews who also worked in areas inspected by Mrs. Stiner), who testified that they had not themselves violated or seen others violate the weld rod control procedures at CPSES. Further, they testified that welders who intentionally violated these procedures would be fired; thus, there was an incentive to adhere to these procedures (*id.* at 31-33; Tr. 11,534).

Mr. Brown (a QC inspector who was also welding foreman over one of Mr. Stiner's crews) presented similar testimony. Mr. Coleman (a QC inspector and a welding foreman over one of Mr. Stiner's crews and who also welded in the same areas as Mrs. Stiner) stated that except for one incident, he also had never observed violations of the weld rod control program. (Mr. Coleman's exception related to an instance where he had unintentionally failed to turn in a rod container; the rod shack attendant alerted his supervisor and the next morning Coleman was "chewed out" by his foreman.) (Applicants' Exhibit 177 at 31-33.) Messrs. Brown's and Coleman's testimony in this regard is significant in that they closely monitored the work of all welders on their respective crews and would have been in a position to notice violations if they occurred (*id.* at 10).

Messrs. Green and Hallford (foreman and general foreman over one of Mr. Stiner's crews) testified that they had not observed any violations of the weld rod control program, but they were aware of one where QC noted a violation and the welder was fired immediately. (This incident is one raised by Mrs. Stiner and discussed below.)

Messrs. Baker and Brandt testified that based on personal observations of welders in the plant, as well as discussions with numerous welders, fitters, foremen, QC inspectors, welding foremen and welding technicians, the weld rod control procedures at CPSES are, with very few exceptions, strictly adhered to. In this regard Applicants testified that in addition to the inherent checks built into the rod control program (e.g., the counting of returned rods and rod stubs to determine if any are missing), other mechanisms that provide assurance that violations are detected include the periodic inspections of each active welder every 14 days (previously addressed), routine monitoring of welders by welding technicians/foremen and other supervisors, and QC inspections (during which weld rod traceability is checked) and surveillance. (*Id.* at 33-34.)

The NRC Staff presented supporting testimony regarding Applicants' weld rod control program. Further, the Staff testified that over the

period of construction at CPSES, NRC inspectors have routinely examined the Applicants' welding activities, including weld rod control. With respect to weld rod control, the inspectors emphasized "whether the documented weld rod was being used in a given weld under observation, and whether the weld rod was appropriate and properly traceable." (NRC Staff Testimony at 36.) The Staff testified that there were no identified findings indicating problems in these areas. In this regard, the Staff noted that what may appear to be a situation where a weld rod has been abandoned, in reality may be where a welder has temporarily left his immediate work station for personal or other needs. As part of the NRC's routine inspections, the inspector has observed apparently unattended weld rods in cans, buckets, or pouches and after remaining near these "unattended" rods found that welders did return to the work station in a matter of minutes. (NRC Staff Testimony at 36-37.)

The NRC Staff also testified that Brown & Root Project Welding Engineering is required by the ASME-approved Brown & Root QA manual to maintain periodic surveillance of the rod issue stations and of welders to whom rods have been issued. This requires surveillance of the rod issue stations every 14 days, and of the welder at least once every 10 working days. A sample of the records of these surveillances has been reviewed by the Staff. The Staff found that the records were complete, the required surveillances were done, and no pattern of discrepancies or potential problems with either weld rod control or welder activities was identified. In addition, the Staff testified that the Brown & Root QA Corporate Office conducted periodic audits of the welder and weld rod issue station surveillances. The Staff reviewed one of these audit reports, and it did not disclose any significant problems. (NRC Staff Testimony at 34-35.)

Mr. Stiner testified that he received no training or indoctrination regarding weld rod control (Tr. 11,140). However, he later contradicted himself by stating that his first foreman, Mr. Coleman, gave him indoctrination regarding weld rod control (Tr. 11,146). In addition, Applicants testified that after successful completion of qualification testing and prior to being released for production welding, each new welder at CPSES (including Mr. Stiner) was given an orientation by welding engineering as to the requirements of the weld rod control procedure. Applicants testified that at this orientation the importance of filler material control at the facility was explained to the welder and the welder was informed that any willful violation of the procedure would result in immediate firing. This orientation was documented and the welder signed a form indicating his understanding. (Applicants' Exhibit 177 at 27-28.)

With regard to the threat of termination for weld rod control violations, Mr. Stiner testified as follows (Tr. 10,853-54):

BY MR. REYNOLDS:

Q. What would happen if you were caught doing that [committing weld rod control violations] Mr. Stiner?

A. Immediate termination.

Q. What is ncentive for doing it?

A. The incentive for doing it is, as I said before, the convenience to the welder.

Q. You would risk your job to avoid having to walk back to the rod shack for rods?

A. Well, as I have stated before, the quality control program at Comanche Peak is, you know, less than adequate in the fact that they can't catch these types of problems. So they can literally do it all over the place and the quality control inspector has no way of knowing that it is being done.

JUDGE BLOCH: But before, Mr. Stiner, you said that the quality control people would wander around the plant and you would have to worry about them and cover for your welds. Why wasn't the same thing true for additional weld materials as it was for your repair welds?

THE WITNESS: That is why I say they always had somebody watching when they do this.

JUDGE BLOCH: But why do you always have to have someone watching when you are doing a repair weld but you don't worry at all about QC finding extra weld rod materials?

THE WITNESS: Well, you do worry about it. Like I said, it is reason for termination, you see.

Mr. Stiner also testified that workers violated weld rod control procedures regarding retention of rods, even under threat of termination, because "they are under so much pressure to get the work done and get the hangers up that they try to do anything they can do to speed up work" (CASE Exhibit 919 at 19). However, in response to an inquiry that appeared to bring into question the logic of such a position, Mr. Stiner reversed himself and testified that he did not hold out rods because he was under time pressure (Tr. 11,126-28). The Board finds Mr. Stiner's testimony on this issue to be inconsistent and unreliable.

Mr. and Mrs. Stiner also testified that the accountability process specified in the weld rod control program was ineffective. Specifically, they al-

leged that rod stubs were not counted or recorded by rod shack attendants (Tr. 10,638, 10,978-83).[16] However, Mr. Stiner testified later that early in his employment he was told by his first welding foreman, Mr. Coleman, that he had to "keep account of everything . . . don't lose none of your stubs . . . because they may count them on you when you go back and if you don't have any they will write you up, you know." (Tr. 11,146).

Applicants testified that rod stubs are counted (Applicants' Exhibit 177 at 21-23; Tr. 11,419-20, 11,422, 11,592, 11,670) and introduced an example of the checksheets maintained by the rod shacks reflecting shortages resulting from such counts (Applicants' Exhibit 185, introduced into evidence at Tr. 11,975).

Mr. Baker testified that the rod counts are monitored on a daily basis by the rod shack attendant and reports are sent monthly to the piping general superintendent who reviews them for trending purposes (Tr. 11,892-93). Mr. Coleman testified that normally the attendants in the rod shack would take the rod stubs and pour them out of the stub can, count them and then throw them into a barrel (Tr. 11,594). However, Messrs. Coleman, Pickett and Braumuller testified that at busy times the attendants would take the stub cans and write the welders' symbols on them and place them off to the side; when the rush was over they would count the stubs (Tr. 11,594-95, 11,637-41, 11,684-85). Further, Mr. Brown testified that if a welder did not return his unused weld rods and stubs, the weld technicians would conduct an investigation (Tr. 11,501-02).

Mr. and Mrs. Stiner raised four specific incidents of weld rod control violations. In the first incident, Mrs. Stiner testified that she wrote an NCR on a welder who had used two weld rods that had been checked out and not returned the day before (Tr. 4166). Applicants' witness Baker testified that Applicants' investigation of Mrs. Stiner's NCR (#M82-0034) revealed that while the facts were substantially as Mrs. Stiner had stated, she did not discuss the resolution. In this case, Applicants testified that the welder had completed the weld the day before and intended to alert QC that an inspection was needed the next day. The next morning the welder was assigned another task, drew his weld rods for the other task, and went back to the weld he had worked on the preceding day to get a QC inspection. For some reason he did some more welding on the weld (perhaps he saw something he had missed) using two additional rods (either from his rods checked out for other

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[16] Mr. Brandt testified that the practice of issuing a precise number of weld rods and counting returned stubs was not widely used at other nuclear construction sites. Other nuclear construction projects which are in compliance with Code requirements merely issue rods by weight. (Tr. 11,422.)

tasks that day, or as Mrs. Stiner alleges, from two rods he kept from the previous day). In any event, the incident was uncovered in the QC inspection and an NCR was written. The resolution of the NCR was that the welder was *terminated immediately* and the weld was ground out and replaced. (Applicants' Exhibit 177 at 28-29.) The Board finds that this incident provides no support for CASE's position. If anything, it reflects that the QA program functioned properly and that violations of the weld rod control procedure at CPSES are taken seriously.

In the second incident, Mrs. Stiner alleged that seventy-five weld rods were used on hanger SI-0135032.S35R (Tr. 4164). She alleged that that particular hanger should not have required more than three to four rods (Case Exhibit 919 at 20; Tr. 4165). Applicants testified that the Applicants' investigation revealed that only fifty weld rods (not the approximately seventy-five that Mrs. Stiner reported) were issued. Further, the weld rod accountability log did not reflect that any rods were missing (i.e., the total number of unused rods, rod stubs and damaged rods turned in was fifty). As to the specifics of the incident, records reflect that at 7:10 a.m. on April 9, 1980, the date in question, the welder checked out fifty rods for the hanger. At 1:48 p.m. that same day he returned the rod can, plus unused and damaged rods and rod stubs. (Records indicate that there were no missing rods.) The welder then checked out additional rods for another job using a separate WFML. At the end of the day he turned in the remaining unused rods, stubs or damaged rods. The welder could not remember the incident. (Applicants' Exhibit 177 at 29-30.) The Board finds that this incident does not raise a safety concern or provide support for Mrs. Stiner's allegations.

In the third incident, Mrs. Stiner testified that she found bundles of unburned rods wrapped in a rubber band (Case Exhibit 919 at 20). Mrs. Stiner alleged that after she gave the rods to her supervisor, he threw them into the trash (Tr. 4165, 10,206-07, 10,293-97, 10,470-74). Mrs. Stiner stated, however, that she did not know if he later removed them from the trash (Tr. 10,296). Applicants testified that the two bundles of weld rod material were not immediately discarded without an investigation, as Mrs. Stiner had indicated. Rather, the weld rod material was given to Mr. Brandt who subsequently turned it over to construction to assure that an investigation was conducted. (Applicants' Exhibit 177 at 30; Tr. 11,459-60.) Based on the investigation, Applicants were able to trace the rods to the organization which used them (not Brown & Root) and training was conducted to correct the situation (Tr. 11,454-55).[17]

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[17] Mr. Brandt testified that other QC inspectors have at times also discovered loose rods and reported them to their supervisors (Tr. 11,426-27) who assured that the incidents were investigated (Tr. 11,440).

The Board finds that this incident also reflects that the QA program was effective and appropriate corrective action taken. However, there is a gap in the record for the Staff to fill through investigation. If Applicants found bundles of unburned rods left uncontrolled by Grinnell Fire Protection Company, an organization doing construction on site, it is not at all clear that instruction alone would cure the problem with respect to work that had been already done. We trust that the Staff will inquire into whether this nonconforming condition was properly resolved with respect to prior work of Grinnell Fire Protection Company.

In the final incident, Mr. Stiner testified that his supervisor was under a great deal of pressure to complete a particular assignment which Mr. Stiner described in detail. He stated that to accomplish this the welders on the crew used rods checked out to other welders to complete work. (Tr. 4220-21.) Mr. Baker testified that the Applicants investigated the allegation and determined that welders from Henry Stiner's first crew remaining at Comanche Peak (Messrs. Pickett and Braumuller) stated that no such incident occurred. Further, the welding foreman (Mr. Coleman) on Stiner's crew at that time also stated that no such incident occurred. In any event, even if the incident did occur, Applicants testified that all the welders on Stiner's crew would have been welding on the same material with the same type weld rod. Thus, while such action would have been a violation of procedure, Applicants concluded it would not have had an adverse impact on plant safety. (Tr. 4220, 10,648-50.) The Board finds that substantial and credible testimony from Applicants' witnesses reflect that the incident never occurred.

From the testimony, the Board finds that CASE's allegations regarding weld rod control do not reflect systematic or significant violations of procedures indicative of a breakdown in the QA/QC program. In addition, the Board finds that there is reasonable assurance that the specific incidents of weld rod control violations raised by Mr. and Mrs. Stiner do not raise a significant safety concern.[18]

b. Safety Implications of Weld Rod Control Violations

Mr. and Mrs. Stiner raised as their concerns regarding weld rod control violations, the possibility that weld rods left out may absorb moisture and result in defective welds due to excessive porosity (CASE Exhibit 919 at 18; Tr. 10,648). Also, they were concerned over the impact of

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[18] During direct examination of Mrs. Stiner, CASE attempted to raise in connection with weld rod control, the new issue of placement of welders' symbols adjacent to welds (Tr. 10,477-94). Upon a representation by Applicants' counsel that such symbols would not be relied on to support the adequacy of the weld rod control program, the Board ruled that such testimony was not admissible (Tr. 10,494).

welders exchanging weld rods (Tr. 10,640-41, 10,650); however, in later testimony, Mr. Stiner stated that this was not a safety concern (Tr. 11,150).

With regard to the first concern, Mr. and Mrs. Stiner testified that when weld rods are kept out and not controlled they can absorb moisture (Case Exhibit 919 at 19, 21; Tr. 10,283, 10,648, 10,858, 11,124). They stated that E-7018-type electrodes should not be exposed to an unheated atmosphere for more than 4 hours (Case Exhibit 919 at 20; Tr. 10,646).

The NRC Staff testified that if weld rods had been exposed to ambient air at CPSES for 2 to 3 days (such as alleged here) the "worst-case effect" would be porosity in the weld (which is due to arc instability and off-gassing of water vapor) which should be detected during the normal visual inspection by the welder and QC (NRC Staff Testimony at 33, 35).

Applicants conducted tests of E-7018 electrodes (the electrodes used by Mr. and Mrs. Stiner) which had been stored for 7 months in an open container in an uncontrolled atmosphere. Using this electrode, test specimens were welded utilizing a full penetration butt weld. Nondestructive and destructive examinations conducted on the resulting specimen showed no rejectable defects; failure of the base material (not the weld material) occurred at a reading in excess of 70 kilograms per square inch (ksi), the maximum requirements for any affected steels (most steels have a much lower requirement). In short, even if weld material was left out for 2-3 days (as alleged by Mr. and Mrs. Stiner), the Board finds that there is little likelihood that this could have an adverse impact on the safety of the plant. (Applicants' Exhibit 177 at 27.)

With regard to the second concern, Mr. and Mrs. Stiner alleged that welders deliberately saved weld rods to lend to other welders so that these welders would not have to get rods issued from the distribution stations (Case Exhibit 919 at 19; Tr. 10,209-10, 10,223, 10,648-50). However, Mr. Stiner stated that this was not a safety concern (Tr. 11,150). Applicants presented testimony that all welding on safety-related low-carbon and mild steels at CPSES which is of concern here (the welding to which Mr. and Mrs. Stiner referred in their testimony) uses the same electrode (weld rod), E-7018. Thus, Applicants testified that the possibility of a welder borrowing an electrode from another on his crew and getting the wrong electrode for the job was virtually nonexistent. Applicants further testified that, in any event, welders are trained to know that they can only use the specific electrodes designated for that job. (Applicants' Exhibit 177 at 26.) The Board finds that even if some weld rod control violations such as alleged by Mr. and Mrs. Stiner oc-

curred, there is reasonable assurance that they would not have a significant adverse impact on plant safety.

4. Welding of Misdrilled Holes

Mr. and Mrs. Stiner alleged that under the direction of supervisors, welding of misdrilled holes without appropriate welding engineering authorization or proper QC inspection was common practice at CPSES (CASE Exhibit 919 at 22-23).

The numerous inconsistencies in Mr. and Mrs. Stiner's testimony called into question their credibility on all issues (*see* § II.B, *supra*). On this issue we do not believe that Mr. Stiner's testimony can be relied upon and accordingly, the Board gives it no weight. The one overriding factor regarding the Board's decision involves Mr. Stiner's incredible statement that a 1¼-inch hole in 2-inch-thick material (on which he allegedly welded many times (Tr. 10,683-84)) could be easily welded in about 2 minutes (excluding the blending of the weld with surface material (Tr. 10,698-99)), *and* it would only require two weld rods to complete (Tr. 11,158).

NRC Staff witnesses stated that it was impossible for such a hole to be welded in 2 minutes or with the two weld rods as noted by Mr. Stiner. The Staff testified that a simple volumetric calculation reflected that it would require twenty-five weld rods to fill the hole. (Staff Testimony at 26; Tr. 12,250-51.) Further, the Staff testified that it takes approximately 1 minute to burn one weld rod (Tr. 12,250). Accordingly, even assuming that only twenty rods were required to fill the volume of the hole, it would take 20 minutes to simply burn the rods, not including the time required to change rods or turn the specimen over (Tr. 12,251-52). Based on independent testing, Applicants testified that such a hole would require approximately twenty weld rods to complete (Tr. 11,768).

Mr. Stiner's sworn testimony on this point is not accurate and reliable. The Board believes that any welder who had ever weld-repaired a misdrilled hole of this large size or smaller would have been able to at least provide a response that was in the ballpark. In that Mr. Stiner was not able to do so, the Board questions whether Mr. Stiner has ever performed a weld repair on a misdrilled hole. This, in combination with other inconsistencies noted in § II.B, above, leads the Board to conclude that on this issue Mr. Stiner's testimony will be given no weight.

In any event, Mr. Stiner's principal concerns are that misdrilled holes were "repaired" without proper authorization or QC inspections, and

may contain slag so as to call their structural integrity into question.[19] These concerns are addressed below in conjunction with the Board's discussion of Mrs. Stiner's allegations.

With regard to allegations concerning widespread repair of misdrilled holes without proper engineering authorization or QC inspection, Messrs. Fernandez, Braumuller and Brown, who each were welders or foremen in the same areas as Mr. and Mrs. Stiner for an extended period of time, testified that they had never welded a misdrilled hole (Applicants' Exhibit 177 at 38; Tr. 11,479, 11,690). Mr. Coleman testified that he had welded some misdrilled holes on cable tray supports in the cable spreading room, but that these had all been properly inspected (Tr. 11,542-53). Mr. Pickett also stated that he had welded a few misdrilled holes on cable tray supports in the cable spreading room which had also been properly inspected by QC (Tr. 11,625). Indeed, both Messrs. Coleman and Pickett testified that QC personnel were in the cable spreading rooms when the repairs were being made (Tr. 11,543, 11,625).

The testimony of both Messrs. Coleman and Brown that they had not observed any unauthorized welding of misdrilled holes is significant in that they routinely monitored the work of the welders under them, including Mr. Stiner, and would have been aware of any problem which existed in this regard (Applicants' Exhibit 177 at 10; Tr. 11,480, 11,534). Messrs. Green and Hallford, who have also had welders under their supervision for an extended period of time at CPSES, provided similar testimony (Applicants' Exhibit 177 at 41).

Applicants further testified that there was little motivation to violate procedures by performing unauthorized welding on misdrilled holes, to do this could result in termination (*ibid.*).

Both Mr. Pickett and Mr. Coleman stated that they were not sure what design documentation authorized their repair of the misdrilled holes in cable tray supports (Tr. 11,544-45, 11,647).[20] Applicants testified that these repairs were made in accordance with a Design Change Authorization ("DCA") issued by the design engineer for the welding

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[19] It should be noted that individuals that Mr. Stiner implicated as having performed such welds or having directed him to perform these welds have denied the allegation, *viz.*, Messrs. Coleman (Tr. 11,540), Brown (Tr. 11,479), Pickett (Tr. 11,622), Fernandez (Tr. 11,690) and Braumuller (Tr. 11,690).

[20] Mr. Coleman stated that he had no paperwork when repairing the holes (Tr. 11,545). He stated that his foreman may have had the paperwork (Tr. 11,545, 11,787). In any event, the Board requested that Applicants provide it a report on this issue (Tr. 11,786-87). By letter of April 27, 1984, Applicants provided to the Board and all parties a report which explained why separate authorization at that time was not needed to weld-repair misdrilled holes on cable tray supports in the cable spreading room. The Board is satisfied with the report.

of these and other holes on cable tray supports (Tr. 10,039).[21] Since these repairs were non-ASME repairs, only the DCA was needed, not an RPS (NRC Staff Testimony at 24; Tr. 10,137). The Staff further testified that Inspection Report 81-12 (Staff Exhibit 178) determined that "plug welds" were being utilized by welders in accordance with Brown & Root welding procedures (NRC Staff Testimony at 26, 30).

With regard to the welding procedure used to make the repairs, Applicants testified that if the welds were authorized by engineering, Welding Procedures 10046 and 11032 could be used to repair AWS and ASME welds, respectively (Tr. 11,393). As previously noted, a DCA had been authorized to repair misdrilled holes on cable tray supports. Repair of pipe supports was not authorized by this DCA. (Tr. 10,040.) In response to cross-examination on this issue, Mr. Pickett verified this by testifying that baseplates for pipe supports which had misdrilled holes were discarded (Tr. 11,632-33).

To determine if the QC inspections were being routinely performed on weld repair of misdrilled holes, Applicants conducted a preliminary search of documentation for cable tray hangers in the cable spreading room and reported that QC inspection reports of over 450 misdrilled holes were located (Tr. 10,038). Applicants concluded that this reflected that misdrilled holes were being properly inspected by QC (Tr. 10,039, 11,401-07).

Mrs. Stiner testified that she weld-repaired misdrilled holes under orders many times (Case Exhibit 919 at 23). However, she stated that she could only remember doing them on the "fab tables" in the turbine building (Tr. 10,555). She stated that while a couple of other welders who worked on the fab tables also made such welds (she doesn't remember the names), she did not know what other welders in the field did (Tr. 10,553-54). She stated that she made such welds under the orders of James Stembridge (her foreman), and though she was less sure, Clay Andrews (another foreman). (Tr. 10,286-88, 10,541.) She stated that she thought it was improper because she was told to watch for QC (Tr. 10,529). The record reflects that Mr. Andrews was Mrs. Stiner's first foreman while she was a welder; Mr. Stembridge replaced Mr. Andrews and was her foreman for a fairly short period of time. (Tr. 4130, 11,782.)

Applicants investigated Mrs. Stiner's allegation by interviewing Mr. Stembridge (Mr. Andrews no longer works at CPSES) and others associated with the incident (Tr. 11,781-86). Mr. Stembridge stated that he

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[21] DCA 5347 provided direction on which misdrilled holes needed to be repaired and authorized their repair (Tr. 11,407). It should be noted that based on this DCA, Mrs. Stiner's testimony that *all* misdrilled holes needed to be welded (Tr. 10,506) is in error.

had directed Mrs. Stiner to make unauthorized repairs on three hangers that had misdrilled holes in them (Tr. 11,781). Applicants testified that Mr. Stembridge had been a foreman in the small-bore hanger fabrications area for about 4 months when the incident occurred. Applicants testified that one day, seven hangers were sent from the fab shop to Mr. Stembridge to install, but three of them were wrong. Applicants testified that Mr. Stembridge stated that as a new foreman he tried to shortcut the system. (Tr. 11,782.) However, another foreman saw the activity and informed a QC inspector, Mr. Wilkerson. Mr. Wilkerson stated that he investigated and caught Mrs. Stiner making unauthorized repairs. (NRC Staff Testimony at 28; Tr. 11,782.) The hangers were subsequently scrapped and Mr. Stembridge was demoted to and remains in a nonsupervisory position (NRC Staff Testimony at 28-30; Tr. 11,786). Staff testimony supported the results of Applicants' investigation (NRC Staff Testimony at 27-30).

Mrs. Stiner stated that her concern with repairing misdrilled holes is slag entrapment[22] (Case Exhibit 919 at 22). She further stated that if slag were left in the weld it would be an improper weld (Tr. 10,497). While she attempted to clean out as much slag as possible with a chipping hammer, she testified that there was still some left inside the weld[23] (Tr. 10,229, 10,235, 10,236, 10,284).

Applicants testified that welding of a misdrilled hole is a relatively simple procedure (Applicants' Exhibit 177 at 42; Tr. 11,623). Further, Applicants stated that it was very difficult to leave significant slag deposits using low-hydrogen electrodes, like those used at CPSES, because the normal welding technique provides assurance that slag remains fluid, floats to the top of the weld and is removed (Applicants' Exhibit 177 at 36). The Staff testified that if there were large amounts of slag entrapped when the arc was struck much of this slag would become granulated from the force of the arc and would float to the top with succeeding passes (Tr. 12,240). Applicants testified that it was very difficult to weld over unacceptable slag deposits using normal welding techniques (Applicants' Exhibit 177 at 36, 37). Further, if the weld was not relatively free of slag, there would in all likelihood be unacceptable surface indi-

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[22] Mrs. Stiner also stated that repair welds could not be traced because welders did not put their symbols on them (Tr. 10,504, 10,528-29, 10,670-71). Applicants' witness Coleman stated that he repaired misdrilled holes in accordance with procedures and that included placing his welding symbol by the welds (Tr. 11,545-46). Applicants' witness Pickett also placed his symbol on the "plug welds" he did in the cable spreading room (Tr. 11,629). In any event, the allegation does not raise a safety concern.

[23] Mrs. Stiner testified that a pencil grinder was needed to clean slag completely out of a misdrilled hole, but there were none available (Tr. 10,285-86, 10,499). Other welders and foremen (Pickett, Braumuller, Fernandez, Coleman, Brown and even Mr. Stiner) testified that they had pencil grinders in the areas in which they worked (Tr. 11,469, 11,547, 11,621-22, 11,643, 11,666).

cations remaining on the face of the weld. Test techniques corroborated this. (*Id.* at 37, 39.)

To determine the possible impact of slag deposits on repairs of misdrilled holes, Applicants conducted a test of the effects of slag inclusions in a misdrilled hole on the strength of the material. Two test specimens of SA36 plate material with a minimum tensile strength requirement of 58 ksi were prepared. The specimens were approximately 8 inches in length and 3/8-inch thick,[24] and, in the area of concern, approximately 1.5 inches in width. A ¼-inch-diameter hole (which was to be welded) was drilled in the area of concern of each specimen. This hole, therefore, comprised one-half of the cross-sectional area of the test specimen. (Applicants testified that in view of gauge tolerance requirements under which a hole cannot be placed nearer than 1 hole-diameter to the edge of the material (here being ¾ inch), this configuration was extremely conservative.) (Applicants' Exhibit 177 at 43-44. However, it is difficult to generalize about the probable location of welds made in violation of procedures because there was no authorizing weld repair paper.)

The hole in one of the specimens was properly welded and radiographed to assure that it was perfect. Applicants testified that after numerous attempts and using abnormal welding techniques, the hole in the second specimen was welded with significant slag deposits remaining. (As previously noted, it is very difficult to weld over slag in a hole.) The second specimen was radiographed showing major slag inclusions throughout the weld, including one which was about ¼ inch at its widest point, ½ inch in length and about 1/8-inch thick. Tensile tests were performed on each specimen. The first specimen (with the good weld) failed at a tensile strength of 71,639 psi. Significantly, the failure occurred in the specimen material and not the weld material (i.e., the weld material was stronger than the base material). The second specimen (with major slag inclusions) failed at a tensile strength of 69,918 psi, still significantly above the 58,000 psi required of the material. (*Ibid.*)

In sum, Applicants testified that even when skilled craftsmen attempted to weld a worst-case weld such that major slag inclusions were present in the material, the strength of the resultant weld was not significantly lower than the strength of the base material, and still well above the required strength. Applicants thus stated that even if some degree of slag was present in a weld of a misdrilled hole, as alleged by Mrs. Stiner, it

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[24] Mr. Stiner stated that this test was flawed because the specimens should have been 2 inches thick (Tr. 10,683). Applicants testified that the thickness was immaterial in that the relevant parameter of concern (pounds per square inch (psi)) was dependent and correlated with the cross-sectional area (Tr. 11,965-06).

would not have had a significant adverse impact on the strength of the material.

Ordinarily, we would not accept any test of a single sample to be dispositive of any safety issue, particularly where the relevant variable — the amount of slag inclusion — is not fully detailed and where it is not possible to tell whether the test caused stress concentration within the welded area. In addition, the only thing that was tested was a newly made weld, which may or may not be representative of the extent to which inclusions may progressively weaken the weld material over time.

However, the NRC Staff supported Applicants' conclusions and testified that the Brown & Root Welding Procedures 11032 and 10046 specified the use of E-7018 weld rod, a low-hydrogen rod which produces a weld with a tensile strength of approximately 70,000 psi, or about 10,000 psi better than the tensile strength of the base material. If the "plug weld" was made well enough not to be readily discernible after surface grinding, which was the case for both Mr. and Mrs. Stiner, the Staff testified that the weld and the surrounding base material would be at least as strong as the original base material before it was drilled. (Staff Testimony at 26.) Although the Staff did not testify about the continued strength of the weld over time, the technical point is fairly obvious and we expect that the Staff considered it. If the Staff did not, we would expect it to correct the record on this point.

From the foregoing, the Board finds that Mrs. Stiner was directed to perform unauthorized weld repairs of misdrilled holes on at least three hangers on the turbine building fab tables.

In any event, in view of the testimony of Applicants and Staff, the Board finds that most, if not all, hangers repaired by Mrs. Stiner on the fab tables were subsequently cut down and replaced. In addition, based on (1) Applicants' testing which suggests that even large amounts of slag in the repair weld would not affect the weld integrity of a newly made weld and (2) Staff testimony that as long as the surface of the weld repair of a misdrilled hole was acceptable (as both Mr. and Mrs. Stiner stated) the weld would provide acceptable structural strength, the Board finds that even if some weld repairs of misdrilled holes were not properly inspected and contained defects as alleged by Mr. and Mrs. Stiner, it is unlikely to have an adverse impact on the safety of the plant.

Conclusion About Improperly Documented Repairs

We are far less sanguine about Applicants' failure to comply with their procedures than we are with the possible safety implications of their having failed to do so. Violations of procedures are important in their

own right because they contribute to the workers' understanding of the extent to which procedures are to be taken seriously and followed scrupulously. The record in this instance convinces us that there was a practice of indeterminate extent at Comanche Peak with respect to welding unauthorized repair welds. Since Applicants did not make the required contemporaneous investigation of this practice, we find that the practice was of substantial extent and that this violation of procedures was a significant violation of Appendix B to 10 C.F.R. Part 50.

First, we note that until January 1983, Welding Procedure WES-29 required that the welding engineering department issue a Repair Process Sheet (RPS) specifying the methods and techniques to be used for any base metal repairs, the qualified welding procedure to be used in making the repair (for Class 4 and 5 hangers the repair procedure is CDM 6.9 (Tr. 11,969 (Baker)), and the type of nondestructive examination to be made of the repair. The RPS also provided for a final inspection by quality control. Tr. 11,766 (Baker).

Second, we note that when Applicants detected Mrs. Stiner making an improper repair at the direction of her supervisor, they failed to create any deficiency paper and made no contemporaneous investigation of the extent of this improper practice. Tr. 11,783-84. This was a clear violation of Appendix B requirements for the prompt identification of deficiencies and for trending of deficiencies that may be significant. (At that time, Applicants had not done studies of the effects of improper repairs and they cannot take credit for their subsequent studies as an excuse for not trending this earlier deficiency.)

Third, we note that Applicants repeatedly testified that individuals are "terminated" when they violate procedures. However, Mr. Stembridge was merely reduced in rank. We infer from other testimony and from the failure to investigate the extent of the practice at that time that Mr. Stembridge's directions to his welders about repair welds may not have been an isolated incident. Fred Coleman, who was a welder at the plant, testified that there were many misdrilled holes repaired in the Unit 1 cable spread room. Tr. 11,542. Additionally, Mr. Coleman was not even aware that any form of paper, such as a Repair Process Sheet, was needed for him to repair such a hole. Tr. 11,544-45. Nor have Applicants even attempted to explain this testimony of Mr. Coleman.

The welding of misdrilled holes without authorization is further substantiated by a Staff inspection of fifty-six supports in the north cable spreading room. Staff found two plug welds in each of three supports, but none of these welds was properly documented. Addendum to Page 27 of Staff Testimony at 1 (Gilbert).

We note that the Staff has requested and is evaluating an explanation of these undocumented repairs from the Applicants. NRC Staff Proposed Findings of Fact on Weld Fabrication at 57. We will consider the Staff's analysis of the Applicants' response in this proceeding. We are particularly concerned about the extent to which welding procedures and, possibly, QC procedures may have been ignored. The possibility of QC procedures being ignored is supported by the testimony of Mr. Fred Coleman, who stated that QC inspectors were present in the cable spreading room during the time he was welding misdrilled holes. Tr. 11,542.

We find that there was a significant violation of Appendix B in that there was a practice in which misdrilled holes were not properly documented.

5. Preheat Requirements

Preheat requirements are specified temperatures above which the parent metal surrounding a weld joint must be heated prior to beginning to weld (Tr. 10,026). Brown & Root welding procedures, however, require all weld joints to be preheated to at least 70°F (Tr. 11,836-37).

Mr. Stiner alleged that most of the hangers he worked on at Comanche Peak "were not preheated." Case Exhibit 919 at 9. He later testified that "all" hangers he worked on were not preheated (Tr. 10,824). Subsequently, he testified that he did preheat one hanger and that there were many he did not have to preheat (Tr. 10,826-28). Mr. Stiner testified that he was directed by his supervisor not to preheat in order to speed up production (CASE Exhibit 919 at 9). He testified that failure to preheat was a common practice at Comanche Peak (Tr. 10,800, 10,826). He further stated that on many occasions he had welded without preheat when the temperature was below freezing (CASE Exhibit 919 at 9; Tr. 11,084-85).

As discussed more fully below, the record reveals that Mr. Stiner's allegations regarding preheat are not reflective of systematic or significant violations of procedural requirements. Further, even if isolated events of violation of preheat requirements have occurred, the likelihood of an adverse impact on plant safety is remote.

a. Preheat

Mr. Stiner alleged that he welded on Class 3 hangers that were not preheated on days when the temperature was below 32°F. He stated that he was ordered to do this in order to speed up production. CASE Ex. 919 at

9 (H. Stiner). Although the Board discussed striking this portion of Mr. Stiner's testimony, it decided not to do so after Applicants withdrew their motion rather than have this matter referred to the Staff. Tr. 9947-49.

During Mr. Stiner's first term of employment at Comanche Peak, the environmental temperature dropped below 32°F only on March 3, 1980, when the recorded temperature rose from 28°F at 6 a.m. to a high of 60°F. (Tr. 10,035 (Baker).) The Board took official notice that during Mr. Stiner's second term of employment, from June 1981 to July 1981, the temperature at Comanche Peak (in central Texas) did not drop below 32°F. Tr. 10,035.

Welding when the temperature is below 32°F is not necessarily a violation of the applicable procedure. Paragraph 4.2 of § IV of the ASME Code prohibits welding only "where the ambient temperature is below 0° Fahrenheit." Tr. 10,031 (Baker). "Ambient temperature" does not refer to the atmospheric or environmental temperature, but rather the temperature in the immediate vicinity of the weld joint. *Ibid.* Thus, even if it were 0°F outside, welding operations could continue so long as the area adjacent to the weld joint were maintained at 0°F or higher. *Ibid.*

"Preheat temperature" is the temperature of the material immediately prior to welding. Tr. 10,026 (Baker). Weld Procedure 11032 specifies a minimum preheat temperature of 60°F for material up to 1¼ inches thick and 200°F for materials of greater thickness. *Ibid.* Joint Affidavit at 9 (Gilbert, Taylor). Procedure 10046 (non-ASME) specifies a preheat temperature of 70°F for steel up to 1½ inches thick. For steel from 1½ to 2 inches thick, preheat is specified as 150°F, and for steel over 2 inches thick, the specified preheat is 225°F. Joint Affidavit at 9-10 (Gilbert, Taylor).

During the colder months, the temperature in the areas where welding takes place is likely to be somewhat higher than the environmental temperature because welding usually takes place inside heated enclosed structures. Tr. 10,034 (Baker). Moreover, the ambient temperature is even higher than room temperature due to supplemental heat sources such as space heaters, and lighting. *Ibid.*; Tr. 11,618 (Pickett). It is not necessary to preheat material when the room temperature has been greater than the required preheat temperature for a period of time. When it is necessary to preheat, however, a propane torch is used. *See* Tr. 11,537 (Coleman).

Mr. Stiner also testified that the welders at Comanche Peak, himself included, did not preheat metal before welding. CASE Ex. 919 at 11. The weight of the evidence is to the contrary. Mr. Pickett, for example, testified that Mr. Stiner did preheat. Tr. 11,643 (Pickett). Mr. Pickett

was certain of this because he remembered lending his propane torch ("rosebud" or "preheat bottle") to Mr. Stiner. *Ibid.* The other welders who worked on Mr. Stiner's crew or in the same general area as Mr. Stiner each testified that they complied with preheating requirements. *E.g.*, Tr. 11,665 (Fernandez); Tr. 11,665 (Braumuller); Tr. 11,615 (Pickett).

Although Applicants' witnesses testified that welders preheated material prior to welding, this testimony does not address precisely the allegation made by Mr. and Mrs. Stiner: that welders do not check to make certain that the temperature prior to welding is at least 60°F for materials less than 1¼ inches in thickness. Applicants' witnesses testified only that they used preheating bottles. There is no evidence, however, that suggests that welders utilized any kind of temperature measuring device to verify that the temperature of the metal after being preheated was at least 60°F or 200°F, whichever the case may be. In fact, Mr. Muscente implied that it is sufficient for a welder "to take his torch and play it over this material until he gets it up to what we refer to as hand warm." Tr. 10,028 (Muscente). Accordingly, the Staff has required Applicants to assess the significance of permitting welders to make subjective determinations as to whether the preheat requirement of Procedure 11032 is met. Staff's assessment of Applicants' response will be considered in this proceeding.

b. Safety Implications of Violation of Preheat Requirements

Mr. Stiner's apparent concern regarding failure to preheat is that porosity (Tr. 10,799) or "under bead" cracking could occur (Tr. 10,802-03). In this regard, Mr. Stiner relates an incident where he failed to adequately preheat and the result was a visible crack down the middle of the weld. Mr. Stiner testifies that he ground out the weld and repaired it. (Tr. 10,801-04.)

With regard to Mr. Stiner's concerns, Applicants testified that in view of Applicants' use of low-hydrogen electrodes, failure to preheat would not have had a significant adverse impact on the low carbon steels welded on by Mr. Stiner or resulted in a hydrogen-embrittlement-related defect in the weld joint itself. However, given extreme conditions, restraint of the weld joint, and thick materials, failure to preheat may result in shrinkage stresses that could impact the weldment and possibly the heat-affected zone of the weld. While the likelihood of a problem even under these conditions is remote, Applicants testified that if such a weld was not adequately preheated to retard the cooling rate, excessive stresses could develop in the joint resulting in a wide-open, centerline

crack of the weld. (Tr. 11,820-38.) This was apparently the type of crack that allegedly occurred when Mr. Stiner failed to preheat the one weld joint he described in his testimony (Tr. 10,802-03). Significantly, this type of failure is clearly visible and would result in detection by the welder (with appropriate action such as that allegedly taken by Mr. Stiner) or the QC inspector during his final visual inspection of the weld. In either case, the resulting defect would be detected and corrected.

With regard to Mr. Stiner's concerns regarding possible porosity in a weld resulting from lack of preheat, if such a condition should occur Applicants have previously testified that it would also be detected by the welder and corrected or by QC during their final visual inspection (Tr. 11,897). In this regard, Applicants have testified that the AWS and ASME Codes state that some porosity in a weld is acceptable. For example, for Class 3 welds, such as alleged to have been welded without preheat by Mr. Stiner, the ASME Code does not even address porosity as a visual accept/reject criterion, and it is rejectable under ASME subsection NF construction only if a pore of porosity exceeds 1/16 of an inch (Tr. 11,215). In addition, pursuant to the AWS Code, porosity is rejectable only to the extent that the sum of the diameters of the porosity exceeds 3/8 of an inch in any linear inch of weld, or ¾ of an inch in any linear 12 inches of weld. (Tr. 11,215). There has been no testimony that even implies porosity of this magnitude.

In sum, the Board finds that even if Mr. Stiner had failed to preheat some weld joints as alleged, there is reasonable assurance that this would not have resulted in an adverse impact on plant safety. The principle impact in this proceeding would be on the Board's opinion of whether Applicants have conscientiously applied their procedures.

III. OTHER MATTERS CONSIDERED

We have addressed in this decision each of the remaining allegations by Mr. and Mrs. Stiner regarding the welding issues at Comanche Peak which we perceive could have affected our determination as to the adequacy of the QA program or the safe operation of the plant. To the extent CASE may have raised other questions, we have considered those also, and found they were without merit, were improperly raised or were insignificant and could not affect our determination here.

IV. CONCLUSION

The Board concludes that the allegations raised by Mr. and Mrs. Stiner and addressed here (i.e., weave welding, welding of misdrilled holes, downhill welding, weld rod control and preheat) are without merit except to the extent that the Board has specifically indicated in this opinion, primarily with respect to implementation of repair weld procedures and the use of temperature measuring instruments to verify preheat. We await further Staff filings before determining the extent of the breakdown indicated by these situations. The Board further concludes, however, that there is reasonable assurance that these allegations are not reflective of any condition that could adversely impact the safe operation of the plant. (We expect Applicants or Staff to correct the record, however, if they know that slag inclusions may cause a long-term safety problem because of the effect of the inclusions on weld integrity over time.)

ORDER

For all the foregoing reasons and based on consideration of the entire record in this matter, it is, this 18th day of December 1984,

ORDERED

1. Staff analyses of Texas Utilities Electric Company, *et al.*, (Applicants) responses concerning preheat and repair welding will be considered in this proceeding.

2. Applicants appear to have had the practice of verifying preheat by subjective determination of whether materials were "hand warm."

3. Applicants had a practice, of indeterminate extent, of making repair welds without proper documentation.

4. Applicants demoted a welding supervisor for directing improper welding in violation of procedures, but they violated Appendix B by: (a) failing to document this personnel problem in deficiency paper and (b) by failing to conduct an adequate contemporaneous investigation of the extent of the practice or the effect of the practice on plant safety.

5. In all other respects, the welding allegations discussed in this opinion are found to be without merit.

FOR THE ATOMIC SAFETY AND
LICENSING BOARD

Peter B. Bloch, Chairman
ADMINISTRATIVE JUDGE

Walter H. Jordan (by PBB)
ADMINISTRATIVE JUDGE

Kenneth A. McCollom (by PBB)
ADMINISTRATIVE JUDGE

Bethesda, Maryland

Cite as 20 NRC 1696 (1984) LBP-84-56

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)

December 18, 1984

Because a false statement made by Applicants' witnesses and other inconsistencies in Applicants' filings, the Licensing Board permits Intervenors and Staff to file additional discovery requests relating to the credibility of Applicants' witnesses.

RULES OF PRACTICE: DISCOVERY

Discovery may be reopened against Applicants as a remedy for a misrepresentation and for inconsistencies in testimony.

MEMORANDUM

(Reopening Discovery; Misleading Statement)

Citizens Association for Sound Energy (CASE) and the Staff of the Nuclear Regulatory Commission (Staff) agree that Texas Utilities Electric Company, *et al.* (Applicants) have made a false statement in this proceeding and that a proper remedy is to reopen discovery.[1] Applicants disagree.[2]

Although we will await the Staff investigation before determining whether this is a material false statement,[3] we find Applicants' testimony to be misleading, to reflect adversely on the credibility of Applicants' expert witnesses and to be cause for reopening discovery.

Applicants' U-Bolt Summary Disposition Motion, June 29, 1984, relied in part on a testing program. Applicants state, at page 5:[4]

> [T]o assure that the tests and analyses accurately represent plant conditions, Applicants conducted a survey of the torque on a representative sample of cinched down U-bolts . . . .

It now appears, however, that there is no sense in which the sample was representative or random.

First, the "sample" was collected with no written procedures.[5] Second, there was no method of drawing a random or representative sample; the sample included "U-bolts that could be found . . . that were unpainted."[6] Third, the sample was restricted to Unit 2, because "Unit 1 had already been painted," thereby allegedly making it impossible to obtain a relevant sample from Unit 1;[7] however, this sampling restriction was not disclosed and therefore not subject to challenge until after the Board requested the raw data from Applicants.

Fourth, Applicants stated that they "inspected the torque of a randomly selected representative sample of cinched down U-Bolt supports" and presented the results of the sampling in Table 2, which provides the

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[1] CASE's Motions and CASE's Answer to Applicants' Response to Board Request for Information Regarding Cinched Down U-Bolts, November 5, 1984 (CASE's Motion), and NRC Staff Response to CASE's Motions . . . , December 7, 1984 (Staff Response).

[2] Applicants' Reply to CASE's Motion Concerning Information Regarding Cinching Down U-Bolts, November 19, 1984.

[3] Staff has requested the advice of the Office of Inspection and Enforcement concerning whether this is a material false statement. Staff Response at 6.

[4] Page 5 cites page 10 of the accompanying affidavit, which also states that the sample was "randomly selected."

[5] Applicants' Response to Board Request for Raw Data Regarding Cinching Down U-Bolts, November 9, 1984, at 2.

[6] *Id.* at 3.

[7] *Ibid.*

"Torque Range (ft-lbs.)."[8] However, Applicants failed to mention that Table 2 was constructed using the *average* torque on the two bolts on each U-bolt. They also failed to mention that the torques were not always the same — a condition that may or may not be material but that differed from the test that was conducted, suggesting that the test may not have been representative of field conditions because torques used in the test were equal.[9]

Fifth, although Applicants claim that the torquing practices in both units were the same, their own filing discloses that the procedures changed; Applicants state:

> [T]he construction practice for torquing Unit 1, common and Unit 2 U-bolts was the same. In this regard, Applicants note that the procedure referenced by CASE [a torquing procedure adopted by Applicants on October 8, 1982] was written at the suggestion of the NRC resident inspector at that time (Robert Taylor) to document the construction practice which had been and was currently being used to torque U-bolts. Finneran Affidavit at 2.[10]

It is apparent from Applicants' representation that prior to October 8, 1982, Unit 1 was constructed without any written procedure governing the torquing of U-bolts. Under the circumstances, it will require empirical information to determine that torques applied in Unit 2 are representative of those applied in Unit 1. Even were the same procedure in effect in both units, the turnover in relevant personnel during a period of years could affect *practice*, requiring evidence concerning whether the torque on Unit 2 bolts is representative of the torque on Unit 1 bolts.

Our concern about the reliability of Applicants' testimony goes beyond that of CASE and the Staff in the instant motion. In Applicants' Motion for Summary Disposition of CASE's Allegations, at 5 n.3, we find the following statement, which we believe to be a reiteration of earlier testimony before this Board:

> Even though the Board refers to SA-307 [steel] material, the designation of the U-bolt material is SA-36. Applicants recognize that *the material is the same* [emphasis added] in any case, with A-307 being the designation employed for headed bolts.

Then, in Applicants' Response to Board Memorandum (Information on Composition of A36 and A307 Steel), we learn that the materials are not the same. Applicants' witnesses state, at page 2 of their affidavit,

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[8] Applicants' Motion for Summary Disposition at 10.
[9] Applicants' Response to Board Request for Raw Data at 2.
[10] Applicants' Reply to CASE's Motion at 7.

that "there is a major difference in the specified mechanical requirements for SA36 and SA307 steels."

Furthermore, Applicants' Response to Board Memorandum (Information on Composition of A36 and A307 Steel) seems to be an intentional effort to avoid displaying, in clear language or tables, the information the Board sought in its October 25, 1984 Memorandum and Order (LBP-84-44, 20 NRC 1340). We requested information on the extent to which the items tested by Applicants have been representative of the steels actually employed at the plant. We did this because Dr. Robert Iotti had described A307 steel to the Staff as "garbage steel," which is highly variable in content. We inferred that A36 steel, previously considered in testimony to be identical to A307, also was a "garbage steel," a logical inference that has not been directly contradicted by responsive testimony.

Applicants did not address the variability of A36 steel composition at all. Nor did they state directly how the test samples compared to steels in use at the plant. From Figure 1 of their filing it would appear that some fraction of the steels at the plant have a yield strength of less than *any* of the samples used in the Westinghouse tests and there are no data in our record concerning the extent to which the Westinghouse samples are representative of materials in use in the plant; nor is their data on the statistical error of the sample. From Figure 2, as well, there would appear to be a substantial portion of the steels in the plant with a tensile strength less than that subject to test, and we have no way of quantifying the significance of that. Furthermore, Applicants' tests related to friction, stiffness, relaxation and creep, characteristics of steel that are not readily ascertained from data on yield and tensile strength.

We note that Applicants also failed to respond fully to our question on the extent to which the U-bolt configurations in the plant are the same as those tested.[11] Obviously, differences in those configurations would limit the extent to which the test results may be applied to actual configurations found in the plant. We suspect that this omission was intentional.

We have had other changes in position that are hard to understand. At Tr. 9881, Applicants' attorney insists on cross-examining Mr. Jack Doyle, who had been examining CYGNA's witness. Despite the lack of orthodoxy in this suggestion, the Board granted the request. The purpose

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[11] Our Memorandum of October 25, 1984, LBP-84-44, *supra*, 20 NRC at 1341 n.2, stated that "there . . . is no mention of the extent of their representativeness [sic] of the dimensions of U-Bolts used at the plant. *See also* . . ." Yet, Applicants treated the "*See also*" citation and the discussion of that citation as if it restricted the meaning of the clear words of the preceding sentence. We do not understand or sympathize with this lack of attention to our language.

of the examination was to attack Mr. Doyle's knowledge concerning whether the use of cinched up U-bolts was industry practice. Yet, it now appears to be clear (based on the transcript of a recent conference between Applicants and Staff) that the use of cinched-up U-bolts at Comanche Peak is unique. Applicants should have known that at the earlier date and should have refrained from taking a position contrary to the facts.

Prior to our December 27, 1983 decision (LBP-83-81, 18 NRC 1410), witness Reedy testified about an alleged industry practice. Yet, on cross-examination by Mr. Mark Walsh, it was discovered that the sole basis for his generalization was his knowledge of Comanche Peak. Tr. 6905-31, especially 6921-22 [MPSI should be read as NPSI], 6930-31 (Mr. Reedy evades Judge Bloch's question about industry practice by responding that he is a "registered professional engineer.").

After we had ruled that several sections of the AWS Code appear to be applicable to Comanche Peak, we were assured that all welds are qualified under ASME and not subject to any AWS provisions. Tr. 6264/13-25, 6265/1-2 (Reedy). We ruled against that position. Later, we learned from Applicants that they agree that a few of the AWS Code provisions pointed out by CASE are applicable to weld design at Comanche Peak.

There also have been instances of calculational errors and of mislabeling of tables in testimony filed before this Board. LBP-83-81, 18 NRC 1410, 1440-41 (1983).[12]

With respect to the role of an independent expert in this proceeding, pursuant to Applicant's plan, we have had conflicting representations. At Tr. 13, 033-34, in the midst of a discussion concerning CYGNA's responsibility to review in detail the results of tests on U-bolts, Applicants' attorney objected that the Board was misconstruing CYGNA's role because

> [T]hey are not an independent reviewer of our plant. The professor who we are going to retain will perform that function.

However, Applicants' Report Regarding Academic Expert, November 9, 1984, at 3, stated that Applicants' expert in theoretical and applied mechanics reviewed "the basic engineering principles employed in the

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[12] *See also* the August transcripts of meetings between Applicants and Staff and Case's Proposed Findings of Fact and Conclusions of Law (Walsh/Doyle Allegations), August 22, 1983, especially ch. XXVII. Although we have determined that some of the allegations in ch. XXVII cannot be substantiated, we have not reviewed each allegation thoroughly enough to ascertain whether any constitute significant inconsistencies or material misrepresentations.

review and analyses set forth in Applicants' motions for summary disposition." If we understand this correctly, he did *not* review the details of Applicants' analysis of pipe supports affected by Walsh-Doyle issues.[13] Hence, his role appears to have been limited in a way that precluded a meaningful independent review.

Similarly, despite the Board's conclusions rejecting the SIT's findings and Applicants' assurances that CYGNA would review pipe supports in order to resolve matters in controversy,[14] CYGNA has adopted certain SIT findings and not gone into them, apparently at Applicants' request.[15] Applicants appear to have ignored the advice given by the Board at Tr. 9283-85, 9287 (CYGNA's checklist should include the Walsh/Doyle concerns; there should be a measure of observer reliability; filings under the plan should be clear and fully documented; findings will not rely on unanalyzed portions of Applicants' studies; use of tables, charts and matrixes; assistance in evaluating the meaning of recurrent noncosting errors). As a consequence, there is no independent review of Dr. Iotti's and Dr. Finneran's findings. *Compare* the Board's strong suggestion at LBP-83-81, *supra*, 18 NRC at 1454-55.

Under these circumstances, and in light of Applicants' failure to file current information about the completion of construction, CASE and the Staff may undertake additional discovery concerning samples, testing or any other aspect of testimony whose credibility they now decide to investigate within the time limits imposed in the accompanying Order. We also invite Applicants to review their own testimony and to disclose all their errors in the course of this proceeding (or the related docket) in a single filing, together with explanations.

ORDER

For all the foregoing reasons and based on consideration of the entire record in this matter, it is, this 18th day of December 1984,

ORDERED

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[13] If we are correct in this, it is directly contrary to Applicants' representation at Tr. 9267/8-12.

[14] Tr. 9268/12-18, 9274/18-24, 9277/20-25, 9278/10-14. ("What we tried to do was assess the issues in controversy and then pick those systems where most, if not all, of the configurations would be found."). (Note that Judge Bloch is often referred to in this transcript as Judge Broch.)

[15] *See* Tr. 13,033-34 where the Board made it clear that CYGNA should examine in detail tests Applicants planned to conduct in order to substantiate the acceptability of the SIT acceptance of cinched-up U-bolts as a cure for stability problems. *Compare* CYGNA, Independent Assessment Program, Final Report – Phase 3, vol. 2, App. J, General Notes 7 and 8; *see also* Tr. 12,805, 12,810, 12,826/7 to 12,827/7, 12,830/14-25, 12,847/15 to 12,848/9, 13,038/8 to 13,039/2 and 13,114/8 to 13,115/10. (These sections indicate some lack of clarity in the way in which Applicants and CYGNA were defining CYGNA's role.)

Citizens Association for Sound Energy and the Staff of the Nuclear Regulatory Commission may conduct discovery until February 21, 1985, on questions relating to samples, tests or the credibility of testimony or representations of Texas Utilities Electric Co., *et al.*, in this proceeding. Delays in response to interrogatories will be considered should there be a request for an extension of this time period.

FOR THE ATOMIC SAFETY AND
LICENSING BOARD

Peter B. Bloch, Chairman
ADMINISTRATIVE JUDGE

Walter H. Jordan (by PBB)
ADMINISTRATIVE JUDGE

Kenneth A. McCollom (by PBB)
ADMINISTRATIVE JUDGE

Bethesda, Maryland

Directors' Decisions Under 10 CFR 2.206

DIRECTORS' DECISIONS

Cite as 20 NRC 1703 (1984) **DD-84-25**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

OFFICE OF NUCLEAR REACTOR REGULATION

Harold R. Denton, Director

In the Matter of **Docket No. 50-155**
(10 C.F.R. § 2.206)

CONSUMERS POWER COMPANY
(Big Rock Point Plant) **December 3, 1984**

The Director, Office of Nuclear Reactor Regulation, denies a Petition filed by Mr. John O'Neill, II, requesting that the Commission issue a show-cause order requiring Consumers Power Company to demonstrate that it is financially qualified to operate an expanded spent fuel pool.

DIRECTOR'S DECISION UNDER 10 C.F.R. § 2.206

By a petition sent in the form of a "Motion for Show-Cause Order Regarding the Financial Qualifications of Consumers Power" dated August 15, 1984, to the Director of Nuclear Reactor Regulation, Mr. John O'Neill, II, requested that the NRC issue a show-cause order requiring Consumers Power Company (the Licensee) to demonstrate why a proposed amendment to its license to permit compacted storage of spent fuel should not be suspended because the Licensee is financially unqualified to safely operate an expanded spent fuel storage pool. Mr. O'Neill was informed by letter dated September 7, 1984, that his petition would be considered under 10 C.F.R. § 2.206 of the Commission's regulations. A notice was published in the *Federal Register* September 28, 1984 (49 Fed. Reg. 38,426) that Mr. O'Neill's petition was being treated pursuant to 10 C.F.R. § 2.206.

As a basis for his request, Mr. O'Neill asserts that the Licensee has not been required to demonstrate that it is financially qualified to operate an expanded spent fuel pool before the Licensing Board which has considered the proposed amendment and that the NRC Staff has never reviewed the Company to determine its financial health. Mr. O'Neill asserts that under the decision by the D.C. Court of Appeals in *New England Coalition on Nuclear Pollution v. NRC*, 727 F.2d 1127 (D.C. Cir. 1984), such financial review is required by law. In addition, Mr. O'Neill asserts that the cancellation by the Licensee of its Midland Nuclear Power Plant on July 15, 1984, because of financial constraints makes the Company's continued solvency speculative. He contends the financial difficulties surrounding the Midland cancellation raise sufficient doubt as to whether Consumers Power Company can safely modify and maintain the modified spent fuel pool.

I have considered the concerns of the petitioner and other relevant information bearing on the issue addressed in the petition. For the reasons set forth below, the petitioner's request for a show-cause order is denied.

Consumers Power Company's amendment application was in hearing before an Atomic Safety and Licensing Board for some time. The Board issued its Initial Decisions on the application authorizing issuance of the amendment in August and September 1984. LBP-84-32, 20 NRC 601 (1984), supplemented on September 25, 1984, LBP-84-38, 20 NRC 1019. On October 11, 1984, the NRC Staff issued Amendment No. 70 to the Big Rock Point license authorizing the Licensee to expand the storage capacity of the spent fuel pool from 193 to 441 assemblies.

No specific financial qualifications review was necessary for issuance of that amendment. In response to the Court's decision in *NECNP v. NRC, supra*, the Commission initiated a new financial qualifications rulemaking to clarify its position on financial qualifications reviews, 49 Fed. Reg. 13,044 (April 12, 1984). In addition, the Commission issued a policy statement on June 7, 1984, 49 Fed. Reg. 24,111 (June 12, 1984) which indicated that it had reasonably interpreted the Court's opinion as not vacating the rule so as to require adjudication of financial qualifications issues for operating license applications pending completion of the rulemaking. A final rule was published on September 12, 1984, 49 Fed. Reg. 35,747, reinstating financial qualifications review for construction permit applicants, and continuing in effect the provision that no finding of financial qualification is necessary for an electric utility applicant for an operating license, 10 C.F.R. § 50.33(f) and 10 C.F.R. § 50.57(a)(4). The Commission concluded that case-by-case review of financial qualifications for all electric utilities at the operating license stage is unnecessary due to the ability of such utilities to recover, to a

sufficient degree, all or a portion of the costs of safe operation through the ratemaking process.

The Commission's regulations governing amendment of an operating license, 10 C.F.R. §§ 50.90-50.92 do not provide for any financial qualifications review. Section 50.90 directs an applicant to follow as far as applicable the form prescribed for original applications. Although amendments to operating licenses are not explicitly addressed in 10 C.F.R. § 50.33(f), given the basis for elimination of financial review for an operating license, it is reasonable to include any amendments to such a license within that exclusion. Thus, no financial review was necessary for issuance of the recent amendment to Consumers Power Company's license.

The NRC Staff is aware, of course, that the circumstances surrounding the cancellation of the Midland project have created a potentially uncertain situation and consequently is monitoring the financial health of Consumers Power Company. Currently, there is no indication that the payment of nuclear operating expenses is in jeopardy for Big Rock Point or Palisades, the two nuclear power reactors operated by Consumers Power Company. Also, in response to the petition, the resident inspector at Big Rock Point performed a special review of operational safety over a time period of several months following the cancellation of Midland. This review found no apparent decrease in operational safety at Big Rock Point. In addition, recent personnel reassignments made by Consumers Power have actually increased the number of employees working at Big Rock Point and Palisades and appear to favorably impact future operational safety at Big Rock Point.

The NRC's resident inspectors and region-based inspectors will continue to observe the operational safety of Big Rock Point and Palisades. If these observations begin to indicate that operational safety is being adversely affected due to financial constraints (or for any other reason), the NRC will take all necessary actions required to ensure the safety of these plants.

In addition, the NRC project managers who are responsible for licensing actions on the Palisades and Big Rock Point plants have been and will continue to watch for signs that financial constraints are unduly affecting Consumers Power Company's programs for ensuring plant safety.

In conclusion, as discussed above, the NRC Staff is monitoring the financial health and nuclear power plant operations of Consumers Power Company. Based on the NRC Staff's findings to date, I have determined that no adequate basis exists for issuance of a show-cause order to Consumers Power Company regarding its financial capability to safely operate the Big Rock Point Plant. Therefore, the petitioner's request is

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).

Harold R. Denton, Director
Office of Nuclear Reactor
Regulation

Dated at Bethesda, Maryland,
this 3rd day of December 1984.