

NUCLEAR REGULATORY COMMISSION ISSUANCES

OPINIONS AND DECISIONS OF THE NUCLEAR REGULATORY COMMISSION WITH SELECTED ORDERS

July 1, 1975 – December 31, 1975

Volume 2



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THE BEHAVIOR OF THE WELFARE STATE

Since the 1960s, the welfare state has been a major focus of political and social debate. In this section, we examine the changing nature of the welfare state in the United States and its implications for the economy and society.

THE WELFARE STATE AND ECONOMIC GROWTH

The welfare state is a system of social insurance and income redistribution that is financed by taxes and social security contributions. It provides a safety net for the population in case of unemployment, illness, disability, or old age. The welfare state is a key element of social policy and has a significant impact on economic growth and development.

The welfare state has evolved over time in response to changing social and economic conditions. In the early 20th century, the welfare state was primarily focused on providing social insurance for the working class. Over time, it has expanded to include a wide range of social services, such as education, healthcare, and housing. The welfare state has become an important part of the social contract between the state and its citizens.

The welfare state has both positive and negative effects on economic growth. On the one hand, it provides a safety net that encourages risk-taking and innovation. It also provides a source of demand for goods and services, which can stimulate economic growth. On the other hand, the welfare state can be a burden on the economy. It increases government spending, which can lead to higher taxes and inflation. It can also create a dependency culture that discourages people from working and contributing to the economy.

In order to maintain a sustainable welfare state, it is important to strike a balance between social insurance and economic incentives. This can be achieved through a combination of measures, such as increasing taxes on high-income earners, promoting labor market flexibility, and encouraging private provision of social services. The welfare state should be designed to provide a safety net without creating a disincentive to work and innovation.

PREFACE

This is the second volume of issuances of the Nuclear Regulatory Commission and its Atomic Safety and Licensing Appeal Boards and Atomic Safety and Licensing Boards. It covers the period from July 1, 1975, to December 31, 1975.

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

Beginning in 1969, the Atomic Energy Commission authorized Atomic Safety and Licensing Appeal Boards to exercise the authority and perform the review functions which would otherwise have been exercised and performed by the Commission in facility licensing proceedings. In 1972, that Commission created an Appeal Panel, from which are drawn the Appeal Boards assigned to each licensing proceeding. The functions performed by both Appeal Boards and Licensing Boards were transferred to the Nuclear Regulatory Commission by the Energy Reorganization Act of 1974. Appeal Boards represent the final level in the administrative adjudicatory process to which parties may appeal. The Commission may, however, on its own motion, direct the certification of the record of any proceeding for review by it.

This volume is made up of reprinted pages from the six monthly issues of the Nuclear Regulatory Commission publication *Nuclear Regulatory Commission Issuances (NRCI)*, for this time period, arranged in chronological order. Cross references in the text and indexes are to *NRCI* page numbers, which are the same as the page numbers in this publication.

Issuances are referred to as follows: Commission—CLI, Atomic Safety and Licensing Appeals Boards—ALAB, and Atomic Safety and Licensing Boards—LBP.

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.

The material in this volume was indexed and prepared for printing by the Energy Research and Development Administration, Office of Public Affairs, Technical Information Center, Oak Ridge, Tennessee.

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

CLI-75-7

COMMISSIONERS:

William A. Anders, Chairman
Marcus A. Rowden
Edward A. Mason
Victor Gilinsky
Richard T. Kennedy

In the Matter of

THE TOLEDO EDISON COMPANY
and THE CLEVELAND ELECTRIC
ILLUMINATING COMPANY

Docket No. 50-346A

(Davis-Besse Nuclear Power Station,
Unit 1)

THE CLEVELAND ELECTRIC
ILLUMINATING COMPANY, ET AL.

Docket Nos. 50-440A
50-441A

(Perry Nuclear Power Plant,
Units 1 and 2)

and

THE TOLEDO EDISON
COMPANY, ET AL.

Docket Nos. 50-500A
50-501A

(Davis-Besse Power Station,
Units 2 and 3)

July 7, 1975

The Commission authorizes and directs the Licensing Board to determine whether consolidation of the *Davis-Besse 2 and 3* antitrust proceedings with the previously consolidated *Perry 1 and 2* and *Davis-Besse 1* proceedings is appropriate, expressing no views on the merits of the requested consolidation.

ORDER

The NRC Staff has moved for an order authorizing and directing the Atomic Safety and Licensing Board to decide whether consolidation of the *Davis-Besse 2 and 3* antitrust proceedings with the previously consolidated *Perry 1 and 2* and

Davis-Besse 1 proceedings is appropriate. The motion is supported by the Department of Justice, the State of Ohio, the City of Cleveland, and the Applicants. No party has objected to the requested relief.

Accordingly, the Atomic Safety and Licensing Board previously designated to preside over each of these proceedings is hereby authorized and directed to determine whether consolidation of the proceedings is appropriate under 10 CFR 2.716 and to take all necessary action to effectuate consolidation if this is required. The Commission expresses no views on the merits of consolidation of these proceedings.

By the Commission

Samuel J. Chilk
Secretary of the Commission

Dated at Washington, D. C.
this 7th day of July, 1975

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ALAB-280

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Michael C. Farrar, Chairman¹
Richard S. Salzman, Member
Dr. W. Reed Johnson, Member

In the Matter of

Docket No. 50-389

FLORIDA POWER & LIGHT COMPANY

(St. Lucie Nuclear Power Plant,
Unit No. 2)

Mr. Harold F. Reis, Washington, D. C., for the applicant
Florida Power & Light Company.

Mr. Martin H. Hodder, Miami, Florida, for intervenors
Rowena Roberts and others.

Appeal Board denies intervenors' motion for a third extension of time to brief their exceptions, finding no new reasons offered to justify a further extension. Appeal Board also denies without prejudice intervenors' motion for award of fees and expenses as premature.

MEMORANDUM AND ORDER

July 10, 1975

I

On June 18, 1975, over the applicant's objections, we granted the intervenors a second extension of time in which to brief exceptions, thereby giving intervenors until July 3, 1975 for that purpose—a total of two months. The brief they filed on that date, however, omits any discussion of five of their

¹ Mr. Farrar did not participate in this decision.

exceptions. Intervenors now ask us for an additional but unspecified time period to brief those five. The applicant renews its objections.

We do not think the intervenors are entitled to any further extension of their briefing time. The Licensing Board's decision was rendered on February 28, 1975, and served on March 3, 1975. Intervenors have thus had it in hand for more than four months, although their time for exceptions and briefs did not technically commence to run until the applicant's motion for reconsideration of certain limited aspects of the decision below was acted upon on April 25, 1975. See our order of March 10, 1975. Intervenors offer no new reason for needing more time to complete their brief; they merely refer us once again to the explanation submitted with their last request for similar relief. We then allowed all the extra time those reasons merited and noted, accordingly, that "we do not expect to receive another request for an extension of briefing time." In the absence of any reason which would justify yet a third enlargement of that period, we decline to grant intervenors such relief.²

II

Also before us is intervenors' motion for an award of attorney's fees and witnesses' expenses. The motion is premature. Whether this Commission is authorized to make such awards is an open question and, moreover, one which is now pending before the Commission in a rulemaking proceeding. We therefore follow the course previously charted when faced with similar motions in other cases. We deny the motion without prejudice to its renewal before the Licensing Board if and when the Commission authorizes such awards. See *Niagara Mohawk Power Corporation* (Nine Mile Point Nuclear Station, Unit 2), ALAB-264, NRCI-75/4R, 347, 373 (1975). We thus need not and do not express any opinion about the Commission's authority to make an award of attorney's fees and expenses or about the intervenors' entitlement to receive one.

²We also noted that the intervenors failed to file proposed findings of fact and conclusions of law with the Licensing Board with respect to three of their five unbriefed exceptions (Nos. 9, 10 and 43). A fourth (No. 8) is directed to the proposition that their failure to file proposed findings and conclusions on any point is not inconsistent with Commission rules because the Licensing Board did not direct that any be submitted. See 10 C.F.R. §2.754. The short answer is that the Board did direct all parties to file proposed findings and conclusions within a specified time period; indeed, the record reflects not only the presence of intervenors' counsel when that order was given but his understanding and acquiescence as well. Tr. 3369-74. Consequently, to the extent intervenors have failed to file proposed findings, they are in default under the Commission's Rules of Practice. We doubt that we are obliged to consider on appeal exceptions directed to such matters in any event. See *Consumers Power Company* (Midland Plant, Units 1 and 2), ALAB-123, 6 AEC 331, 332-34 (1973).

Intervenor's motion for another extension of time to brief their exceptions is *denied*; their motion for an award of attorney's fees and witnesses' expenses is *denied without prejudice* as premature.

It is so ORDERED.

**FOR THE ATOMIC SAFETY AND
LICENSING APPEAL BOARD**

**Margaret E. DuFlo
Secretary to the Appeal Board**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ALAB-281

ATOMIC SAFETY AND LICENSING APPEAL BOARD

John B. Farmakides, Chairman
Dr. John H. Buck, Member
Dr. Lawrence R. Quarles, Member

In the Matter of

Docket No. 50-286

**CONSOLIDATED EDISON COMPANY OF
NEW YORK, INC.**

**(Indian Point Station,
Unit No. 3)**

Upon motion by New York State Atomic Energy Council for extension of time within which to file exceptions to Licensing Board decision (LBP-75-31), Appeal Board, although finding the motion to be technically untimely, permits the Council to rely on the incorrect time limits specified by the licensing board in its decision and finds good cause for the requested extension. Appeal Board also permits applicant to rely on incorrect time limits and to file exceptions on that basis.

Motion of Atomic Energy Council granted; exceptions of applicant accepted as timely.

RULES OF PRACTICE: TIME LIMITS FOR FILING EXCEPTIONS

Where the Commission's rules specify that certain time limits for filing exceptions are to be applied to all initial decisions rendered on or after a specified effective date, a licensing board must comply. 10 CFR §2.762.

RULES OF PRACTICE: EXTENSIONS OF TIME FOR FILING EXCEPTIONS

Requests for extensions of time to file exceptions to licensing board decisions are to be determined by the Appeal Board.

RULES OF PRACTICE: REQUIREMENTS OF DECISIONS

The rules of practice specifically require that licensing board decisions specify the time limits within which exceptions shall be filed. 10 CFR §2.760(c)(4).

MEMORANDUM AND ORDER

July 11, 1975

By telegram dated July 3, 1975, confirmed by a written motion of the same date, both received on July 7, 1975, the New York State Atomic Energy Council (Council) moved for an extension to July 18, 1975 of the time within which it might file exceptions (with supporting brief) to the Licensing Board's decision of June 12, 1975 (LBP-75-31, NRCI-75/6 593). This memorandum and order confirms and amplifies our telephone communication on July 8, 1975 to all parties advising that the Council's motion had been granted.

Any exceptions to the June 12, 1975 decision which the Council wished to submit should have been filed by June 23, 1975 (with supporting brief filed by July 8, 1975), as required by Section 2.762 of the Commission's Rules of Practice (10 CFR §2.762 (1975)). A request for extension of time for filing exceptions should have been in our hands by June 20, 1975. Hence, technically, the Council's instant motion is untimely and might be rejected on that basis alone.

There is a further consideration, however, which must be taken into account. In its June 12, 1975 decision, the Licensing Board ruled that exceptions (and a supporting brief) need not be filed within the time period now provided by the Rules of Practice. Rather, the Board determined that the rules in effect at the time of the Commission's Notice of Opportunity for Hearing (October 1972) were applicable.¹ As its reason, the Board opined, without elaboration, that "... [d]ue process prohibits the application of the more restrictive time periods prescribed by the 1973 amendment to a pending proceeding."

Apart from the fact that we can see no plausible basis for the Licensing Board's view, the Commission itself has specified that the current rules, including those relating to time limits for filing exceptions, are to be applied to initial decisions rendered on or after March 2, 1973 (38 F.R. 5624 (March 2, 1973)).² That directive was binding upon the parties and the Board.

Although its motion is untimely, the Council had good reason (absent guidance of the type herein provided) to assume that it could rely on the appellate time limits specified by the Licensing Board. For the rules specifically require that decisions specify the time limits within which exceptions shall be filed. 10 CFR §2.760(c)(4). *Duquesne Light Co.* (Beaver Valley Power Station, Unit 2), ALAB-240, RAI-74-11 829, 830, n. 3 (November 8, 1974). In the

¹ NRCI-75/6 593, 605, n. 21. Thus, exceptions and briefs in support thereof would be due within 20 days after service of the decision (25 days in the case of the NRC staff).

² In this connection requests for extension of time to file exceptions are to be determined by the Appeal Board.

particular circumstances, therefore, we are inclined to permit the Council to rely on those time limits and, under such limits, the request for a time extension was timely filed on July 3, 1975. We have considered and acted upon the request in that context.

Good cause having been demonstrated, the requested extension is *granted*. Any exceptions of the Council, with supporting brief, must be filed by July 18, 1975.

Because of the same circumstances, the exceptions filed by the applicant on July 7, 1975 were likewise untimely. However, under the time limits provided by the Licensing Board, such exceptions would have been timely filed. For the reasons we have set forth above, we accept applicant's exceptions as timely.

It is so ORDERED.

**FOR THE ATOMIC SAFETY AND
LICENSING APPEAL BOARD**

**Margaret E. DuFlo
Secretary to the Appeal Board**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ALAB-282

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Alan S. Rosenthal, Chairman
Michael C. Farrar, Member
John B. Farmakides, Member

In the Matter of
CONSUMERS POWER COMPANY
(Midland Plant, Units 1 and 2)

Docket Nos. 50-329A
50-330A

Appeal Board ratifies appeal and briefing schedule proposed by the parties.

RULES OF PRACTICE: APPELLATE PROCEDURE

An independent appeal from an initial decision may normally be taken only by a party aggrieved by the result of such decision. Upon appeal by some other party, however, a party satisfied with the result may nonetheless challenge any or all of the findings of fact or conclusions of law upon which such decision rests while defending the result.

ORDER

July 25, 1975

On July 18, 1975, the Licensing Board rendered its initial decision in this antitrust proceeding involving Units 1 and 2 of the Midland Plant. In view of the number and complexity of the issues presented in the proceeding and decided by the Board in its lengthy opinion, and the voluminous evidentiary record adduced below, it is patent that there must be an enlargement under 10 CFR 2.711(a) of the time periods prescribed by 10 CFR 2.762 for the various steps in the appellate process. The parties have now jointly submitted to us a proposed schedule for the filing of exceptions to the initial decision and the briefing of any appeal or appeals which may be taken. In the totality of circumstances, we deem the agreed-upon schedule to be entirely reasonable and, accordingly, it is hereby ratified. Its provisions are as follows:

1. *September 8, 1975*—The filing of exceptions to the initial decision by any

party deeming itself to be aggrieved by the *result* reached in that decision. See *Toledo Edison Co. (Davis-Besse Nuclear Power Station)*, ALAB-157, 6 AEC 858 (1973).¹

2. *November 3, 1975*—The filing by the appellant(s) of the brief(s) in support of its (their) exceptions.

3. *January 5, 1976*—The filing by the appellee(s) of the brief(s) in opposition to the exceptions filed by appellant(s).

4. *January 26, 1976*—The filing by the appellant(s) of a reply brief(s), which shall be confined to a response to arguments advanced in the brief(s) of the appellee(s).

It is the present contemplation of this Board that oral argument on any appeal(s) which may be taken will be calendared for sometime during the latter half of February, 1976. At least three weeks advance notice of the precise date of argument will be provided to the parties.

It is so ORDERED.

FOR THE ATOMIC SAFETY AND
LICENSING APPEAL BOARD

Margaret E. DuFlo
Secretary to the Appeal Board

¹ It is often the case that a party will be entirely satisfied with the result but, at the same time, will not subscribe to some of the findings of fact or conclusions of law contained in the initial decision. In such circumstances, although normally precluded from taking an independent appeal, that party will be free to challenge any or all of those findings or conclusions in defending the result (should it be appealed by some other party which is seeking a different result). See *Niagara Mohawk Power Corp. (Nine Mile Point Nuclear Station, Unit 2)*, ALAB-264, NRCI-75/4R 347, 357 (April 8, 1975). In the event that the appellee(s) should pursue this course here, the appellant(s) will have an opportunity to respond to the challenge by way of the reply brief(s).

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ALAB-283

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Richard S. Salzman, Chairman
Dr. Lawrence R. Quarles, Member
Michael C. Farrar, Member

In the Matter of
CONSUMERS POWER COMPANY
(Midland Plant, Units 1 and 2)

**Construction Permit
Nos. 81 and 82
(Show Cause)**

Upon its review *sua sponte* of a Licensing Board determination (LBP-74-71) in a "show cause" proceeding that the licensee's quality assurance program satisfied the Commission's safety regulations, the Appeal Board rules that (1) the Licensing Board's error in relieving the licensee of the burden of proof of compliance with those regulations was harmless in the circumstances of the case and (2) the Board's findings and conclusions were warranted by the record.

Initial decision and denial of reconsideration (LBP-75-6) *affirmed*.

RULES OF PRACTICE: BURDEN OF PROOF

The party licensed to construct a nuclear power facility has the burden of proving compliance with the Commission's safety regulations when ordered to show cause why its license should not be revoked or modified for noncompliance with those regulations. Administrative Procedure Act §7, 5 U.S.C. §556(d); Atomic Energy Act §185, 42 U.S.C. §2235.

RULES OF PRACTICE: ORDER TO SHOW CAUSE

The licensing board properly refused to dismiss a "show cause" proceeding ordered by the Commission to determine whether the licensee was complying with Commission safety regulations in constructing a nuclear power facility notwithstanding the absence of any party supporting the show cause order, because the licensee has the burden of proving its compliance with those regulations.

DECISION

July 30, 1975

In December 1973, the AEC Director of Regulation ordered Consumers Power Company (the licensee) to "show cause" before him why construction of its nuclear power generating facility at Midland, Michigan, should not be suspended for failure to comply with the Commission's "quality assurance" regulations, 10 C.F.R. Part 50, App. B.¹ The Commission referred the Director's order to the Licensing Board for an evidentiary hearing, instructing the Board to determine (1) whether the licensee was implementing its quality assurance program in accordance with the governing regulations and (2) whether there was reasonable assurance that it would continue to do so throughout the remainder of the construction process.²

Hearings were held as directed on the order to show cause. In due course the Licensing Board rendered an initial decision which answered both questions posed by the Commission affirmatively.³ The Board subsequently denied a petition, based on "newly discovered evidence," to reopen the record and reconsider its decision.⁴ These actions of the Licensing Board are now before us for review.

I

1. BACKGROUND

When used with reference to the construction of a nuclear power plant, "quality assurance" in Commission parlance

comprises all those planned and systematic actions necessary to provide adequate confidence that a structure, system, or component will perform satisfactorily in service. Quality assurance includes quality control, which comprises those quality assurance actions related to the physical characteristics of a material, structure, component, or system which provide a means to control the quality of the material, structure, component, or system to predetermined requirements.⁵

¹The "show cause" order was authorized by section 2.202 of the Commission's regulations, 10 C.F.R. § 2.202. See *Consumers Power Company* (Midland Plant, Units 1 and 2), CLI-73-38, 6 AEC 1082 (1973).

²See *Consumers Power Company* (Midland Plant, Units 1 and 2), CLI-74-3, 7 AEC 7 (1974).

³LBP-74-71, RAI-74-9, 584 (September 25, 1974).

⁴LBP-75-6, NRCL-75/3, 227 (March 5, 1975).

⁵10 C.F.R. Part 50, App. B., *Introduction*.

Quality assurance (including quality control) is an important element of the Commission's defense-in-depth approach to nuclear safety. Accordingly, every utility seeking a license to construct a nuclear plant must develop a quality assurance program tailored to the proposed plant, which program must be detailed in the licensee's Preliminary Safety Analysis Report (PSAR) to the Commission. The adequacy of that program is then tested against the quality assurance regulations both in theory and as put into practice during construction.

As our own decisions attest, the construction history of the Midland plant is surfeited with quality assurance difficulties.⁶ The full record of events culminating in the "show cause" proceeding below is chronicled in the Licensing Board's initial decision.⁷ For our purposes it is sufficient to note that the Appeal Board which reviewed the Licensing Board's approval of the Midland construction permits⁸ found the licensee's quality assurance program at that site seriously deficient in several respects.⁹ The Appeal Board accordingly directed certain corrective actions be taken as a condition of allowing the Midland construction permits to stand and imposed certain reporting requirements with respect thereto on both the licensee and the staff.¹⁰ After a series of further decisions on various other aspects of the Midland quality assurance program, the Appeal Board affirmed the decision authorizing the Midland construction permits.¹¹ In so doing, that Board credited representations made to it that the licensee's quality assurance program would thereafter be satisfactorily organized and properly maintained.¹²

The Appeal Board's final decision in *Midland* was rendered on October 5, 1973.¹³ On November 13, 1973, after the Board's formal jurisdiction over the case had ended,¹⁴ AEC staff inspectors reported still more instances of noncompliance with the quality assurance regulations at the Midland site, this time principally involving "cadwelding" operations.¹⁵ Upon learning of that report, the members of the *Midland* Appeal Board on November 26, 1973, sent a

⁶See *Consumers Power Company* (Midland Plant, Units 1 and 2); ALAB-106, 6 AEC 182 (1973); ALAB-132, 6 AEC 431 (1973); ALAB-147, 6 AEC 636 (1973); and ALAB-152, 6 AEC 816 (1973).

⁷See RAI-74-9, 584, *supra*, n. 3.

⁸LBP-72-34, 5 AEC 214 (1972). That decision was not rendered by the same Licensing Board which handed down the "show cause" decision now before us.

⁹ALAB-106, *supra*, 6 AEC 182.

¹⁰*Id.* at 186.

¹¹See ALAB-147, *supra*; ALAB-152, *supra*; and ALAB-160, 6 AEC 1002 n.1 (1973).

¹²See ALAB-162, 6 AEC 1139 (1973).

¹³ALAB-152, *supra*, 6 AEC 816.

¹⁴See ALAB-162, *supra*, n.12.

¹⁵Cadwelding is a process by which metal bars used in reinforced concrete construction are fused together. Dotson, p. 30, following Tr. 597.

memorandum to the Director of Regulation commenting unfavorably on this latest development, expressing dismay that it should have occurred, and urging corrective action.¹⁶

Prompted by the inspection reports and the Appeal Board memorandum, on December 3, 1973 the Director ordered the licensee to suspend cadwelding operations and to show cause before him why all construction activities at the Midland site should not be stopped until its compliance with the quality assurance regulations could be established. On December 17th, after a further inspection, the Director modified his show cause order to allow the resumption of cadwelding activities. 38 *F.R.* 35345 (December 27, 1973).

The "show cause" order (to which a copy of the Appeal Board memorandum was attached) also gave the licensee or "any interested person" twenty days within which to request a Commission hearing on the matter. 38 *F.R.* 33515 (December 5, 1973). Thereafter, at the request of the Saginaw Intervenors (parties to the original *Midland* construction permit hearings),¹⁷ the Commission referred the show cause order for an evidentiary hearing before a Licensing Board newly constituted for that purpose. 7 *AEC* 7 (January 21, 1974).¹⁸ Construction of the Midland facility was permitted to proceed in the interim.

2. THE PROCEEDINGS BELOW

(a) **The parties.** In addition to the licensee and the regulatory staff, Bechtel Professional Corporation and Bechtel Power Corporation (the licensee's architect-engineers for the Midland project) and the Saginaw Intervenors were made parties to the show cause proceeding.¹⁹ The Saginaw group advised the Licensing Board that they would not participate unless the Commission granted their petition for an award of attorney's fees and expenses. The Commission, however, denied that petition for want of a sufficient showing of need.²⁰ Thereafter Saginaw remained away from the hearing and tendered neither

¹⁶The memorandum was not sent under the Board's adjudicatory authority, which had terminated. A copy of the memorandum was also sent to the lead Commissioner for regulation. Having delivered their missive, those individuals disqualified themselves from any additional participation in the case and have not been further involved in this matter.

¹⁷Comprised of Saginaw Valley Nuclear Study Group, Citizens Committee for Environmental Protection of Michigan, Sierra Club, United Automobile and Aerospace Workers of America, West Michigan Environmental Action Council, and University of Michigan Environmental Law Society.

¹⁸The Commission decision also denied the Saginaw Intervenors' petition to revoke the construction permits and the licensee's motion to dismiss the order to show cause.

¹⁹The Dow Chemical Corporation, a party to the original construction permit hearing, was named a party also, but elected not to participate. Tr. 31.

²⁰The Commission noted that two of the Saginaw Intervenors, the U.A.W. and the Sierra Club, had substantial assets. See CLI-74-26, RAI-74-7, 1 (July 10, 1974).

witnesses nor evidence, attempted no cross-examination, and filed no proposed findings of fact or conclusions of law. The Board below nevertheless declined to dismiss them as formal parties in the show cause proceeding.²¹

(b) **The burden of proof.** The Licensing Board had ruled initially that the burden of proving compliance with the Commission's quality assurance regulations and establishing reasonable assurance of continued future compliance—the issues referred to the Board by the Commission—lay on the licensee. Tr. 48-49, 68. Later in the proceeding, however, on the licensee's motion, supported by Bechtel and the regulatory staff,²² the Board reversed its ruling and held the burden of proof to be on the proponents of the show cause order. The Board indicated that the staff, as the initiator of the show cause order, and the Saginaw Intervenors, who had requested a hearing on that order, were the proponents. LBP-74-54, RAI-74-7, 112 (July 12, 1974). The regulatory staff, however, had apprised the Licensing Board on March 28, 1974, that it no longer favored the show cause order. Tr. 32-33, 48-49, 163-64. Bechtel, the licensee's architect-engineer was, of course, not its proponent. This left the Saginaw Intervenors. But they had previously informed the Board that they would not participate without an award of funds from the Commission. Tr. 152-53. As we mentioned, however, that award had been denied two days before the Board reversed itself on the burden of proof question.²³ Consequently, the show cause order did not enjoy the support of any party active in the proceeding.

(c) **The hearing.** Notwithstanding that at the beginning of the trial no party was supporting the show cause order, the Licensing Board denied motions to dismiss the hearing for failure to carry the burden of proof.²⁴ Instead, it cautioned the parties that it was "fully prepared to assess the evidence submitted in this proceeding and reach [its] own judgment of whether or not the Consumers Power Company permits should be modified, reversed, or in any way affected by the record that we develop here." Tr. 155. Accordingly, during the course of the three day hearing which followed, the three parties other than Saginaw proceeded to produce witnesses and documentary evidence responsive to the questions propounded by the Commission.

(d) **The Licensing Board's initial decision.** Based on its evaluation of the evidence adduced before it, the Licensing Board found the licensee to be currently "implementing its quality assurance program in compliance with Commission regulations" and that "[t]here is [now] reasonable assurance that such implementation will continue throughout the construction process," even though "there have been questions [about the licensee's] compliance and

²¹ See RAI-74-9 at 592 and Tr. 162.

²² The Saginaw Intervenors filed no response to this motion.

²³ See note 20, *supra*.

²⁴ See RAI-74-9 at 592.

... attitude regarding QA in the past." RAI-74-9 at 609-10. For these reasons the Board concluded that there was no cause to suspend, modify or revoke the Midland construction permits; it therefore ordered the proceeding closed. *Ibid.*

(e) Saginaw's motion to reconsider. The initial decision was rendered on September 25, 1974; on September 30th the Saginaw Intervenors petitioned the Board below to reopen the record and reconsider that decision. The petition rested entirely on a suit brought by the licensee against Bechtel claiming \$300,000,000 in damages on allegations that Bechtel had negligently performed and otherwise breached its contract to construct another nuclear power facility (Palisades) for the licensee. Saginaw asserted, in substance, that these allegations negated the evidence of Bechtel's ability to perform quality assurance functions satisfactorily at the Midland facility and also undercut the Board's finding of reasonable assurance that those functions will be properly implemented throughout the remainder of the construction period.

The Licensing Board denied the motion on the merits on the ground that, even if true, the matters in the licensee's complaint against Bechtel would not affect the decision in the case at bar. The Board stressed that the litigation involved an entirely different plant, did not encompass the quality assurance matters at issue in this case, and, whatever their past difficulties, the record "convincingly established" that the present relationship between the licensee and Bechtel, together with the Commission's inspection program, could reasonably be relied upon to provide a satisfactory quality assurance program in the future at Midland. LBP-75-6, NRCI-75/3, 227 (1975).

II

This matter initially came before us on exceptions filed by the Saginaw Intervenors.²⁵ Because of their failure to comply with the Commission's Rules of Practice governing proceedings before us, however, they were dismissed as parties to this case.²⁶ Nonetheless, we have followed our customary practice in uncontested cases and reviewed the entire record *sua sponte*. We conclude therefrom, first, that the Licensing Board erred in relieving the licensee of the burden of proof in this show cause proceeding; second, that the error was rendered harmless by the manner in which the Board conducted the evidentiary proceeding; and, third, that the initial decision and the denial of the motion to reconsider were warranted on this record. Accordingly, we affirm.

²⁵We had extended the time to file exceptions to the initial decision until after the Licensing Board disposed of the motion for reconsideration. ALAB-235, RAI-74-10, 645 (1974).

²⁶The reasons for our action are explained in the opinion which accompanied the dismissal order. ALAB-270, NRCI-75/5, 473 (1975).

1. The Board below, accepting the arguments of the licensee and Bechtel, held that section 7 of the Administrative Procedure Act (5 U.S.C. §556(d)) placed the burden of proof on the proponents of the show cause order, in this case the Saginaw Intervenors and the regulatory staff. We do not agree.

To be sure, the APA—including section 7—applies to Commission adjudicatory proceedings.²⁷ The rule laid down by section 7, however, contains an important qualification: “*Except as otherwise provided by statute, the proponent of a rule or order has the burden of proof.*” (Emphasis added). As the parties and the Board below appear to have overlooked, a Commission proceeding such as the one at bar, convened to determine whether a utility is constructing a nuclear power facility in compliance with the Commission’s safety regulations, falls within that exception. This follows from the nature of the two-step licensing process Congress established in the Atomic Energy Act. Under section 185 of that Act,²⁸ “issuance of a construction permit does not make automatic the later issuance of a license to operate” the nuclear power plant. *Power Reactor Development Co. v. Electricians*, 367 U.S. 396, 411 (1961). Rather, when the plant is constructed, the utility must return and “ask the Commission to grant . . . a license to operate the facility.” *Id.* at 405. For that purpose, the utility must come forward with sufficient information to establish (among other things) “that the facility authorized [by the construction permit] has been constructed . . . in conformity with the . . . regulations of the Commission,” 42 U.S.C. §2235.

It is settled that a utility seeking permission to build a nuclear power plant carries the ultimate burden of proving compliance with all applicable Commission regulations at both ends of the licensing spectrum—the initial construction permit phase and the concluding operating license phase. *Maine Yankee Atomic Power Company* (Maine Yankee Atomic Power Station), ALAB-161, 6 AEC 1003, 1018 (1973). See also *Power Reactor Development Co. v. Electricians*, *supra*, 367 U.S. at 405; *Cities of Statesville, et al. v. AEC*, 441 F.2d 962, 983 (D.C. Cir. 1969). In these circumstances we cannot perceive why the legislature would have wanted that burden shifted elsewhere if a question of compliance arises in the intervening construction phase. As the Seventh Circuit cogently observed in analogous circumstances: “we see no reason why the location of the burden of proof should depend on the timing of the [agency’s] first awareness of a compliance problem,” *Stearns Elec. Paste Co. v. E.P.A.*, 461 F.2d 293, 305 n.38 (1972).²⁹

²⁷ See 42 U.S.C. § 2231 and 2236.

²⁸ 42 U.S.C. § 2235.

²⁹ *Stearns* involved a deregistration proceeding under the Federal Insecticide, Fungicide and Rodenticide Act, 7 U.S.C. § 135. The court went on to hold that “whether the Administrator discovers the hazard at the time of registration or later, Congress intended that the registrant have the burden of proving compliance with the provisions of the statute.” 461 F.2d at 305 n. 39. *Accord, Environmental Defense Fund, Inc. v. Ruckelshaus*, 439 F.2d 584, 593 (D.C. Cir. 1971).

The result we reach does not conflict with the hearing examiner's decision in *New York Shipbuilding Corporation*, 1 AEC 707 (1961),³⁰ relied upon by the Board below. The examiner held in that show cause proceeding that the Administrative Procedure Act placed the burden of proof upon the staff. *Id.* at 708. But, unlike the case at bar, *New York Shipbuilding* was a proceeding to revoke an AEC by-product material license. Consequently, it did not involve the statutory provisions applicable to construction cases that govern our decision here. See 42 U.S.C. §2235.

The other cases cited in the Board's opinion are no more persuasive. They are decisions under different statutes administered by other agencies which, moreover, turn on economic rather than public health and safety considerations. They are therefore not material to the Atomic Energy Act issue before us. Under that Act, where the Commission orders a party licensed to construct a nuclear facility to "show cause" why its license should not be suspended (or otherwise modified or revoked) for not complying with the Commission's safety regulations, the burden of proving compliance rests on the licensee. Thus this case falls within the exception in section 7 of the APA.

2. Which party bears the evidentiary burden becomes a significant question, of course, only where the evidence on an issue is evenly balanced or if the trier is in doubt about the facts. Absent that balance or doubt, the question is immaterial.³¹ In this case, the Licensing Board did not turn its decision on the allocation of that evidentiary burden but expressly denied the licensee's motion to dismiss for failure to meet the burden of proof.³² Instead, the Board called upon the licensee, the licensee's architect-engineers and the staff to explain the circumstances surrounding the quality assurance problems at the Midland plant. The parties did so by supplying knowledgeable witnesses who testified at length not only on examination by counsel but in response to interrogation by the Board itself. The effect of adopting this procedure was to reduce the Board's ruling on burden of proof to *dictum*, thereby rendering harmless its erroneous holding on the question.³³ We therefore turn to an examination of the record on which the Board's decision actually rests.³⁴

³⁰ Reversed in part on other grounds by the Commission, 1 AEC 842 (1961).

³¹ See *Liberty Mutual Insurance Co. v. Sweeney*, 216 F.2d 209, 211 (3rd Cir. 1954); McCormick, *Evidence*, § 307 (1954 ed.).

³² See RAI-74-9 at 592.

³³ We have, nevertheless, elected to discuss the burden of proof question at some length. It is an important one and we do not wish other parties to be misled by the published opinion below (RAI-74-7, 112), which we hereby disapprove.

³⁴ We think the Board exercised sound judgment in refusing to decide this important case on a legal technicality. As that Board perceptively observed, "substantial public interest questions existed regarding Consumers' compliance with Commission quality assurance requirements and Consumers' implementation of its quality assurance program," and, in light of that interest, "a determination is warranted on the record . . . [on those issues]." RAI-74-9 at 592.

3. There were no parties at the hearing actively supporting the order to show cause. Saginaw had dropped out (see pp. 14-15, *supra*) and the staff had come around to the position that the licensee had the Midland quality assurance problems under control again and a hearing was therefore unnecessary.³⁵ Given the circumstances of this case, we pass the question whether the Director of Regulation should have thus changed his position 180 degrees after the Commission had referred his show cause order to a hearing and we proceed directly to a consideration of the record.³⁶

The evidentiary hearing consumed three trial days. Testimony was taken from 20 witnesses, filling nearly 600 transcript pages, and some 276 exhibits were received into evidence. The licensee presented four witnesses: its senior vice president in charge of the planning, construction, operation, and maintenance of its electric generating and transmission facilities; its vice president responsible for all design, construction, and quality assurance activities at the licensee's nuclear plants; its official responsible for quality assurance implementation and

³⁵ MR. MURRAY [staff counsel]: Yes, Mr. Chairman, and this is a very important point and although I am sitting on petitioner's side of the table here, we are really not Petitioners in this proceeding. The posture of the matter is this: The Director of Regulation issued an order to show cause, received an answer to that order to show cause [and] was in the process of pondering that answer when the Commission granted a request of the Intervenor for a hearing.

We are still in the process of pondering that answer. At this stage, however, if you want a preliminary view, we are sort of satisfied with it. And that is how we will present our evidence. Tr. 32-33 (March 28, 1974).

* * *

MR. MURRAY: I should, perhaps, add for the record, Mr. Chairman, that the date that—the schedule that the Staff is proposing is not, repeat, not out of any concern that construction is continuing. As I indicated at the outset, we are satisfied that the QA and QC problems there are now under control. Tr. 65.

* * *

MR. MURRAY: Mr. Chairman, I wonder if I might tender one small but to the Staff very important emendation in your opening remarks?

CHAIRMAN GLASER: All right.

MR. MURRAY: You said that the Staff decided that an order should never have been issued. I think, rather, what we decided was that the response to the show-cause order was adequate and did indeed show cause why they should not be shut down. Tr. 163 (July 16, 1974).

³⁶ The regulatory staff had publicly announced at the Licensing Board's March 28, 1974 hearing that it did not expect to support the Director's show cause order notwithstanding that the Commission had referred it for a formal hearing. See note 18, *supra*. We may reasonably assume that the Commission was aware of this reversal of position; certainly its attention was specifically drawn to it by Saginaw's May 11, 1974 motion for fees and expenses. In the circumstances, we take the Commission's silence as acquiescence.

compliance at the Midland plant; and (at the specific request of the Board) its administrator in charge of licensing for all its operating nuclear plants. The five witnesses called by the staff included three AEC inspectors from the regional office with responsibility over the Midland plant; the Director of that office (at the Board's request); and the Director's technical assistant. Bechtel presented a total of eleven witnesses with a variety of quality assurance and quality control responsibilities at the Midland plant and at other nuclear facilities designed or constructed by that firm.

The testimony covered a broad range of quality assurance matters with the Licensing Board taking an active part in the inquiry. The Board probed, among other things, into the circumstances surrounding the deficiencies specifically mentioned in the "show cause" order, the results of subsequent staff inspections of each deficiency, the effectiveness of the staff's inspection program, the steps taken by the licensee and Bechtel to correct the defects in the Midland quality assurance program, the licensee's present quality assurance organization, procedures, and activities, the attitude of the licensee's senior management toward quality assurance matters and compliance with Commission regulations, the licensee's past quality assurance performance, and the measures it was taking and which would be taken to insure future compliance with the Commission's regulations.

Despite the handicap under which the Licensing Board labored, *i.e.*, the absence of any party before it interested in bringing out information adverse to the position of the staff, licensee and Bechtel, it is apparent from a reading of the record that the Board made a determined effort to insure that the issues were thoroughly explored. If that exploration did not go as deep in some areas as it might have, that fault is not of the Board's making.

On the basis of the record thus developed, the Board found that the licensee is now implementing its quality assurance program in accordance with the Commission's regulations and that it can reasonably be expected to continue to do so. The Board's carefully detailed decision contains findings which support its conclusions on those issues and each finding is in turn backed by appropriate references to relevant portions of the record. RAI-74-9 at 592-609.

We have reviewed the evidence carefully. On the basis of that examination, for the reasons stated in the initial decision we agree that the Board's findings and conclusions are warranted and the issues referred to it are correctly resolved in light of the record. We need only note our concurrence in the Licensing Board's carefully drawn opinion.

4. In its March 5 order, NRCI-75/3, 227, the Board denied Saginaw's petition to reopen the record and reconsider its initial decision on the basis of a recent lawsuit filed by the licensee against Bechtel. The suit alleged negligence and breach of contract on Bechtel's part in serving as the licensee's architect-engineers at the Palisades nuclear plant. Among other things, the complaint charged Bechtel with negligent performance of quality assurance and quality

control functions at that facility. Saginaw argued that these matters were relevant to the issue of Bechtel's ability to perform its quality assurance responsibilities at Midland and warranted reopening this proceeding.

The Licensing Board determined that Saginaw's "new evidence," even if true, would not affect the decision in this proceeding.³⁷ That ruling was founded upon the Board's belief that (1) the issues raised in the Palisades lawsuit were different from those raised in this show cause proceeding, and (2) it was clear from the record here that the Consumers-Bechtel relationship and the staff's inspection program gave reasonable assurance that the quality assurance program at Midland would be implemented in conformity with the Commission's regulations.³⁸

We have held that performance of quality assurance activities at one facility is relevant in determining the likelihood of future satisfactory performance at another. *Duquesne Light Company* (Beaver Valley Power Station, Unit 2), ALAB-240, RAI-74-11, 829, 833-34, 838-40 (1974). In this case the Board below had already considered the quality assurance performance at Palisades in the course of determining whether there was a likelihood of continued implementation of a satisfactory program at Midland.³⁹ A stronger answer to Saginaw's petition was the second reason proffered by the Board. For even assuming that all the allegations against Bechtel were true, they relate to past activities under different circumstances. We agree with the Board below that they are not sufficient to overcome the direct evidence in the record of this proceeding. That evidence shows that, as a result of changes made in the intervening years, the licensee and Bechtel have now adopted an adequate quality assurance program and organization at the Midland plant, which, backed by the staff's inspection program, gives reasonable assurance of future compliance with the Commission's regulations. We therefore hold that the Board below did not abuse its discretion in declining to reopen the case on Saginaw's petition.

III

Some observations are in order before closing our books on this matter. The result we reach is constrained by the record before us. However, the perspective of hindsight harshly but accurately reveals the overall history of quality assurance actions at Midland to have been one of marginal effectiveness at best—not only on the part of the licensee and Bechtel but, in our judgment, by the staff as well. Given the importance of the quality assurance program in the

³⁷ NRCI-75/3 at 231.

³⁸ *Ibid.*

³⁹ See RAI-74-9 at 608, par. 80.

furtherance of nuclear safety, this long and unsatisfactory history suggests that a fresh, hard look at the philosophy and practices underlying the Commission's program in this area is in order. We recommend that such a review be undertaken by individuals divorced from direct responsibility for that program.

The decisions of the Licensing Board are *affirmed*.
It is so ORDERED.

FOR THE ATOMIC SAFETY AND
LICENSING APPEAL BOARD

Romayne M. Skrutski
Secretary to the Appeal Board

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

LBP-75-37

ATOMIC SAFETY AND LICENSING BOARD

Elizabeth S. Bowers, Chairman
Dr. A. Dixon Callihan, Member
Dr. Franklin C. Daiber, Member

In the Matter of
LONG ISLAND LIGHTING COMPANY
(Jamesport Nuclear Power Station,
Units 1 and 2)

Docket Nos. 50-516
50-517
July 1, 1975

Upon untimely petition for intervention in construction permit proceeding, Licensing Board finds (1) that petitioner has failed to show good cause for its late filing; (2) that it has not established the requisite interest for intervention; (3) that it has failed to submit contentions different from those already proposed by other intervenors (who are capable of protecting petitioner's interest); and (4) that prejudicial delay might occur by admitting petitioner as a party.

Petition denied.

**ORDER RELATIVE TO THE AMENDED PETITION
OF THE OIL HEAT INSTITUTE OF LONG ISLAND, INC.**

On September 20, 1974, the Atomic Energy Commission, now the Nuclear Regulatory Commission, published in the *Federal Register* a notice of Hearing on Application for Construction Permits regarding this proceeding (39 *F.R.* 33817). The notice provided, *inter alia*, that any person whose interest may be affected by this proceeding could file a petition to intervene no later than October 21, 1974. On March 11, 1975, the Oil Heat Institute of Long Island, Inc. (OHILI) filed an untimely petition which alleged good cause for the late filing on the bases that it was not aware of the Notice of Hearing and that on becoming aware some months elapsed while it sought to have representation by counsel. The petition alleged that it would suffer an economic loss by an anticipated major curtailment of future customers and that there was no other means available to

protect its interests. It also alleged that it was in a unique position to present evidence and that its participation would not unduly delay the proceeding.

At the prehearing on March 26, 1975, the Board informed counsel for the Oil Institute and the Applicant and Staff that there had not been sufficient time for the Board to receive the responses to the petition prior to the prehearing and that the Board would not act on a basis of the informational copies distributed at the prehearing. The Applicant's response of March 21, 1975, opposed the petition. The NRC Staff response of March 21, 1975, stated that petitioner had made a showing of good cause for the untimely filing and that interest had been established, but that the petition does not meet the requirements of 10 CFR 2.714 and suggested that the petitioner be granted thirty (30) days to amend. By Order of April 30, 1975, the Board granted the Oil Institute fifteen (15) days to amend from the date of the receipt of the Order.

The amended petition, dated May 16, 1975, reiterated its earlier position of "good cause" for late filing stressing that no other group would be as adversely affected on an economic basis. The amended petition is the affidavit of William F. Kenny, III, Chairman of the Board of Directors of the Oil Heat Institute of Long Island, Inc. The petition sets forth contentions a through z, aa, bb, and cc. The Applicant's response of May 27, 1975, stated that "good cause" for late filing had not been established and that "interest" was questionable. The response also stated that the contentions "merely mirrored contentions raised by existing parties". Applicant contends that "OHILI has presented no data establishing any special competence on its part as to the resolution of its contentions (a)-(cc)". The NRC Staff response of May 29, 1975, repeated its prior position that "good cause" had been established, as well as "interest". "In the Staff's view, the contentions stated in subparagraphs 5(a) through (h) of the amended petition, relating to need for power, alternative energy sources and alternate sites, are subject to further refinement, sufficient to satisfy the specificity requirements of 10 CFR 2.714(a)". The Staff stated the OHILI should be admitted as a party with consideration given to other contentions after further refinement.

The Board has carefully considered the criteria for consideration of an untimely petition set forth in 10 CFR 2.714(a) and (d) and has concluded the following:

(a)(1) The availability of other means whereby the petitioner's interest will be protected. Since the OHILI contentions do "mirror" the contentions of other parties who oppose the construction of the proposed Jamesport facility, OHILI "interest" will be propounded by the other parties.

(a)(2) The extent to which the petitioner's participation may reasonably be expected to assist in developing a sound record.

OHILI has submitted no information which indicates that it is prepared to go forward in support of any of its contentions to assist in developing a sound record.

(a)(3) The extent to which petitioner's interest will be represented by existing parties.

While other parties have not alleged a lack of potential OHILI customers, they share a common interest in the cancellation of the proposed plant.

(a)(4) The extent to which the petitioner's participation will broaden the issues or delay the proceeding.

The Board does not believe that OHILI will broaden the issues since it has essentially adopted issues of other parties, but delay would occur if OHILI proposes to put on a direct case on these same issues or to engage in cross-examination of other parties' witnesses. This could be prejudicial to other parties.

(d)(1) The nature of the petitioner's right under the Act to be made a party to the proceeding.

OHILI has a "right" to be admitted as a party to this proceeding if it (1) filed a timely petition meeting the requirements of 10 CFR 2.714(a) first paragraph, (b), and (d) or (2) establishes its "right" under 10 CFR 2.714(a)(1)(2)(3)(4), (b), and (d).

(d)(2) The nature and extent of the petitioner's property, financial, or other interest in the proceeding.

OHILI alleges that it has a unique interest because of a potential economic loss if possible future potential customers do not use oil heat. The Board considers this allegation to be entirely speculative and conjectural.

(d)(3) The possible effect of any order which may be entered in the proceeding on the petitioner's interest.

The Board believes that its response to (d)(2) is applicable to consideration of this statement.

In summary, the Board does not accept the allegation of good cause for the late filing, the question of interest is not established, and the proposed contentions have been developed by other parties who are very capable of thorough participation in this proceeding. The petitioner is therefore denied party status by the Board.

OHILI's right of appeal from this Order is set forth in 10 CFR 2.714a.
It is so ORDERED.

**THE ATOMIC SAFETY AND
LICENSING BOARD**

Elizabeth S. Bowers, Chairman

Issued at Bethesda, Maryland
this 1st day of July, 1975.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

LBP-75-38

ATOMIC SAFETY AND LICENSING BOARD

Samuel W. Jensch, Chairman
R. B. Briggs, Member
Dr. Franklin C. Daiber, Member

In the Matter of
**CONSOLIDATED EDISON COMPANY
OF NEW YORK, INC.**
**(Indian Point Nuclear
Generating Unit No. 3)**

Docket No. 50-286

July 3, 1975

Upon applicant's motion for clarification of Licensing Board's previous order (LBP-75-31), Board finds no good cause for clarification, since previous decision clearly authorized the issuance of a full-term full-power license only after two stated conditions were met.

Motion denied.

**ATOMIC ENERGY ACT: SCOPE OF INFORMATION
REQUIRED FOR LICENSING**

While a decision to grant a full-term license requires a licensing board to consider all pertinent aspects of operation, including seismic matters, where an application for a testing license is unopposed, the board must authorize the Director of Nuclear Reactor Regulation to make appropriate findings and issue a license for the requested operation. See 10 CFR § 50.57 (c).

**ORDER DENYING MOTION
FOR CLARIFICATION**

On June 23, 1975, Consolidated Edison Company of New York, Inc. (Applicant) filed a motion for clarification of the Memorandum and Order dated June 12, 1975, of the Atomic Safety and Licensing Board which authorized the Director of Nuclear Reactor Regulation to issue a full-term full-power license after two conditions were fulfilled: namely, approval, as requested by the parties to the proceeding, by the Atomic Safety and Licensing Appeal Board of the Stipulation executed by the parties, and determination by the Nuclear Regulatory Commission respecting the issues on seismic matters pending before the Commission.

The Rules of the Commission (10 CFR 2.730(e)) require that a motion presented in writing be disposed of by a written order.

The Atomic Safety and Licensing Board finds that good cause has not been presented by Applicant for clarification of the Memorandum and Order. While the Licensing Board agrees in general¹ with some factors recited by the Applicant regarding the historical basis for the Memorandum and Order, such indicated agreement is not to be construed that the Director of Nuclear Reactor Regulation is authorized to issue a full-term full-power license until the two recited conditions are fulfilled. Applicant's motion has assumed that priority need not be given to the recognition that seismic matters are pending before the Commission. Applicant states that the Licensing Board did not receive evidence to warrant a condition to await Commission action. Such assumption and statement defy administrative law reality.

The Licensing Board has clearly made a distinction between a testing license and a full-term license, the latter reflecting all pertinent considerations, which are likewise applicable to any operation. The testing license issued pursuant to 10 CFR 50.57(c) is no longer limited by the term in the regulation "... low-power testing (operation at not more than 1 percent of full power for the purpose of testing the facility)" The phrase following the provision for testing, i.e., "... and further operations short of full power operation" has been held to supersede the *expressio unius est exclusio alterius* aspect of the first portion of the regulation. The concluding direction for action by a Licensing Board is that if no party opposes a testing license, then the Licensing Board will authorize the Director of Nuclear Reactor Regulation to make appropriate findings "... and to issue a license for the requested operation." The Licensing Board has proceeded as directed, and no clarification is needed.

The Licensing Board emphasizes that no full-term operating license is authorized to be issued until the two identified conditions have been fulfilled.

No good cause being shown for clarification, the motion therefore should be denied.

Wherefore, it is ORDERED, in accordance with the Atomic Energy Act, as amended, and the Rules of Practice of the Commission, the motion by Applicant for clarification of the Memorandum and Order of June 12, 1975 is denied.

ATOMIC SAFETY AND
LICENSING BOARD

By Samuel W. Jensch, Chairman

Issued:
July 3, 1975
Germantown, Maryland

¹ See letter of June 25 to Applicant.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

LBP-75-39

ATOMIC SAFETY AND LICENSING BOARD

Hugh K. Clark, Chairman
J. Venn Leeds, Jr., Member

In the Matter of
CONSUMERS POWER COMPANY
(Midland Plant, Units 1 and 2)

Docket Nos. 50-329A
50-330A
July 18, 1975

Upon consideration of antitrust aspects of application for construction permits (in a proceeding where such permits had already been issued and which was subject to grandfather clause of subsection 105c(8) of the Atomic Energy Act), Licensing Board finds that the activities under the licenses will not create or maintain a situation inconsistent with the antitrust laws, as specified in subsection 105a of that Act.

Construction permits authorized to be continued as issued, without the imposition of any antitrust conditions.

ATOMIC ENERGY ACT: CRITERIA FOR ANTITRUST REVIEW

A "situation inconsistent with the antitrust laws" means *anticompetitive conduct*. In determining the existence of anticompetitive conduct, each of the following criteria should be considered: (a) conduct which is a violation of the antitrust laws enumerated in Section 105a of the Atomic Energy Act including conduct heretofore determined to be unfair by the FTC pursuant to Section 5 of the FTC Act, and (b) conduct, without necessarily having been previously considered unlawful, (1) which offends public policy as it has been established by statutes, the common law, or otherwise, or is within at least the penumbra of some common law, statutory, or other established concept of unfairness; (2) which is immoral, unethical, oppressive or unscrupulous; and (3) which causes substantial injury to consumers or competitors or other businessmen.

**ATOMIC ENERGY ACT: RELATIONSHIP BETWEEN LICENSED
ACTIVITIES AND SITUATION INCONSISTENT WITH ANTITRUST LAWS†**

Nexus exists between otherwise lawful activities under a proposed license and a situation inconsistent with the antitrust laws, if, and only if, the said

activities are misused so as to be a material element and a substantial factor in a scheme or conspiracy the purpose or effect of which is to cause the creation or maintenance of said situation.

ATOMIC ENERGY ACT: RELATIONSHIP BETWEEN LICENSED ACTIVITIES AND SITUATION INCONSISTENT WITH ANTITRUST LAWS

Activities under a license issued by the Commission pursuant to statute per se cannot create or maintain a situation inconsistent with the antitrust laws.

ATOMIC ENERGY ACT: RELATIONSHIP BETWEEN LICENSED ACTIVITIES AND SITUATION INCONSISTENT WITH ANTITRUST LAWS;

Activities under a license issued by the Commission pursuant to statute can create or maintain a situation inconsistent with the antitrust laws if, and only if, such activities constitute a material element and a substantial factor in a scheme or conspiracy the purpose or effect of which is to cause the creation or maintenance of a situation inconsistent with the antitrust laws.

ATOMIC ENERGY ACT: RELATIONSHIP BETWEEN LICENSED ACTIVITIES AND SITUATION INCONSISTENT WITH ANTITRUST LAWS!

Unilateral refusal to assist competitors per se is not anticompetitive conduct and is not a scheme or conspiracy the purpose or effect of which is to cause the creation or maintenance of a situation inconsistent with the antitrust laws.

ATOMIC ENERGY ACT: RELATIONSHIP BETWEEN LICENSED ACTIVITIES AND SITUATION INCONSISTENT WITH ANTITRUST LAWS.

Unilateral refusal to enter voluntarily into coordination agreements with competitors per se is not anticompetitive conduct and is not a scheme or conspiracy the purpose or effect of which is to cause the creation or maintenance of a situation inconsistent with the antitrust laws.

ATOMIC ENERGY ACT: RELATIONSHIP BETWEEN LICENSED ACTIVITIES AND SITUATION INCONSISTENT WITH ANTITRUST LAWS;

Unilateral refusal to wheel power for competitors per se is not anticompetitive conduct and is not a scheme or conspiracy the purpose or effect of which is to cause the creation or maintenance of a situation inconsistent with the antitrust laws.

ATOMIC ENERGY ACT: RELATIONSHIP BETWEEN LICENSED ACTIVITIES AND SITUATION INCONSISTENT WITH ANTITRUST LAWS

If an applicant for a license intends to construct and operate a nuclear power facility solely for the purpose of supplying power to its customers, unilateral

refusal to provide its competitors with access to such facilities is not anticompetitive conduct and is not a scheme or conspiracy the purpose or effect of which is to cause the creation or maintenance of a situation inconsistent with the antitrust laws.

**ATOMIC ENERGY ACT: SITUATION
INCONSISTENT WITH ANTITRUST LAWS**

The record in this proceeding does not disclose substantial evidence of any fact or facts within the relevant matters in controversy which constitute a scheme or conspiracy the purpose or effect of which is to cause the creation or maintenance of a situation inconsistent with the antitrust laws.

**ATOMIC ENERGY ACT: SITUATION
INCONSISTENT WITH ANTITRUST LAWS**

Applicant's activities under the Midland licenses are not a material element and significant factor in any actual or alleged scheme or conspiracy the purpose or effect of which is to cause the maintenance of a situation inconsistent with the antitrust laws.

**ATOMIC ENERGY ACT: RELATIONSHIP BETWEEN LICENSED
ACTIVITIES AND SITUATION INCONSISTENT WITH ANTITRUST LAWS'**

No nexus exists between Applicant's activities under the Midland licenses and any actual or alleged situation inconsistent with the antitrust laws.

APPEARANCES

Wm. Warfield Ross, Esq., Keith S. Watson, Esq., Thomas W. Brunner, Esq., Gerald B. Wetlaufer, Esq., Toni K. Golden, Esq., (Wald, Harkrader & Ross), and Harold P. Graves, Esq., James B. Falahee, Esq., and Wayne B. Kirkby, Esq., of Counsel, for the Applicant, Consumers Power Company.

Thomas E. Kauper, Esq., Assistant Attorney General, Donald I. Baker, Esq., Deputy Assistant Attorney General, Joseph J. Saunders, Esq., Milton J. Grossman, Esq.,

Wallace E. Brand, Esq., David A. Leckie, Esq., Mark Levin, Esq., and C. Forrest Bannan, Esq., for the United States Department of Justice.

George Spiegel, Esq., James F. Fairman, Jr., Esq., Robert A. Jablon, Esq., and James Carl Pollock, Esq. (Spiegel & McDiarmid), for the Intervenor.

Joseph Rutberg, Esq., Benjamin H. Vogler, Esq., Robert J. Verdisco, Esq., and Andrew F. Popper, Esq., for the Regulatory Staff of the Nuclear Regulatory Commission.

INITIAL DECISION (ANTITRUST)

This proceeding involves the antitrust aspects of the application of Consumers Power Company for construction permits authorizing the construction of two pressurized-water nuclear power reactors, designated as the Midland Plant, Units 1 and 2, to be built on the Applicant's site adjacent to the Tittabawasee River in Midland County, Michigan. (Consumers Power Company application for licenses for Midland Units—Docket Nos. 50-329, 50-330).

The proceeding is being held pursuant to Section 105 of the Atomic Energy Act as amended on December 10, 1970 [42 USC 2135]. Sec. 105 is reproduced for convenient reference in Appendix A. This statutory provision will hereinafter be referred to as "Section 105 of the Act" or more briefly as "Sec. 105". Appendix A also includes relevant portions of the Federal Power Act and of the antitrust laws.

The application for license having been on file at the time of enactment of Section 105 of the Act, this proceeding falls under the grandfather clause [Sec. 105c(8)] and, hence, has not delayed the issuance of construction permits. Such permits issued on December 15, 1972, were made subject to the outcome of this proceeding.¹

The Attorney General of the United States, in a letter dated June 28, 1971 addressed to the Associate General Counsel of the Commission, presented his recommendation that a hearing be held:

For the foregoing reasons, we believe that granting the license sought herein may *maintain* a situation inconsistent with the antitrust laws. Accordingly, we recommend that a hearing be held pursuant to Section 105 of the Atomic Energy Act to provide a factual basis upon which the Commission may appropriately determine these questions. (Emphasis added).

¹As required by the Atomic Energy Act, 42 USC §§ 2131-33, Consumers Power Company applied to the former U. S. Atomic Energy Commission for a construction permit on January 13, 1969. Thereafter, the Energy Reorganization Act of 1974 [Act of October 11, 1974, P. L. 93-438, 88 Stat. 1233, 42 USCA §5801] abolished the A. E. C., established the Nuclear Regulatory Commission, and transferred the A. E. C.'s licensing functions under the Atomic Energy Act (including those performed by the Atomic Safety and Licensing Boards and the Atomic Safety and Licensing Appeal Boards) to the new Commission. For convenience, we use the term "Commission" in this opinion to refer to both the A. E. C. and the N. R. C.

On the 11th of April, 1972, the Commission issued a "Notice of Antitrust Hearing on Application for Construction Permits." This Notice was published in the *Federal Register* [37 FR 7726] on the 19th of April, 1972. That Notice contained the following instructions to the Board established in the Notice:

The issue to be considered at the hearing is whether the activities under the permits in question would create or maintain a situation inconsistent with the antitrust laws as specified in Subsection 105a of the Act. In its initial decision, *the Board will decide those matters relevant to that issue which are in controversy among the parties* and make its findings on the issue.

A cardinal prehearing objective will be to establish, on as timely a basis as possible, a clear and particularized identification of those matters related to the issue in this proceeding which are in controversy. As a first step in this prehearing process, the Board shall obtain from the parties a detailed specification of the matters which they seek to have considered in the ensuing hearing. (Emphasis added).

At the first Prehearing Conference held in Washington, D. C. on the 12th of July 1972, the first order of business was the Petitions to Intervene filed by a collection of municipalities and cooperatives² operating and located in the lower peninsula of Michigan (the Petitions to Intervene were filed on September 30, 1971 and October 4, 1971). After reviewing Petitions to Intervene and the written Answers thereto filed, and hearing oral argument, the group collectively were admitted as one set of joint intervenors (hereinafter called "Intervenors") [Admission as Intervenors at Tr. 33-35]. In addition to the Intervenors, the other parties to the proceeding are the Department of Justice (hereinafter called "Justice"), the Regulatory Staff of the Commission (hereinafter called "Staff"), and Consumers Power Company, the Applicant for the Construction Permits (hereinafter called "Applicant").

As directed by the Commission and as a result of the First Prehearing Conference, the Board issued "Prehearing Conference Order of the Atomic Safety and Licensing Board" on the 7th day of August, 1972 stating the "Relevant Matters in Controversy":

The basic thrust of Justice's case is that (a) applicant has the power to grant or deny access to coordination; (b) applicant has used this power in an anticompetitive fashion against the smaller utility systems; (c) applicant's said use of its power has brought into existence a situation inconsistent with the antitrust laws, which situation would be maintained by activities under the licenses that applicant seeks. Neither the intervening parties nor the Atomic Energy Commission's regulatory staff enlarge this scope. Hence, the scope of the relevant matters in controversy is as herein outlined.

² Wolverine Electric Cooperative, Inc., Northern Michigan Electric Cooperative, Inc., and the cities of Traverse City, Grand Haven, Holland, Zeeland, Coldwater, and the Michigan Municipal Electric Association.

Essentially, this initial opinion is a determination of the broad issue based on conclusions as to the "Relevant Matters in Controversy" as stated in the Board's Order of August 7, 1972. Yet the Board recognizes a wider duty. This proceeding is a case of first impression. Thus, the Board, in addition to the holdings on the "Relevant Matters in Controversy", will address itself to alternate holdings. Some matters considered to be beyond the scope of "Relevant Matters in Controversy" will also receive attention. At the least, any appellate body will have the benefit of the Board's thinking on the subjects discussed.

During the hearing, many terms of art of the electric utility industry were used. The meanings of these terms were not uniform. Thus, the Board defines the terms and uses these definitions consistently throughout this opinion.

1. In the electric industry, the terms "power" and "electric energy" are used interchangeably where accurate measurements are not involved. Where accurate measurements are involved, "power" means the capacity to supply electricity and "energy" means the quantity of electricity supplied.

2. The watt is the unit of power. (Large units of power are: Kilowatt (Kw) = 1000 watts, megawatt (Mw) = 1,000,000 watts).

3. The kilowatt hour (Kwhr) is the unit of energy. The megawatt hour (Mwhr) = 1000 Kwhr.

4. "Generation" means the production of electric energy or power by means of a hydro, fossil fueled or nuclear facility.

5. "Utility" means an organization, a principal business of which is performing one or more of the following functions; e.g., generation, transportation, and sale of electric power which power is for the use of others.

6. Retail power is power sold to ultimate consumers.

7. Distribution system is a utility's facility for the transportation of retail power.

8. Wholesale power is power sold to customers for resale.

9. Bulk power is power supplied by a utility either (1) to its own distribution system, or (2) to a wholesale customer.

10. Transmission system is a utility's facility for the transportation of bulk power.

11. Wheeling is the transportation of wholesale power between the facilities of two utilities over the transmission system of a third utility.

12. "Mutual Assistance" means the interchange of beneficial services between cooperating business concerns in the same industry through an agreement which confers on each party a benefit not attainable by such concerns operating independently.

13. A "Mutual Assistance Agreement" is an agreement which controls the interchange of beneficial services between cooperating concerns.

14. "Coordination" means mutual assistance in the electric utility industry.

15. Thus, "Coordination" means the interchange of beneficial services between cooperating electric utilities through an agreement which confers on

each party a net benefit not attainable by such electric utilities operating independently.

16. A "Coordination Agreement" is a mutual assistance agreement in the electric industry which confers on each party a net benefit.

17. "Emergency Energy or Power" means energy or power needed, supplied, or received in an emergency situation, i.e., an unscheduled outage.

18. "Maintenance energy or power" means energy or power supplied or received to replace needed energy or power which is unavailable because a generation unit or transmission unit is out for scheduled maintenance.

19. "Economy Energy or Power" means energy or power supplied to or received by a utility from another utility which power costs less than the receiving utility's current production cost.

20. "Dump Energy or Power" is energy or power available from a utility and which energy or power must be produced anyway. (An example is a hydroelectric plant which must be run to monitor river flow or lake level and the production of energy or power is in excess of needs of the utility owning the plant.)

21. "Diversity" means the difference in electric loads on two different utilities resulting from noncoincident maximum load demands of two different utilities.

22. "Seasonal Diversity" means diversity caused by differences in load demand during different seasons of the year.

23. "Time Diversity" means diversity caused by differences in load demand during the day. (Usually occurs between two time zones and if so, is called "time zone diversity".)

24. "Reserves" means extra generating capacity maintained to generate power in the event of unexpected demand for power or loss of a generating facility or unit or scheduled outage of a generating facility or unit.

25. "Reserve Sharing" means the sharing of reserves by two or more utilities.

26. "Unified control or economic dispatch of generation or transmission facilities" means the control of the generation or transmission facilities of each of two or more utilities by one central control authority.

27. "Operational Coordination" means the interchange or sharing of one or more of the following: Reserve sharing, emergency energy or power, maintenance energy or power, economy energy or power, dump energy or power, seasonal or time diversity energy or power, unified control of generation transmission facilities.

28. "Developmental Coordination" means the joint planning of facilities. (It may be carried out by staggered construction of facilities or by construction of a facility as a joint venture or by a combination of both.)

29. "Firm power" means highly reliable power (obtained by adequate reserves and suitable transmission alternatives) such that service interruptions, even of short duration, seldom occur. While not capable of exact definition, electric service with interruptions averaging a total of one day occurring over a

period of seven or more years is usually considered to be firm power. Most industrial, commercial and residential customers buy firm power.

30. Interruptable power has less reliability than firm power (usually due to inadequate reserves) and is bought at a reduced price by industrial customers whose operations will not be seriously damaged by interruption of service.

31. "Unit Power" means power which is available to entities entitled to receive that power only when the designated unit is operating. Thus, unit power is a species of interruptable power.

A brief summary of the electric industry is used to introduce the subject-matter herein discussed. Electric energy in commercial quantities is produced by a stream of a fluid, either water or steam or a gas, causing rotation of a turbine which is mechanically coupled to an electric generator. An electric generator is a device which converts mechanical energy into electric energy. Thus it performs the reverse function of an electric motor which latter device converts electric energy into mechanical energy. If the fluid is water, then the generator is called a hydro or hydroelectric unit in the industry. If the fluid is steam resulting from the combustion of coal, oil or natural gas, the unit is called a fossil or fossil fired unit. If the fluid is steam resulting from nuclear fission, the plant is called a nuclear plant. If the fluid is the gases resulting from the combustion of gas or oil, the unit is called a gas turbine generator. The commercial electric energy produced in the United States is universally an alternating current of a frequency of 60 hertz at some constant voltage. The user of the electric energy cannot tell the source of the energy used to generate the electricity.

Significant differences exist in the cost of producing power, and the availability of various fuels is subject to change.

Most customers of electric energy need or desire firm power. In order to sell firm power, a utility must have reserve generating capacity to cope with (1) scheduled facility shutdown for maintenance, (2) unscheduled facility shutdown due to various causes, and (3) variations in load on the system.

For a small utility, generating and selling firm power in isolation from other utilities, a rough rule of thumb requires that reserve generating capacity equal the capacity of the utility's largest generating unit. (Actually, the rule states that the reserve capacity should equal the largest load on a single generator. The assumptions are that, (1) only one generator is likely to have an emergency shutdown, and (2) the largest loaded unit may be the unit that is lost. Because the largest unit is often the most economical unit to produce power and thus fully loaded, the rule is often stated that a reserve equal to the rating of the largest unit must be kept in reserve. The criterion is often called the "largest unit" criterion.)

For a large utility having many generating units and operating in isolation from other utilities, the reserve generating capacity usually exceeds the capacity of such utility's largest unit and is expressed as a percentage of the greatest

amount of firm power sold in any specified short (often 15 minutes) interval in a year. (In other words, a percentage of the annual peak requirements.)

Assuming the largest unit criterion, and all generating units of approximately the same size, an increase in the number of generating units results in a decrease in the percentage reserve capacity requirement. At some point, the probability that two units are down simultaneously may become large enough to require that the reserve capacity be equal to the capacity of the two largest units. When the utility reaches this size, the percentage reserve may actually increase when the next unit is added.

Much more sophisticated methods of determining reserves are currently in use in the industry. The process of calculating the reserves by these methods is quite complicated. These methods attempt to determine the probability that a failure will occur and the reserves will not be adequate. The probability may actually be expressed in familiar units. For example, failures may be expected to occur such that over a 7 year period interruptions will average a total of one day.

Reserve requirements can be decreased if a way can be found to increase the number of units. Of course, as the load grows, the number of units increases. Yet another way is to join with a neighboring utility so that the number of units jumps as does the load. The advantages of such an arrangement were discussed in *Gainesville Utilities v. Florida Power Corp.* [402 US 515, 29 L. Ed. 2d 74, 91 S. Ct. 1592]. [1971] at page 519, footnote 3. As shown below, the *decrease in reserves* if allocated to both utilities can result in each system being able to sell more power or to have a more reliable system because each system has to carry less reserves. If something other than the *decrease in reserves* is allocated, one system *may* have to carry increased reserves. But if any *decrease in reserves* is allocated, then each utility benefits.

Reserves are of two types. The Supreme Court in *Gainesville*, supra at page 518, note 2, describes these:

2. The industry distinguishes between various types of "reserve" requirements. Since time is required to start up equipment that is not operating, a certain amount of equipment must be maintained in such a state that it can begin generating power immediately. The industry calls these instantaneous or "spinning" reserves, and they must be available to meet load variations and breakdowns of equipment as they occur. A utility must always maintain "spinning" reserves equal to the size of the largest generator currently in service producing power, in order to protect against a breakdown of that unit. As "spinning" reserves are called upon a utility must start up more equipment in order to maintain "spinning" reserves at an adequate level. These reserves are called "quick-start" or "ready" reserves and must be available on short notice—usually 10 minutes or less. Both spinning and quick-start reserves are collectively referred to as "operating" reserves, in contrast to "installed" reserves. Installed reserves refers to the remaining generating capacity of a utility, those generators that are not ready to be operated, or in operation. Accordingly, the expense associated

with "reserve" requirements includes both capital expense—building the necessary "installed" reserve generating capacity—and operating expense—running the necessary "spinning" reserves and maintaining the readiness of "quick-start" reserves. In general, this opinion will not differentiate between the different reserve requirements.

The cost of generating power has two components: (1) the demand cost, primarily based on cost of capital invested in facilities, (demand cost continues whether or not the facility is operated) and (2) energy cost which is the cost of operating the facility and which includes primarily labor, overhead, maintenance and fuel cost. Energy cost essentially is an operational cost. Fuel is the principal energy cost for fossil facilities, when the facilities operate most of the time at reasonably full load. The demand cost per Kw of installed capacity of a particular type of generating facility tends to decrease as the size of the facility increases. To a lesser extent, fuel consumption per Kwhr of energy produced tends to decrease as the size of the facility increases. Such decrease in both demand cost and energy cost is known as the economy of size or scale. However, different types of facilities are not directly comparable as to demand cost or energy cost. Nuclear generating facilities have high demand (capital) cost and low energy (fuel) cost compared with fossil fuel generating facilities.

The amount of electrical energy taken by firm power customers varies from day to day and from time to time within each day. These variations cause peaks and valleys in the amount of electrical generation needed to supply the demand. The quantity of energy required to meet the demand during the valleys in demand is called the base load. Base load generating units are units that are normally operated continually (except for maintenance and accidents). Peak load units are units that are operated only a part of the time and are usually comparatively small units. Increased fuel cost is more than made up by decrease in demand cost during periods of idleness. Thus, economy of size applies primarily to base load generating units which operate, as nearly as possible, continually.

A large utility, with many generating units, may employ units intermediate in size between base load units and peaking units. To some extent, economy of size may apply to the intermediate units. For purposes of this opinion, we shall not again mention intermediate units, since they add nothing but complication to an already complicated subject.

In addition to base load units and peaking units, a utility must have reserve units which operate only a small part of the time. Reserve units are an economic waste in two ways: (1) the depreciation and maintenance cost of such units must be added into the selling price of electrical energy, and (2) if reserve units could be used to generate energy, the same capital investment would produce more electrical energy. (Moreover, human energy employed in building reserve units, if not so employed, could be utilized to produce other desirable things.) In other words, the greater the reserve generating capacity, the greater the economic loss.

The concept of using the most efficient units having the lowest overall power production costs is called economic dispatch in the industry. Essentially, economic dispatch means that for the loads to be supplied and for the location of those loads, units are selected so that cost of producing the power delivered to the loads at the various locations is minimized. This allocation of power production may mean that some units are fully loaded while other units are not. The reasons for differences in loading are differences in thermal efficiency of the units (the amount of energy produced per unit cost of fuel), and the incremental cost of transmission of the energy to the load (usually losses in power caused by the ohmic resistance of the lines). In addition, energy may be available from other utilities which costs less than the energy produced by the utility's own plants (economy energy). In that case, such energy may be procured as part of operational coordination. A utility will at all times attempt to minimize cost of power production.

The calculation of the best (i.e., least cost) configuration of plants is quite complicated. Older methods of economic dispatch used mathematical tables, but more modern methods utilize digital computers to make the calculations.

From the above, the conclusion can be reached that some units are loaded close to the rating of the unit if the alternative is using another unit which would result in higher costs.

At this point, these concepts should be clear:

(1) A system will have a variety of generating facilities of different size, and producing a unit of electrical energy at a different cost.

(2) Large facilities are expected to have lower demand costs and to have lower energy costs.

(3) A system with a few large generating units will require more reserves than the same system with a greater number of smaller generating units.

(4) A system will *at a minimum* keep spinning reserves equal to the largest load on a single generating facility or unit.

(5) A system should supply the loads from the most efficient generating units on the system so that the cost of producing the electrical energy is minimized.

(6) Supplying power from the large generating units to achieve lower energy costs is in conflict with achieving a reliable system with adequate reserves.

If a method can be found so that large efficient units can be utilized without increasing the reserve requirements significantly, then the cost of producing power can be decreased. Reserve sharing between two utilities is a way to accomplish this desirable result. Once two utilities have agreed to mutual assistance in reserve sharing, other opportunities for increasing reliability of firm power and economy in production of firm power by mutual assistance become apparent. In each case, the number and variety of opportunities may vary with the particular circumstances.

One opportunity is to have both systems controlled as one larger system so that the most efficient units of the combined system are used (called joint economic dispatch). Another is to plan a construction program of the combined systems jointly and construct plants in time sequence. Such plants could be larger than justified by the growth of either utility. The power from such plants is controlled jointly utilizing joint economic dispatch. Another is scheduling maintenance outages jointly so reserves and costs of power production are optimized.

As an electrical utility, the Applicant is in the business of (1) acquiring firm power by operation of its own facilities (self generation) supplemented by purchase of firm power when needed and further supplemented by the assistance provided by coordination agreements, and (2) selling such firm power at both wholesale and retail. In the areas of the southern peninsula of Michigan in which Applicant is franchised, Applicant is by far the largest utility whether measured by generation capacity or by sales of firm power, or any other reasonable yardstick. Impressed with these facts, the Parties have attempted to define the relevant market in terms of electric power as a relevant *product*. Such attempts *ignore* the material issues in controversy which are all concerned with *coordination*.

RELEVANT MATTERS IN CONTROVERSY

During the First Prehearing Conference, Counsel for Justice was asked to clarify the areas to be explored in the evidentiary hearing and he did so [Tr. 46]. The Chairman of the Atomic Safety and Licensing Board (hereinafter "Chairman"³) asked if Justice contemplated introducing any evidence with respect to the Midland units *creating* a situation inconsistent with the antitrust laws. Justice answered "No" [Tr. 46]. The Chairman then asked the Counsel for the Regulatory Staff the same question and again the answer was "No" [Tr. 46]. Last, the Chairman asked the Counsel for the Intervenors the same question and the reply was "I am in agreement with Counsel's statement." [Tr. 46] The Chairman then checked the replies to which all Parties adverse to Applicant agreed, that no evidence would be introduced with respect to *creating* a situation inconsistent with the antitrust laws [Tr. 46-47]. The Board continued to explore possible issues in controversy:

³Subsequent to closing of the record in this proceeding, Jerome Garfinkel, Esq., was killed in an automobile accident. Reference to "Chairman", unless otherwise noted, is to Chairman Garfinkel. This decision is rendered by the two remaining Board Members as stipulated by the Parties to this proceeding (Justice, September 13, 1974; Staff and Intervenors [joint letter], September 13, 1974; Applicant, September 13, 1974), and by Order of the Chairman of the Atomic Safety and Licensing Board Panel (September 20, 1974).

CHAIRMAN GARFINKEL: In response then are you saying the activity that is contrary to the antitrust laws purposes is the refusal to permit these municipals to participate in the coordination?

MR. BRAND: [Justice] Yes, your Honor, of various types. One kind of coordination is such reserve sharing. Another kind of coordination is what we call coordinative development. . . . One way is to engage in joint ventures. . . . Another way is the sale of unit power. . . . A third way is to have staggered development which I have just described. . . . The net effect is we take the full advantage of the new technology, but we can't do that unless we have access to coordination through high voltage transmission. [Tr. 55-56].

* * *

MR. CLARK: [Board] Yes, but what is the situation: That is what I am trying to find out.

MR. BRAND: [Justice] Ah, yes. The situation, as we have mentioned, more briefly is maintenance of the power to grant or deny access to coordination. In other words, so far as these smaller systems are concerned, the Applicant has the power to grant or deny access to coordination.

MR. CLARK: Has the Applicant used that power?

MR. BRAND: Yes, your Honor, it has used it in an anticompetitive fashion against the smaller systems.

MR. CLARK: And you intend to introduce evidence to that effect?

MR. BRAND: Yes, your Honor.

MR. CLARK: All right, that is one thing that you wish us to explore. You are going to introduce evidence that the Applicant has used its power to deny coordination activities with the smaller companies. [Tr. 59].

* * *

MR. CLARK: All right. Now what else do you suspect the Applicant of having done which is in violation of the antitrust laws?

MR. BRAND: I think that forms the basic thrust of our case.

MR. CLARK: That is the thrust of your case?

MR. BRAND: Yes, your Honor. Now there will be evidence to show what has created the situation which the Applicant now uses to maintain its position. [Tr. 60].

* * *

CHAIRMAN GARFINKEL: It is not a question of relief. The question is the maintaining of a situation that is bothering us, and the question comes out we are interested in that situation. In your brief, you talked about the situation prior to the operation of the plant. [Tr. 65].

* * *

DR. LEEDS: [Board] So it would be things that have happened in the past that would tend to maintain, and the injuries that were created in the past?

MR. BRAND: Your Honor, the situation was created in the past. The installation of the Midland unit would maintain the situation, because by its very installation Applicant demonstrates its own power to use large units and maintain its cost advantage and prevent the proposed intervenors from doing so—excuse me—the intervenors from doing so. [Tr. 65-66].

CHAIRMAN GARFINKEL: . . . Do you have any comments, any additions you want to make?

MR. RUTBERG: [Staff] No, Mr. Chairman.

CHAIRMAN GARFINKEL: Mr. Fairman, do you want to make any additional statements?

MR. FAIRMAN: [Intervenors] I think perhaps at the close the question from the Board did satisfy my concern. I think that the history is important because whether it is proper or improper it shows a pattern of practice which did not spring up over night and was not devised with the advent of the Midland plant, but is a continuation of the kind of policy determinations that I, based on my recent experience, see no evidence of any modification. . . . [Tr. 66-67].

Subsequent to the First Prehearing Conference, the Board issued "Prehearing Conference Order of the Atomic Safety and Licensing Board" on the 7th of August 1972 stating the "Relevant Matters in Controversy":

The basic thrust of Justice's case is that (a) applicant has the power to grant or deny access to coordination; (b) applicant has used this power in an anticompetitive fashion against the smaller utility systems; (c) applicant's said use of its power has brought into existence a situation inconsistent with the antitrust laws, which situation would be maintained by activities under the licenses that applicant seeks. Neither the intervening parties nor the Atomic Energy Commission's regulatory staff enlarge this scope. Hence, the scope of the relevant matters in controversy is as herein outlined.

No party to these proceedings objected to or requested revision to this statement of Relevant Matters in Controversy at any time except Intervenor's attempt to broaden them to include "create", discussed hereinafter.

For example, counsel for Justice on January 15, 1974 [Tr. 4011-4012], Staff in its Proposed Findings of Fact and Conclusion of Law page 4, October 8, 1974, Intervenor in "Answer of Intervenor to Applicant's Objection to Document Request and Motion for Protective Order", page 5, November 1, 1972, and Applicant in "Applicant, Objections to Document Requests and Motion for Protective Order", page 12, October 26, 1972, all quoted with no adverse comment the issues as defined by the Board in the August 7, 1972 Prehearing Conference Order.

In the letter from counsel for intervenors dated March 5, 1974, urging that "maintain" be changed to "maintain or create", on page 3, counsel states "Intervenor do not question the statement of issues in the Board's prehearing conference order, although we note their extreme generality."

Proceedings under Section 105 of the Atomic Energy Act are not in the nature of a full antitrust suit by Justice in a Federal court. Except in grandfather clause cases, Section 105 proceedings are intended to be a part of the "construction permit" phase of nuclear power plant licensing, to be held concurrently with the "health and safety" and "environmental" hearings, and to be completed within the same interval as required by those hearings.

Determining the relevant matters in controversy is fundamental to the hearing process. The Board was directed by the Commission to "decide those matters relevant to that issue which are in controversy among the Parties". Without determining the relevant matters in controversy, the Board could not decide the issue in this case and limit the scope of discovery and testimony. In the absence of a limitation on the scope of discovery and testimony, discovery would become a fishing expedition, the proceedings would be filled with irrelevant testimony and evidence, and the proceedings would be prolonged intolerably, all of which would be contrary to administrative procedure, case law and the purpose and intent of Section 105 of the Atomic Energy Act.

The Board has consistently reminded the parties when the opportunity occurred that this proceeding was concerned only with the matters in controversy as defined in the Board's Order of August 7, 1972. For example, the relevant matters in controversy were read on 27th of October 1972 in the opening statement of the Chairman at the beginning of the hearing [Tr. 824] and again in its Order of the 28th of November 1972, "Order Ruling on the Applicants' Objections to Document Requests, the Department of Justice's Motion to Compel the Production of Four Categories of Documents, and the Applicant's Motion for Protective Orders", the Board stated:

Applicant next objects to requests for documents relating to Applicant's political activities (Request 3(e)). The Department argues that under the guise of appropriate political activities, the Applicant may have practiced a mere sham to engage in forbidden activities. Whether or not Applicant has engaged in unfair practices through political maneuvers is a matter not relevant to the issues in controversy; more particularly, issues pertaining to

coordination. Under the Commission's Notice of Antitrust Hearing dated April 11, 1972, this Board may not address itself to matters not in controversy. Consequently, we agree with Applicant's arguments concerning the invalidity of the request. The objection is sustained.

In another instance, the Chairman was questioning a witness of Justice:

CHAIRMAN GARFINKEL: The question is coordination, now. That's the issue in this case.

THE WITNESS: Well, the question is coordination, of course. . . . get as much evidence as I can, because I know through long experience in this industry that an isolated act, if one looks at a particular act and says, does this act in and of itself violate the antitrust laws, and someone shows me that there's another company which engages in precisely the same act, I can't answer that question.

On the other hand, this act, in the context of a pattern of actions, has quite a different meaning and implication than if it were simply viewed as an isolated event. As a consequence, then, the answer here was twelve years, and suppose in these twelve years a particular company did not acquire one further.

CHAIRMAN GARFINKEL: . . . but there is no allegation in this proceeding that we are challenging the acquisition program of the Applicant. . . . but as you read the statement of issues, we are here to show whether or not—whether the Applicant has the power to prevent or influence coordination, and whether they used that power in an anticompetitive fashion, the power of coordination in an anticompetitive fashion. [Tr. 3986-3987].

The Counsel for Justice clearly understood the issue in the proceeding because in argument over the admission of documents during the Justice's direct case stated:

MR. BRAND: [Justice] . . . The issues set out in the Board's order are the existence of a power and the use of the power. We fully agree, and we do not intend any conduct to be shown prior to 1960 concerning the use of the power. The only use that we propose to be made of evidence of what can be described as conduct prior to 1960 is only the conduct as it affects the later market structure.

In other words, when we are concerned with the existence of the power to grant or deny access to coordination, then we are concerned with how did the power come about, because it is useful to understand how the power came about to determine whether or not that power actually exists. . . . [Tr. 4011-12]. [See also Tr. 5920, 5923 and 6279].

RELEVANT MARKET

In view of the scope of the relevant matters in controversy, which were accepted by all Parties, *the relevant market* is not a product market but *is a service market* and that market is *coordination services*. As witness Gutman testified: "you're dealing with a whole bundle of services." [Tr. 4693].

From the entire record, it is clear that the "smaller utility systems" in issue "(b)" refers to the smaller utility systems in the area of the lower peninsula where Applicant is now franchised to sell power and that area into which Applicant could reasonably and feasibly extend service. Accordingly, the relevant geographic market is all of the lower peninsula of Michigan except the eastern section served by the Detroit Edison Company and the southwest section served by the Indiana and Michigan Electric Company and the Michigan Gas and Electric Company, both subsidiaries of American Electric Power Company. [Exhibits DJ 18, 19, 20A which are maps of the area].

BURDEN OF PROOF

In litigation, the burden of proof rests with the party accusing another of unlawful behavior. In the present proceedings, Justice, with the acquiescence of Staff and Intervenor, proposes an order that the activities under the licenses sought by Applicant would maintain a situation inconsistent with the antitrust laws. Justice based this proposal on Applicant's behavior with regard to coordination. The Board's Order of August 7, 1972 merely stated the relevant matters in controversy in terse language.

In this country, persons or entities accused of criminal or tortious conduct do not have the burden of proving a negative; i.e., that no such misconduct exists. The Commission's Rules of Practice 10 CFR §2.732 which follows §556(d) of the Administrative Procedure Act, provides: "Unless otherwise ordered by the presiding officer, the Applicant or the proponent of an order has the burden of proof." The presiding officer has not ruled otherwise in this proceeding. Therefore, in accordance with the usual principles of law and the Commission's Rules of Practice, the burden of proof rests upon Justice, Staff and Intervenors.

BASIC LEGAL CONCEPTS

The Board has a duty and obligation to explain its reasoning [Rule 2.760c Rules of Practice]. Beyond the normal requirement in any case, the Board in a case of first impression expects that its decision will be widely read. This part of the opinion collects in one place several legal concepts developed as a result of independent Board research on the legal basis for Board actions. Not all such

concepts are collected here but only those on especially important aspects of the case. Others are contained throughout the text of the decision.

In seeking the meaning of a statute containing language which has never been construed and the meaning of which is not clear, it is not unusual to review the legislative history. In the instant case, the legislative history contains various expressions of the interest of witnesses and lawmakers each having a point of view different from the other. Sec. 105 as amended by Public Law 91-560 represented a compromise acceptable to the Joint Committee on Atomic Energy and to the Congress. In the Legislative History of PL 91-560, the matter is expressed at page 7130 as follows:

Of course, the committee is intensely aware that around the subject of prelicensing review and the provisions of subsection 105c, hover opinions and emotions ranging from one extreme to the other pole. At one extremity is the view that no prelicensing antitrust review is either necessary or advisable and that the first two subsections of section 105 concerned with violation of the antitrust laws and the information which the Commission is obliged to report to the Attorney General are wholly adequate to deal with antitrust considerations. Additionally, there are those who point out that it is unreasonable and unwise to inflict on the construction or operation of nuclear power plants and the AEC licensing process any antitrust review mechanism that is not required in connection with other types of generating facilities. At the opposite pole is the view that the licensing process should be used not only to nip in the bud any incipient antitrust situation but also to further such competitive postures, outside of the ambit of the provisions and established policies of the antitrust laws, as the Commission might consider beneficial to the free enterprise system. The Joint Committee does not favor, and the bill does not satisfy, either extreme view.

Senator Pastore told the Senate:

The committee and its staff spent many, many hours on this [antitrust] aspect of the bill, and I can assure the Senate that we consider very carefully the considerable testimony, comments and opinions we received from interested agencies, associations, companies and individuals, *including representatives from the Antitrust Division of the Justice Department*, from privately owned utilities, and from public and cooperative power interests. The end product, as delineated in H. R. 18679, is a carefully perfected compromise by the committee itself; I want to emphasize that *it does not represent the position, the preference, or the input of any of the special pleaders inside or outside of the Government*. In the committee's judgment, revised subsection 105c, which the committee carefully put together to the satisfaction of all its members, constitutes a balanced, moderate framework for a reasonable licensing review procedure. [116 Cong. Rec. S. 39619 (December 2, 1970) (Emphasis added).]

While the legislative history makes clear the general intent of the Joint Committee and of Congress, many hours of study of history and hearings which formed a basis for PL 91-560 were sterile in the sense of not providing guidance as to the appropriate construction of the specific language of the Act. Of necessity, such guidance has been sought elsewhere.

SITUATION INCONSISTENT WITH THE ANTITRUST LAWS

The first legal concept which needs clarification is the term "situation inconsistent with the antitrust laws". The antitrust laws have for their purpose the promotion and preservation of competition among business entities engaged in interstate or foreign commerce. In other words, the antitrust laws recognize the right of business entities to compete and the principle that such entities must be prepared to encounter competition by others. In considering alleged violations of the Sherman Act, it is competition which must be preserved and not competitors. The elimination of one or more competitors by competitive conduct is not inconsistent with the Sherman Act.

In *U. S. v. Aluminum Co. of America*, 148 F. 2d 416, 429 (2nd Cir. 1945), Judge Hand stated:

It does not follow because "Alcoa" had such a monopoly, that it "monopolized" the ingot market: it may not have achieved monopoly; *monopoly may have been thrust upon it.*

* * *

Nevertheless, it is unquestionably true that from the very outset the courts have at least kept in reserve the possibility that the origin of a monopoly may be critical in determining its legality; and for this they had warrant in some of the congressional debates which accompanied the passage of the Act. In *Re Greene*, C. C. Ohio, 52 F. 104, 116, 117; *United States v. Trans-Missouri Freight Association*, 8 Cir., 58 F. 58, 82, 24 L. R. A. 73. This notion has usually been expressed by saying that size does not determine guilt; that there must be some "exclusion" of competitors; that the growth must be something else than "natural" or "normal"; that there must be a "wrongful intent", or some other specific intent; or that some "unduly" coercive means must be used. At times there has been emphasis upon the use of the active verb, "monopolize", as the judge noted in the case at bar. *United States v. Standard Oil Co.*, C. C. Mo., 173 F. 177, 196; *United States v. Whiting*, D. C., 212 F. 466, 478; *Patterson v. United States*, 6 Cir., 222 F. 599, 619; *National Biscuit Co. v. Federal Trade Commission*, 2 Cir., 299 F. 733, 738. What engendered these compunctions is reasonably plain; persons may unwittingly find themselves in possession of a monopoly, automatically so to say; that is, without having intended either to put an end to existing competition, or to prevent competition from arising when none

had existed; they may become monopolists by force of accident. Since the Act makes "monopolizing" a crime, as well as a civil wrong, it would be not only unfair, but presumably contrary to the intent of Congress, to include such instances. A market may, for example, be so limited that it is impossible to produce at all and meet the cost of production except by a plant large enough to supply the whole demand. Or there may be changes in taste or in cost which drive out all but one purveyor. *A single producer may be the survivor out of a group of active competitors, merely by virtue of his superior skill, foresight and industry.* In such cases a strong argument can be made that, although the result may expose the public to the evils of monopoly, the Act does not mean to condemn the resultant of those very forces which it is its prime object to foster: *finis opus coronat. The successful competitor, having been urged to compete, must not be turned upon when he wins.* The most extreme expression of this view is in *United States v. United States Steel Corporation*, 251 US 417, 40 S. Ct. 293, 64 L. Ed. 343, 8 ALR 1121, from which we quote in the margin; and which Sanford, J., in part repeated in *United States v. International Harvester Corporation*, 274 US 693, 708, 47 S. Ct. 748, 71 L. Ed. 1302 (Emphasis added).⁴

(See also *Cole v. Hughes Tool Co.*, 215 F. 2d 924 (10 Cir. 1954), cert. den., *Ford v. Hughes Tool Co.*, 348 US 927, 99 L. Ed. 726, 75 S. Ct. 339 (1955)).

An explanation of the aim of Section 7 of the Clayton Act is suggested in a footnote in *Brown Shoe Co. v. U. S.*, 370 US 294, 72, 82 S. Ct. 1502, 8 L. Ed. 2d 510 (1962), and in the main decision in *U. S. v. Philadelphia National Bank*, 374 US 321, 370, 10 L. Ed. 2d 915, 949, 83 S. Ct. 1715 (1963). The Court stated:

(S)urely one premise of an antimerger statute such as Sec. 7 is that corporate growth by internal expansion is socially preferable to growth by acquisition.

In the traditional antitrust cases (Sherman and Sec. 7 of the Clayton Act), the emphasis is on "monopoly" and "competition". In this context, if competition flourishes, competitors may be injured or destroyed (see quotation from *Alcoa* above). In the FTC Act, the emphasis is on protection of "competitors" and "consumers" from unfair practices regardless of whether or not the forbidden activities affect competition. Thus, when Sec. 5 of the FTC Act is included in the expression "the antitrust laws", one is hemmed in and must move with care between the Scylla of forbidden injury to competition and the Charybdis of forbidden injury to competitors and consumers. Injury to (1) competition, (2) competitors, and (3) consumers are all taboo. For privately owned utilities, there is, for other reasons, a fourth taboo; to wit, injury to stockholders. Thus, one is forbidden (1) to have a scheme to cause forbidden

⁴*Alcoa* was found to have violated the Sherman Act because of an illegal scheme to maintain its existing monopoly.

injury to these four classes, (2) to enter a conspiracy to cause forbidden injury to these four classes. When used alone, the term "scheme" includes also plans, programs or other forms of conscious unilateral behavior, the effect of which is to cause the forbidden injury. When used alone, the term "conspiracy" includes contracts, combinations, joint ventures or other forms of conscious joint action with others the effect of which is to cause the forbidden injury.

Since the purpose of the antitrust laws is to promote and preserve competition, it follows that a "situation inconsistent with the antitrust laws" must mean *anticompetitive conduct*. Such anticompetitive conduct may violate the antitrust laws by monopolization, conspiracies in restraint of trade, acquisitions which substantially lessen competition or tend to create a monopoly, unfair methods of competition, or deceptive acts or practices in commerce. For purposes of Sec. 105, such conduct need not amount to a statutory violation if it meets appropriate criteria for determining anticompetitive conduct: The cases dealing with violation of the Sherman Act and the Clayton Act provide little guidance in the selection of appropriate criteria for determining anticompetitive conduct which does not amount to a violation of antitrust laws.

Section 5 of the Federal Trade Commission Act (15 USC 45) is indefinite in that the terms "unfair methods of competition" and "unfair or deceptive acts or practice in commerce" used therein are of uncertain scope. The Supreme Court in a recent decision held that Section 5 of the Federal Trade Commission Act empowered the Federal Trade Commission (hereinafter FTC) to define and proscribe an unfair competitive practice, even though the practice does not infringe either the *letter or the spirit of the antitrust laws* and to proscribe practices as unfair or deceptive in their effect upon consumers regardless of their nature or quality as competitive practices or their effect on competition. *FTC v. The Sperry and Hutchinson Company*, 405 US 233, 31 L. Ed. 2d 170, 92 S. Ct. 898 (1972). The court concluded that violations of the antitrust law include conduct that the FTC has defined as an "unfair method of competition" or "unfair or deceptive acts or practices" pursuant to its power under Sec. 5.

The exploration of the scope of Section 5 of the FTC Act has led to the development of criteria which we find useful.

The Supreme Court in *Sperry* gives guidance in quoting from an earlier Supreme Court case giving a broad interpretation to the authority of the FTC. The authority of the FTC was held to reach acts which were long deemed to be *against* public policy as evidenced by common law and criminal law, *FTC v. R. F. Keppel and Bro., Inc.*, 291 US 304, 78 L. Ed. 814, 54 S. Ct. 423 (1934):

Thenceforth, unfair competitive practices were not limited to those likely to have anticompetitive consequences after the manner of the antitrust laws: nor were unfair practices in commerce confined to purely competitive behavior. [*Sperry*, supra at 244.]

The Court also quoted in *Sperry* at p. 243, a statement from Keppel:

It would not have been a difficult feat of draftsmanship to have restricted the operation of the Trade Commission Act to those methods of competition in interstate commerce which are forbidden at common law or which are likely to grow into violations of the Sherman Act, if that had been the purpose of the legislation. [*Keppel, supra, at 310*]

Similarly, it would not have been a difficult feat of draftsmanship to have restricted the operation of Section 105 of the Atomic Energy Act to violations of the antitrust laws including Section 5 of the FTC Act including "unfair methods of competition" or "unfair or deceptive acts or practices" as determined by the FTC. In fact, the Board in the last sentence essentially drafted such a restriction. *However, Congress did not.*

In approving FTC's guidelines for construing Section 5 of the FTC Act, the Court in *Sperry*, p. 244, note 5, quoted factors which the FTC deemed suitable for its use in declaring practices unfair, thus making such practices a violation of Section 5. The Ninth Circuit quoted the aforesaid list of factors as suitable for the said purpose. *Heater v. FTC*, 503 F. 2d 321, 323 (9th Cir. 1974). After careful consideration, we deem the use of the aforesaid factors as criteria to be appropriate in supplementing "violation of" the antitrust laws so as to cover the entire area of conduct "inconsistent with" said laws.

In summary, we conclude as a matter of law that "situation *inconsistent* with the antitrust laws" means *anticompetitive conduct*, which term includes both violations of the antitrust laws and practices determined to be unfair by the use of the criteria quoted in *Heater v. FTC supra*. In determining the existence of anticompetitive conduct, each of the following criteria should be considered: (a) conduct which is a violation of the antitrust laws enumerated in Section 105a of the Atomic Energy Act, including conduct heretofore determined to be unfair by the FTC pursuant to Section 5 of the FTC Act; and (b) conduct, without necessarily having been previously considered unlawful; (1) which offends public policy as it has been established by statutes, the common law, or otherwise, or, in other words, is within at least the penumbra of some common law, statutory, or other established concept of unfairness; (2) which is immoral, unethical, oppressive or unscrupulous; and (3) which causes substantial injury to consumers or competitors or other businessmen. The term "violations of the antitrust laws" as used in this Board opinion means practices which have been determined to be violations of the antitrust laws in authoritative Federal court opinions.

CAUSAL CONNECTION—NEXUS

Once a Board has found an actual or prospective situation inconsistent with the antitrust laws (anticompetitive conduct), it must consider whether such situation will be created or maintained by activities under the license. The said

activities must have a *causal connection* with the creation or maintenance of the said situation.

The term *nexus*, has been used in *City of Lafayette, Louisiana v. SEC* consolidated with *City of Lafayette, Louisiana v. FPC, Gulf States Utilities Co.*, intervenor, 147 App. D. C. 98, 454 F. 2d 941 (1971) especially at pages 953 and 956, affirmed sub nomine *Gulf States Utilities v. FPC*, 411 US 747, 93 S. Ct. 1870, 36 L. Ed. 2d 635 (1973), reh. den. 412 US 944, 93 S. Ct. 2767, 37 L. Ed. 2d 405 (hereinafter called the Gulf States case).

The Commission recognized the need for nexus in the Matter of Louisiana Power and Light Company (hereinafter the LP&L case), Docket No. 50-382A, Memorandum and Order of September 28, 1973, RAI-73-9, pp. 619-622. The Commission pointed out, that the fact of the comingling of power from the licensed facility with the power from the Applicant's other generating facilities "should not be utilized to support the view that an application to construct one nuclear plant somehow authorizes an inquiry into all alleged anticompetitive practices in the electric utility industry." The Commission further said:

The hearing issues cannot and should not be divorced from the overriding requirement that there be a reasonable nexus between the alleged anticompetitive practices and the activities under the particular nuclear license . . . We remind the Board and the parties that if it becomes apparent at any point that no meaningful nexus can be shown, all or part of the proceedings should be summarily disposed of.

In this case of first impression, the disagreement of the Parties as to the facts and as to the interpretation of the law, led the Board to defer rulings on nexus until after a full hearing.

The question of nexus remains a primary and predominant matter which must be resolved as to each alleged anticompetitive practice.

Neither the Gulf States case or the LP&L case defined nexus in such terms as to give assurance in applying the doctrine to proceedings under Section 105 of the Act. The brief of the Parties did not close the hiatus. The Board has, therefore, analyzed the matter in order to reach a *modus operandi* in the application of the doctrine to this proceeding.

Section 1 of the Act reads, in part, as follows:

Atomic energy is capable of application for peaceful as well as military purposes. It is therefore declared to be the policy of the United States that . . . the development, use and control of atomic energy shall be directed so as to promote world peace, improve the general welfare, increase the standard of living, and strengthen free competition in private enterprise.

Section 3 of the Act reads, in part, as follows:

It is the purpose of this Act to effectuate the policies set forth by providing for . . . a program to encourage widespread participation in the development and utilization of atomic energy for peaceful purposes to the maximum

extent consistent with the common defense and security and with the health and safety of the public.

Chapter 10 (Sections 101-110) of the Act carries out the quoted policy and purpose of the Act by authorizing licensing, which includes the licensing of nuclear power plants for the production of electric energy. Such licenses grant to the licensees permission and authorization to carry out the licensed activities. Where the Congress has by legislation provided for the grant for specified rights, it is axiomatic that the *use* of activities authorized by such a grant or license cannot create or maintain a situation inconsistent with the antitrust laws. The use of the licensed activities are immune from the antitrust laws. Yet Section 105 of the Act requires a determination that such activities will not create or maintain a situation inconsistent with the antitrust laws. The problem, then, becomes one of determining how activities which are lawful can create or maintain a situation inconsistent with the antitrust laws.

As Judge Hand pointed out in the quotation above from the Alcoa case, since the antitrust laws are criminal as well as civil, *intent* is an important factor in weighing alleged anticompetitive conduct. If there is evidence of intent to carry out a scheme or conspiracy to achieve an anticompetitive result, the execution of such a scheme is anticompetitive conduct. If the result of the scheme is so clearly anticompetitive that reasonable men would not differ in so characterizing it, then the intent may be presumed.

The means for carrying out an anticompetitive scheme need not be illegal. It is not important whether means for carrying out an illegal scheme are in themselves lawful or unlawful. *American Tobacco Co. v. U. S.*, 328 US 781, 66 S. Ct. 1125, 90 L. Ed. 1575 (1946).

If lawful activities can be the means of carrying out an anticompetitive scheme, then "activities under the license" can be causally connected to the anticompetitive conduct. Should this occur, we may appropriately characterize such behavior as the *misuse* of activities under the license. However, the causal connection must be more than incidental or inconsequential.

Nexus and nexum are both Latin nouns derived from the verb necto. The dictionary definitions and the use of these words by outstanding Romans provide a good starting point for our study of "nexus". Cassell's Latin-English and English-Latin Dictionary published by Funk and Wagnalls Co. of New York and London⁵ provides both definitions and usage. On pages 361 and 363, we find the following:

necto, nexui and nexi, nexum, 3. I. Lit., A. *to tie, bind, fasten, connect, weave or fasten together*; catenas, coronam, Hor.; comam myrto, Ov. B. *to bind, fetter, enslave, in consequence of debt*, Liv.; eo anno plebi Romanae velut aliud initium libertatis factum est, quod necti desierunt, Liv. II.

⁵The copy used is without date or edition identification. The only clues are the statement that it is in the "231st thousand" and that it was bought about 1920-1925.

Transf., A. *to affix, attach*; ex hoc genere causarum ex aeternitate pendentium fatum a Stoicis nectitur, Cic. B. *to connect*; Cic.; dolum, *to plot*, Liv.; causas inanes, *bring forward*, Verg.; numeris verba, Ov.

nexum—i, n. (necto), *a formal transaction between debtor and creditor, by which the debtor pledged his liberty as security for his debt*, Liv.; meton., *the obligation created by nexum*, Cic.; quum sunt propter unius libidinem, omnia nexa civium liberata nectierque postea desitum, Cic.

nexus—us, m. (necto). I. *a binding, tying together, entwining, connecting*; atomorum, Cic.; serpens, baculum qui nexibus ambit, Ov. II. Fig., A. legis nexus, Tac. B. *the relation or obligation arising from nexum*; nexu vincti, Liv.; se nexu obligare, Cic.

In the case of the debtor, the unpaid debt is the proximate and sole cause of the resulting slavery. Thus, in this usage of Livy (T. Livius Patavinus, historian, died 16 BC), nexus is the proximate and sole causal relationship.

Nexus as “entwining” in the quotation from Ovid (P. Ovidius Naso, a poet who died in 16 AD) references a serpent or snake entwined around a rod or staff. This is obviously an allusion to the caduceus which was originally the wand or staff of the Mercury and later was the staff of office used by heralds. In modern times, the caduceus has been adopted as a professional insigne by our medical brethren.

For those in the nuclear power industry, the most interesting use is that by Cicero (M. Tullius Cicero, orator and philosopher who died 43 BC) who related nexus to the binding force of the atom (“atomerum, Cic.”). In his day, this force was so great that the parts of the atom could not be separated. Cassell’s Dictionary at page 59, states it thus:

atomus—i, f. (aropos), that which is incapable of division, an atom, Cic.

Centuries were to pass before Paracelsus Phillippus Aureolus Theophrastus Bombastus von Hohenheim, Swiss born alchemist and physician (1493-1541), and his fellow alchemists tried in vain to split the atom in order to transmute baser metals such as lead into gold. More centuries were to pass until the beginning of the atomic age, which was ushered in by the successful experiment carried out under the stadium of the University of Chicago in 1942. Even now, while the atom has been harnessed to produce electric energy, the splitting of the atom is no easy task. It requires the exercise of great force in a complex reactor.

If we visualize nexus as meaning a tie, binding events together as tightly as the parts of the atom are bound, then nexus is an extremely tight and intimate bond. If we accept the debtor relationship of Livy, then nexus means the proximate and sole cause of the injury.

While the meaning of nexus to the Romans is instructive and not to be slightly disregarded, nevertheless we all know that the meanings of words

tend to change with the passage of time. Turning now to more recent authorities, we retain the concept that nexus is a shorthand way of expressing a bond or causal connection. The inquiry is still: "how tight a bond?" or "how much causal connection?"

Guidance is provided by Prosser, *Handbook of the Law of Torts*, 3rd edition (1964) at page 244:

The defendant's conduct is a cause of the event if it was a material element and a substantial factor in bringing it about. Whether it was such a substantial factor is for the jury (i.e., the trier of facts) to determine, unless the issue is so clear that reasonable men could not differ. It has been considered that "substantial factor" is a phrase sufficiently intelligible to the layman to furnish an adequate guide in instructions to the jury, and that it is neither possible nor desirable to reduce it to any lower terms. As applied to the fact of causation alone, no better test has been devised.

This concept of causal connection has been used by the courts in treble damage cases. In *Zenith Vinyl Fabrics Corp. v. Ford Motor Company*, 357 F. Supp. 133, 137 (E. D. Mich. 1973), the court states:

In addition, plaintiff must establish that the alleged violation of the antitrust laws was a "material cause" of or a "substantial factor" in the occurrence of his injury. *Continental Ore Co. v. Union Carbide & Carbon Corp.*, 370 US 690, 702, 82 S. Ct. 1404, 8 L. Ed. 2d 777 (1962); *Bigelow v. RKO Radio Pictures*, 327 US 251, 66 S. Ct. 574, 90 L. Ed. 652 (1946); Note, *Standing to Sue for Treble Damages Under Section 4 of the Clayton Act*, 64 Colm. L. Rev. 570, 575-6 (1964).

In *Karseal Corp. v. Richfield Oil Corp.*, 221 F. 2d 358, 362 (9th Cir. 1955), the Court stated:

Our problem is whether the facts as alleged show the necessary causal relationship. Richfield relies on an absence of *proximate cause* and directness of injury from the facts pleaded. In a private antitrust suit, the plaintiff must not only allege a violation of the antitrust laws, but *damage to the plaintiff proximately resulting* from the acts and conduct which constitute the violation. *Feddersen Motors v. Ward*, 10 Cir., 1950, 180 F. 2d 519, 522; *Clark Oil Co. v. Phillips Petroleum Co.*, 8 Cir., 1945, 148 F. 2d 580, 582, certiorari denied 326 US 734, 66 S. Ct. 42, 90 L. Ed. 437; *Northwestern Oil Co. v. Socony-Vacuum Oil Co.*, 7 Cir., 1943, 138 F. 2d 967, certiorari denied 321 US 792, 64 S. Ct. 790, 88 L. Ed. 1081; *Glenn Coal Co. v. Dickinson Fuel Co.*, 4th Cir., 1934, 72 F. 2d 885, 887; *Myers v. Shell Oil Co.*, D. C. S. D. Cal. 1951, 96 F. Supp. 670, 674 (Emphasis added).

The Staff's show was in the bull's-eye when it cited *Municipal Electric Association of Massachusetts v. SEC*, 413 F. 2d 1052 (DC Cir. 1969). That case was remanded to SEC because the allegations of the plaintiffs, if proved, would be a basis for a finding of a situation inconsistent with the antitrust laws.

Plaintiff alleged the existence of conspiracy to monopolize by exclusion of Plaintiffs from participation in nuclear power plants. Moreover, the capital structure of Yankee was such that the acquisition of the stock carried with it acquisition of all of the low cost power to the exclusion of the municipals. In this connection, the Court said:

The control challenged by Municipals is tied in significant manner to the organization of the stock . . .

In other words, the refusal of access was tied in significant manner (had nexus) to a conspiracy which allegedly created or maintained a situation inconsistent with the antitrust laws (an illegal conspiracy to monopolize).

Justice and Intervenors argue that the existence of a situation inconsistent with the antitrust laws and the simultaneous existence of activities under licenses to build and operate a nuclear reactor automatically supply a bond which is a basis for nexus. Thus Justice on p. 226 of its Brief and Proposed Findings of Fact dated October 8, 1974 states:

This power will not and *cannot* be marketed in isolation . . . the Midland units will be integrated into Applicant's system and coordinated with generation of other systems through the regional power exchange market.

Intervenors in their Memorandum Considering the Effect of Commission's Opinion in the Matter of Louisiana Power and Light Company dated October-18, 1973 at page 13 state:

In judging the closeness of the relationship that should be shown between the relief claimed necessary and the operation of the plant, it should again be stressed that Consumers Power *is* operating an integrated system.

After careful consideration, the very tight, almost unbreakable, causal bond of Cicero and his compatriots is rejected as a basis for finding nexus. Also, the very loose incidental and inconsequential bond urged by Justice and Intervenors is rejected as a basis for finding nexus. In the middle ground used by current legal authorities, the kind of bond which is a basis for nexus is found. Nexus exists between otherwise lawful activities under a license or proposed license and a situation inconsistent with the antitrust laws if, and only if, the said activities are misused so as to be a material element and a substantial factor in a scheme or conspiracy, the purpose or effect of which is to cause the creation or maintenance of said situation.

MISUSE OF ACTIVITIES UNDER THE LICENSE

The problem now becomes one of distinguishing between *use* and *misuse* of activities under the license. Upon reflection, it appears that a study of a more mature branch of the law which deals with an analogous problem can be enlightening.

The best analogy is found in the patent law. Both the license granted by the Nuclear Regulatory Commission and the patent granted by the Commissioner of Patents stem from statutory Congressional actions. In both, activities within the scope of the grant are immune from the reach of the antitrust laws. In both, *misuse* beyond the scope of the grant is subject to antitrust scrutiny. In both, *misuse* may, but need not, amount to a violation of the antitrust laws. In both, the penalty for *misuse* is a requirement that the *misuse* be purged before the benefits of the grant may be enjoyed. Thus, in the nuclear power facility license case, the grant may be withheld or suspended or conditioned to bring about discontinuance of the misuse and, in the patent case, enforcement by the courts of the patentee's exclusive rights is denied pending discontinuance of the misuse. Accordingly, the differentiation between *use* and *misuse* in the patent law is completely analogous and gives reliable guidance.

Pursuant to public policy and statutes implementing it, inventors are granted, for a period of time, an exclusive right to practice the inventions described and claimed in their Letters Patent. The exercise of this exclusive right is not per se anticompetitive conduct.

The owner of a patent has the right to sell it or to keep it, to manufacture the article himself or to license others to manufacture it, to sell such article himself or to authorize others to sell it. *E. Bement & Sons v. National Harrow Co.*, 186 US 70, 46 L. Ed. 1058, 22 S. Ct. 747 (1902); *Heaton-Peninsula Button Fastener Co. v. Eureka Specialty Co.*, 35 ALR 728, 732, 25 CCA 267, 274, 47 US App. 146, 160, 77 F. 228, 294 (quoted with approval in the *Bement* case); *Continental Paper Bag Co. v. Eastern Paper Bag Co.*, 210 US 405, 52 L. Ed. 1122 (1908); *Hartford Empire Co. v. U. S.*, 323 US 386, 65 S. Ct. 373, 89 L. Ed. 322 (1944). *U. S. v. Line Material Co.*, 333 US 289, 309, 92 L. Ed. 701, 718, 68 S. Ct. 550 (1947). All such conduct is proper *use* of the grant and is immunized from the antitrust laws.

Patents have an interesting feature: A patentee receives financial rewards by the practice of the patented invention. In doing this, he automatically provides to the public the advantages thereof, either by making available to the public a new product, a better product or cheaper product. In other words, activities under a patent redound to the benefits of the public.

This same principle applies to license for the construction and operation of a nuclear reactor. In order to derive a benefit, the licensee must operate the reactor to generate electric energy and sell such energy. Every customer, wholesale and retail, receives the benefit of a nuclear power source, which is independent of fossil fuel, and the benefit of lower costs which will be part of the pricing procedure. Also, the retail customers of the licensee's wholesale customers will similarly benefit. Thus, the public automatically has access to and receives benefits by the availability of the electric energy from activities under the license.

There are many instances where the conduct of a patentee has been held to be a violation of the antitrust laws. Let us review a few instances of violation and then evolve a broad conclusion as to how this can be.

A patent owner who exercised his exclusive legal right under the patent grant to sell a patented product and who as a part of that sale attempts to fix the price of another product containing the patented product violates the antitrust laws. *Ethyl Gasoline Corp. v. U. S.*, 309 US 436, 60 S. Ct. 618, 84 L. Ed. 852 (1940); *U. S. v. Univis Lens Co.*, 316 US 241, 62 S. Ct. 1088, 86 L. Ed. 1408 (1942).

The sale of a patented product on condition that the vendee must also purchase an unpatented product (a tying contract) is a misuse of the patent. *Mercoird Corporation v. Mid-Continent Co.*, 320 US 661, 88 L. Ed. 376, 64 S. Ct. 268 (1953). It is also a violation of the antitrust laws. *International Salt Co. v. U. S.*, 339 US 392, 68 S. Ct. 12, 92 L. Ed. 20 (1947). *White Motor Co. v. U. S.*, 372 US 253, 83 S. Ct. 696, 9 L. Ed. 2d 738 (1963).

Misuse of patent licenses, which licenses are legal activities under the patent grant, as part of a contract or conspiracy to monopolize or restrain trade is a violation of the antitrust laws. *U. S. v. Masonite Corp.*, 316 US 265, 62 S. Ct. 1070, 86 L. Ed. 1461 (1942); *U. S. v. Singer Manufacturing Co.*, 374 US 174, 83 S. Ct. 1773, 10 L. Ed. 2d 823 (1963), *U. S. v. Line Material Co. supra*.

The formation of joint ventures in Canada and other countries to exploit the patented inventions of the joint venturers (agreement not to compete) is a violation of the antitrust laws since it adversely affected the foreign commerce of the United States, *U. S. v. ICI*, 100 F. Supp. 504 (S. D. N. Y. 1951).

In each of the above instances, the misuse of activities under the patent grant constituted a material element and a significant factor of the scheme or conspiracy which violated the antitrust laws. In other words, a meaningful tie or nexus existed between the misuse of activities under the patent grant and the conduct which violated the antitrust laws.

The grant of a patent, while immunizing activities under the patent, does not immunize from the reach of the antitrust laws conduct not fairly or plainly within the grant, *U. S. v. Masonite, supra*. To state the proposition another way, a scheme forbidden by the antitrust laws does not become immunized because a significant factor or material element in carrying out the scheme is, per se, lawful. *American Tobacco Co. v. U. S., supra*.

If patent misuse exists, such misuse need not amount to a violation of the antitrust laws. The Supreme Court in *Morton Salt Co. v. Suppiger Co.*, 314 US 488, 86 L. Ed. 363, 62 S. Ct. 402 (1941) stated that courts sitting as courts of equity would not grant injunctions in patent infringement suits while the patentee was engaged in practices contrary to the public policy as evinced by the Constitution and patent law. See also *United States v. U. S. Gypsum Co.*, 333 US 364, 92 L. Ed. 746, 68 S. Ct. 525 (1948), *Zenith Radio Corp. v. Hazeltine Research, Inc.*, 395 US 100, 23 L. Ed. 2d 129, 89 S. Ct. 1562 (1968), *Berlenbach v. Anderson and Thompson Ski Co.*, 329 F.2d 782 (9th Cir. 1964)

and *Laitram Corporation v. King Crab, Inc.*, 245 F. Supp. 1019 (D. Alaska 1965) quoted in *Zenith* supra at 140.

While patent law has been discussed because patent law is completely analogous to our problem, other analogies can be found. One is the field of labor law. Just as we did not discuss patent law in detail, we will not discuss labor law in detail.

The Supreme Court recently decided a case involving labor and the antitrust laws. This case contains an excellent summary of the present status of the law and discussion of the principles involved:

The basic source of organized labor's exemption from federal antitrust laws are §§6 and 20 of the Clayton Act, 15 USC §17 and 29 USC §52, and the Norris-LaGuardia Act, 29 USC §§104, 105 and 113. These statutes declare that labor unions are not combinations or conspiracies in restraint of trade, and exempt specific union activities, including secondary picketing and boycotts from the operation of the antitrust laws. See *United States v. Hutcheson*, 312 US 219 (1941). They do not exempt concerted action or agreements between unions and nonlabor parties. *UMW v. Pennington*, 381 US 657, 662 (1965). The Court has recognized, however, that a proper accommodation between the congressional policy favoring collective bargaining under the NLRA and the congressional policy favoring free competition in business markets requires that some union-employer agreements be accorded a limited nonstatutory exemption from antitrust sanctions. *Meat Cutters Local 189 v. Jewel Tea Co.*, 381 US 676 (1965).

The nonstatutory exemption has its source in the strong labor policy favoring the association of employees to eliminate competition over wages and working conditions. Union success in organizing workers and standardizing wages ultimately will affect price competition among employers, but the goals of federal labor law never could be achieved if this effect on business competition were held a violation of the antitrust laws. The Court therefore has acknowledged that labor policy requires tolerance for the lessening of business competition based on differences in wages and working conditions. See *UMW v. Pennington*, supra, at 666; *Jewel Tea*, supra, at 692-693 (opinion of MR. JUSTICE WHITE). Labor policy clearly does not require, however, that a union have freedom to impose direct restraints on competition among those who employ its members. Thus, while the statutory exemption allows unions to accomplish some restraints by acting unilaterally, e.g., *American Federation of Musicians v. Carroll*, 391 US 99 (1968), the nonstatutory exemption offers no similar protection when a union and a nonlabor party agree to restrain competition in a business market. See *Allen Bradley Co. v. IBEW Local 3*, 325 US 797, 806-811 (1945); Cox, Labor and the Antitrust Laws—A Preliminary Analysis, 104 U. Pa. L. Rev. 252 (1955); Meltzer, Labor Unions, Collective Bargaining, and the Antitrust Laws, 32 U. Chi. L. Rev. 659 (1965).

...
Curtailement of competition based on efficiency is neither a goal of federal labor policy nor a necessary effect of the elimination of competition among workers. Moreover, competition based on efficiency is a positive value that the antitrust laws strive to protect.

.....
This record contains no evidence that the union's goal was anything other than organizing as many subcontractors as possible. *This goal was legal*, even though a successful organizing campaign ultimately would reduce the competition that unionized employers face from nonunion firms. *But the methods the union chose are not immune from antitrust sanctions simply because the goal is legal.* (Emphasis added) *Connel Construction Co., Inc. v. Plumbers and Steamfitters, Local Union No. 100, etc.* ___US___, Slip opinion 73-1256, June 2, 1975, pages 4-8.

Though the Supreme Court did not employ the words *use* and *misuse*, the principles are the same. The granted exemption from the antitrust laws only applies as long as the said exemption is *used* within the exemption and not *misused* as evidenced by conduct beyond the scope of the exemption.

Furthermore, in *Allen Bradley Company et al v. Local Union No. 3*, 325 US 797, 809, 810, 89 L. Ed. 1939, 1948, 65 S. Ct. 1533 (1944), the Court said:

Since union members can without violating the Sherman Act strike to enforce a union boycott of goods, it is said they may settle the strike by getting their employers to agree to refuse to buy the goods. Employers and the union did here make bargaining agreements in which the employers agreed not to buy goods manufactured by companies which did not employ the members of Local No. 3. We may assume that such an agreement standing alone would not have violated the Sherman Act. But it did not stand alone. *It was but one element in a far larger program in which contractors and manufacturers united with one another to monopolize all the business in New York City, to bar all other businessmen from that area, and to charge the public prices above a competitive level.* It is true that victory of the union in its disputes, even had the union acted alone, might have added to the cost of goods, or might have resulted in individual refusals of all of their employers to buy electrical equipment not made by Local No. 3. So far as the union might have achieved this result acting alone, it would have been the natural consequence of labor union activities exempted by the Clayton Act from the coverage of the Sherman Act. *Apex Hosiery Co. v. Leader*, supra, (310 US 503, 84 L. Ed. 1329, 60 S. Ct. 982, 128 ALR 1044). But when the unions participated with a combination among themselves and to prevent all competition from others, a situation was created not included within the exemptions of the Clayton and Norris-LaGuardia Acts.

Our holding means that the same labor union activities may or may not be in violation of the Sherman Act, dependent upon whether the union acts alone or in combination with business groups. This, it is argued, brings about a wholly undesirable result—one which leaves labor unions free to engage in conduct which restrains trade. But the desirability of such an exemption of labor unions is a question for the determination of Congress. *Apex Hosiery Co. v. Leader*, 310 US 469, 84 L. Ed. 1311, 60 S. Ct. 982, 128 ALR 1044, *supra*. (Emphasis added).

No clearer statement has been found of the reasoning followed by this Board. The unions ran afoul of the antitrust laws because their activities became a part of a larger scheme or conspiracy which created a situation inconsistent with the antitrust laws.

Providing additional support is *United Mine Workers v. Pennington*, 381 US 657, 665, 667, 14 L. Ed. 2d 626, 633, 634, 85 S. Ct. 1585 (1954):

We have said that a union may make wage agreements with a multiemployer bargaining unit and may in pursuance of its own union interests seek to obtain the same terms from other employers. No case under the antitrust laws could be made out on evidence limited to such union behavior. But we think a union forfeits its exemption from the antitrust laws when it is clearly shown that it has agreed with one set of employers to impose a certain wage scale on other bargaining units. One group of employers may not *conspire* to eliminate competitors from the industry and the union is liable with the employers if it becomes a party to the conspiracy. This is true even though the union's part in the *scheme* is an undertaking to secure the same wages, hours or other conditions of employment from the remaining employers in the industry. (Emphasis added).

Further guidance has been found in other cases cited in *Connel supra*.

In summary, the activities of a union under the Congressional grant of immunity from the antitrust laws are lawful provided said activities are within the scope of the grant, as provided by Congress in statutes and as interpreted by the courts. However, when the activities under the grant are *misused* by being a material element and a substantial factor in a scheme or conspiracy which creates a situation inconsistent with the antitrust laws, then the said activities are no longer immune from the reach of the antitrust laws.

From the above authorities, we learn that the *use* of activities under a Federal grant within the scope and for the very purpose contemplated by the grant is immunized from the antitrust laws. The aforesaid use of activities under a Federal grant cannot create or maintain a situation inconsistent with the antitrust laws.

Similarly, the *misuse* of activities under a Federal grant by conducting activities under the guise of the grant which go beyond its scope and for a

different purpose is not immunized from the antitrust laws. The aforesaid misuse of activities under a Federal grant can create or maintain a situation inconsistent with the antitrust laws where there is nexus between said activities and said situation.

We conclude as matters of law that:

(a) Nexus exists between otherwise lawful activities under a proposed license and a situation inconsistent with the antitrust laws, if, and only if, the said activities are misused so as to be a material element and a substantial factor in a scheme or conspiracy the purpose or effect of which is to cause the creation or maintenance of said situation.

(b) Activities under a license issued by the Commission pursuant to statute per se cannot create or maintain a situation inconsistent with the antitrust laws.

(c) Activities under a license issued by the Commission pursuant to statute can create or maintain a situation inconsistent with the antitrust laws if, and only if, such activities constitute a material element and a substantial factor in a scheme or conspiracy the purpose or effect of which is to cause the creation or maintenance of a situation inconsistent with the antitrust laws.

TIME PERIODS

In weighing the evidence, consideration must be given to the time period relating to alleged situations inconsistent with the antitrust laws and alleged misuse of activities under the license.

Save in unusual circumstances, the findings of fact and conclusion of law in an antitrust proceeding under Section 105 of the Act will be based on the record of the antitrust proceeding.

If the question is *creation* of a situation inconsistent with the antitrust laws, then the alleged situation and the alleged misuse of activities under the license must occur after the grant of the license. The only relevant and material facts of record will be those tending to prove or disprove the existence of a *scheme* or *conspiracy* to create such situation by said misuse. (In the case of a conspiracy, no implementing acts are needed to create a situation inconsistent with the antitrust laws.)

If the question is the *maintenance* of a situation inconsistent with the antitrust laws, then the alleged situation must be in existence on the date the record is closed and the alleged misuse of activities under the license must occur after the grant of the license. The relevant and material facts of record will be those tending to prove or disprove the existence of said alleged situation and those tending to prove or disprove the existence of an alleged *scheme* or *conspiracy* to maintain such situation by said alleged misuse.

The present proceeding is under the grandfather provision of subsection 105(c)(8) of the Act. The construction permits for Midland Units 1 and 2 were issued on December 15, 1972. Theoretically, there could have been misuse of activities under the license between December 15, 1972 and the close of the antitrust evidentiary hearing on June 20, 1974. Actually, the allegation of misuse is related to future activities under the operating license which had not been granted prior to June 20, 1974. Accordingly, the findings of fact and conclusions of law will follow the rules above stated.

MOOTNESS

A situation inconsistent with the antitrust laws in existence at the close of the evidentiary record could have begun at any previous time. With agreement of the Parties, to keep the record within reasonable bounds, only situations with regard to which there is evidence of existence after January 1, 1960 will be considered.

There must also be considered whether a situation inconsistent with the antitrust laws, which was in existence at some time in the period January 1, 1960 to June 20, 1974, ceased to exist at some time prior to June 20, 1974. If, in fact, such a situation ceased to exist prior to the close of the record, activities under the license cannot maintain the nonexistent situation. The difficulty, of course, will be the determination as to whether the last act disclosed in the record was the end of the situation. While this determination is one of fact, the cases provide some guidance.

When defendants are shown to have settled into a continuing practice or entered into a conspiracy violative of antitrust laws, courts will not assume that it has been abandoned without clear proof. . . . It is the duty of the courts to beware of efforts to defeat injunctive relief by protestations of repentance and reform, especially when abandonment seems timed to anticipate suit, and there is probability of resumption. [United States v. Oregon State Medical Soc., 343 US 326, 333, 96 L. Ed. 978, 985; 72 S. Ct. 690 (1952).]

In United States v. W. T. Grant Co., 345 US 629, 97 L. Ed. 1303, p. 1309, 73 S. Ct. 894 (1953), the Court said:

Both sides agree to the abstract proposition that voluntary cessation of allegedly illegal conduct does not deprive the tribunal of power to hear and determine the case, i.e., does not make the case moot.

The case may nevertheless be moot if the defendant can demonstrate that "there is no reasonable expectation that the wrong will be repeated." The burden is a heavy one. Here the defendants told the court that the interlocks

no longer existed and disclaimed any intention to revive them. Such a profession does not suffice to make a case moot although it is one of the factors to be considered in determining the appropriateness of granting an injunction against the now-discontinued acts.

Under some circumstances, a discontinuance of twelve years duration is not long enough to render the matter moot. *U. S. v. Aluminum Co. of America*, 148 F. 2d 416 at p. 447. Further guidance is supplied by a holding of mootness by the Eighth Circuit Court of Appeals in *Dyer v. Securities and Exchange Commission*, 291 F. 2d 774, (8th Cir. 1961). In that case, no evidence was presented that, in the three years after the defendant had originally violated the rules of the SEC, the defendant had violated any rules even though similar opportunities existed. The defendant had continued all of his previous activities except that he did not violate any SEC rules.

The Third Circuit Court of Appeals in *Independent News Co. v. Williams* 404 F. 2d 758, 761 (3rd Cir. 1968) held:

While it did not make any specific finding as to the bona fides of defendant's future intent with respect to resuming the complained of practice, the district court did find that defendant's sources have dried up as a result of plaintiffs' effective policing of their contracts and that the complained of practice has been discontinued for several years. It is a reasonable inference that the complained of practice cannot be resumed so long as plaintiffs continue policing the contracts. Therefore the likelihood of defendant's being in a position, even if he so desired, to resume the practice is minimal at best, and we think that, in these circumstances, the district court was acting well within its prescribed discretionary limitations in refusing injunctive relief. *U. S. v. W. T. Grant Co.*, 345 US 629, 73 S. Ct. 894, 97 L. Ed. 1303 (1952); *U. S. v. Article of Drug, etc. supra*, 362 F. 2d 923, 928 (3rd Cir. 1966).

In *Independent News*, the plaintiff was actively enforcing plaintiff's contractual obligations with third parties who were dealing with the defendant. The Applicant's contracts with other utilities are now under the jurisdiction of the FPC which must consider antitrust aspects of matters submitted to it. Though not strictly analogous to *Independent News*, a factor in determining mootness as to a discontinued contractual activity would be the present jurisdiction of the FPC. Furthermore, aggressive smaller utilities could be relied upon to alter the FPC to evidence of renewed anticompetitive contractual provisions.

The Board concludes that a situation is "maintained" if the situation is in existence on the close of the record or if there is a reasonable expectation that the wrong will be repeated based on some cognizable danger of recurrent activity beyond the mere possibility of such a happening. In making its determination of cognizable danger of recurrent activity, the Board will consider subsequent events that make it absolutely clear that the behavior could not reasonably be

expected to reoccur, including but not limited to evidence of continuing activities which no longer exhibit the behavior, changes in status of the Applicant which prevents or obviates any necessity or reason for the behavior, observation of the demeanor of any witnesses testifying to cessation of such activities, or other additional factors which would bear on the cessation of the activities.

COORDINATION—NET BENEFITS

The relevant matters in controversy in this proceeding all deal with "coordination" activities. Much testimony, including documents and exhibits, was concerned with benefits of coordination. Justice, Staff and Intervenors seek the benefits of coordination for the smaller utilities in the relevant geographic market. The Applicant through the hearing espoused the view that any alleged agreement to coordinate must provide a net benefit to the Applicant. However, no party discussed the legal requirement for a net benefit in their briefs. The law, as we read the law, imposes the requirement of a net benefit upon each party, including the Applicant, and hence, imposes a duty upon the management of the Applicant to seek such benefits. A brief exposition of this legal principle is in order.

First, the Applicant is both a public utility and a private corporation. The Applicant, as a public utility, provides retail electric power to the public and wholesale electric power to the smaller utilities in the lower peninsula of Michigan. The retail sales of Applicant are regulated by the Michigan Public Service Commission (hereinafter MPSC); its wholesale sales are regulated by the FPC. The Applicant has stockholders and creditors as a private corporation. Thus, to analyze the need for the requirement of a net benefit, we must examine public utility law and private corporation law.

As a public utility, the Applicant has the obligation to serve the public in its area which no private corporation would have. A private corporation may at will discontinue an unprofitable line of business but a public utility may be required by a regulatory commission in the public interest to continue service, *Michigan Consolidated Gas Co. v. FPC*, 283 F. 2d 204, 205 (DCCA 1960), rehearing den. (1960), or to serve some parts at less profit or a loss, *Minneapolis Gas Company, Inc. v. FPC*, 278 F. 2d 870 (DCCA 1960), reh. den. (1960). These requirements to serve and the rate that service is provided are regulated by a public body, a regulatory commission. The choice is not up to the utility.

Yet within this area, the utility does have an obligation to "operate with all reasonable economies" which applies "to tax savings as well as economies of management." *El Paso Natural Gas Co. v. FPC* 281 F. 2d 567, 573 (5th Cir. 1960), cert. den. 366 US 912, 6 L. Ed. 2d 236, 81 S. Ct. 1083 (1961), reh. den. 366 US 955, 6 L. Ed. 2d 1247, 81 S. Ct. 1901 (1961). That Court continued:

This we consider to be the natural and *necessary consequence* of rate regulation. *El Paso supra* at 573 (Emphasis added).

The rates that a utility may charge must not be confiscatory and must provide just compensation. *Ames v. Smith*, 169 US 466, 42 L. Ed. 819 (1897). Over the years, many rate cases have occurred, and the general principle is that the method of setting the rate is unimportant (*FPC v. Hope Natural Gas Co.*, 320 US 591, 88 L. Ed. 333, 64 S. Ct. 281 (1934)). However, the ordinary purpose of the rate is to provide "actual compensation for the services" and includes "reimbursement for expenses incurred in performing the service, return on investment used in the service, and a reasonable profit on the transaction." *Summerfield v. Civil Aeronautics Board*, 207 F. 2d 200, 204 (DCCA 1953) affirmed, sub nomine, *Western Airlines v. C. A. B.*, 347 US 67, 98 L. Ed. 508, reh. den, 347 US 924, 98 L. Ed. 1078 (1954). The same Court defines:

A "just and reasonable" rate is one that assures that all the enterprise's legitimate expenses will be met, and that enables it to cover interest on its debt, pay dividends sufficient to continue to attract investors, and retain a sufficient surplus to permit it to finance down payments on new equipment and generally provide both the form and substance of financial strength and stability. [*D. C. Transit System v. Washington Metropolitan Area Transit Commission*, 350 F. 2d 753, 778 (DCCA 1965).]

(See also *Payne v. Washington Metropolitan Area Transit Commission*, 415 F. 2d 901, 913 (DCCA 1968)). Last, the "costs of service that a regulated utility provides should, as far as possible, be borne by those who are served as they are being served." *Williams v. Washington Metropolitan Area Transit Commission*, 415 F. 2d 922, 951 (DCCA 1968). As a corollary, those not being served should not bear the cost of serving others, "as far as possible."

In summary, those served by a utility should be charged a rate which includes all legitimate expense, a return on investment, and profit to the owners, and customers should bear only the cost of being served.

Now turning to a private corporation: first, a private corporation is organized to make a profit for the owners. The officers and directors are obligated not to waste the assets of the corporation:

It is the general law, as well as that of California and Utah, that in the absence of statute or corporate chapter provision, a corporation cannot divert its *property by gift or by indirect means without consideration or benefit to the corporation* and such acts cannot be ratified by the Board of Directors. [*In re John Rich Enterprises, Inc.*, 481 F. 2d 211, 214 (10th Cir. 1973) (Emphasis added).]

That Court then immediately quoted *Knox v. First Security Bank of Utah*, 196 F. 2d 112, 117 (10th Cir. 1952) which in part stated that:

[T]he alienation or disposition of property of a corporation in that manner constitutes a violation of the rights of the stockholders and is ultra vires.

The Seventh Circuit Court of Appeals has also discussed transfer of property:

Its disposition without adequate consideration would generally, if not always, constitute a fraud on the stockholder. *MacDonald v. Commissioner of Internal Revenue*, 230 F. 2d 534 (7th Cir. 1956).

Though the charter of the Applicant permits donations for public welfare, such a provision is limited to an eleemosynary class comprising scientific, educational and charity purposes. (An early Michigan Supreme Court held that a corporation could not spend large amounts of the money available for dividends for a public purpose to the detriment of the stockholders, *Dodge v. Ford Motor Company*, 204 Mich. 459, 170 N. W. 668, 3 ALR 413 (Sup. Ct. Mich. 1919)). The cases cited supra on rates indicate that the corporation must make money if it can do so (see *D. C. Transit System*, and *Summerfield*, supra).

In summary, the officers and directors of a corporation have an obligation not to waste the assets of the corporation by donation of assets for noneleemosynary purposes.

Thus, the officers and directors of a public utility, which is also a private corporation, have a dual set of obligations: to the public served and to the owners. The officers and directors must do all that they can to make the operation efficient. Congress has encouraged and therefore permitted coordination arrangements between utilities. These coordination arrangements often result in decreased costs to the utility. The officers and directors should enter into coordination arrangements if a benefit to the utility results. They do not have an obligation to enter into alleged coordination agreements from which no net benefit results. (Obviously, part of the arrangement may be a benefit and part may result in a detriment. The benefits must outweigh the detriments, i.e., a net benefit to the utility must result.) To coordinate with a competitor without any net benefit would injure either the public served or the stockholders or both and would be a waste of the assets of the corporation. The officers and directors are obligated to do just the opposite.

From the above, we conclude as a matter of law, that the management of Applicant is forbidden from entering into alleged coordination agreements which said management believes will result in a net detriment to Applicant. Definitions 12 through 16 hereinabove were written with this legal principle in mind.

RESERVE SHARING

In the introductory discussion of the electric industry, the advantages of reserve sharing between two utilities were mentioned briefly. Since reserve sharing is the first step in operation coordination (see definitions nos. 25 and 27), it is a matter of prime importance in considering coordination. It deserves a more detailed discussion both as to its practical and its legal ramifications.

The record abounds with hypotheticals not based on facts concerning the benefits of reserve sharing. The general assertion gleaned from literally hundreds of pages of testimony and cross examination is: if two isolated systems are combined, the reserves in Mw required by the combined system are less than the sum of the reserves required by the systems when isolated. The Board has been shown no fact situation nor even a hypothetical that is to the contrary. But that is really not in dispute among the Parties. The dispute is how that difference shall be divided among the systems joining together and how the reserve requirements should be calculated.

If the combined system requires less reserve in Mw than the sum of the Mw reserve required of the isolated systems, then all the utilities of the combined system benefit if each utility receives some of that difference. This is a truism. The difficulty occurs if the *required reserves of the combined system are allocated rather than the difference between the reserves in Mw* of the combined system and the sum of the required reserves of systems in isolation.

Intervenors and Justice put forth the general proposition that each system should maintain reserves in the same proportion to system load as the combined system must maintain reserves in relation to the combined system load (alleged to be the "Gainesville Formula" or the "Equal Percentage" formula). The implication is that all Parties benefit because each contributes the same "percentage" of its load as reserves and each is required to keep less actual reserves. If one counter example can be shown which would require one system to increase its reserve in Mw under such an arrangement,⁶ this would mean that the *difference* in reserves would not be split so that each system receives some benefit. The Applicant has produced such a counter example [Exhibit CP 11104]. The Board has constructed several less elaborate counter examples. Two examples are shown in the footnote.⁷ Furthermore, the implication has been

⁶ Consider the following which illustrates this principle:

STATEMENT: The square root of each number from 1 to 16 is a whole number
 Proof by hypotheticals: (1) suppose the number is 4; $\sqrt{4} = 2$, a whole number; (2) suppose the number is 9; $\sqrt{9} = 3$, a whole number; and (3) suppose the number is 16; $\sqrt{16} = 4$, a whole number

FALSE CONCLUSION: Statement is true

COUNTER EXAMPLE: Suppose the number is 2; $\sqrt{2} = 1.414$, not a whole number

CORRECT CONCLUSION: Statement is false

⁷ Example 1: Two systems each using the "largest unit in reserve" criterion are combined to form another system which also uses the "largest unit in reserve" criterion. The loads, *required reserves*, and capabilities are shown below:

	System A	System B	Combined System
Required reserves	40	5	40
Load	(4 x 40) 160	(9 x 5) 45	210
Capability	200	50	250
Required reserves (% of load)	25.000	11.111	19.047

(Footnote continued on next page)

that even if one Party were to have to keep increased reserves, that Party would be the larger utility. The Board's counter examples *not only disprove the general statement that both Parties benefit but also disproves the more restricted statement that the smaller system always benefits*. Clearly, the "Gainesville Formula" applied indiscriminately is impractical and may be unfair to either the larger or the smaller Party. In other words, the general statement is: Sharing reserves on "an equal percentage" basis does not *always* result in each party receiving a benefit but may actually require increased reserves of one party or the other.

THE GAINESVILLE FORMULA

Because the "Gainesville Formula" has been discussed at length (but mainly in hypothetical context, not based on facts in this case) in this hearing, we feel that we must discuss the case which is alleged to have approved the "Gainesville Formula". Florida Power Corporation v. Federal Power Commission, 425 F. 2d 1196 (5th Cir. 1970), reversed in part sub nomine, Gainesville Utilities Department v. Florida Power Corporation, 402 US 515, 29 L. Ed. 2d 74, 91 S. Ct. 1592 (1971).

The history of the case is illuminating. Gainesville, after efforts to negotiate an interconnection with Florida Power Corporation had failed, filed an application with the FPC seeking an order under §202(b) requiring Florida Power to interconnect with Gainesville, and at the same time filed a complaint

(Footnote 7 continued)

(NB Required Reserves + Load = Capability, i.e., the load is the maximum load permitted while maintaining the required reserves. The phrase (4 x 40) means 4 units rated at 40. Similarly for 9 x 5.)

The required reserves of the combined system is $(40/210) \times 100\%$ or 19.047 of the load on the combined system.

If each system is required to keep required reserves equal to the same percentage of its load as the combined system, then the load required reserves and capabilities are shown below.

	System A	System B	Combined System
Required reserves	32	8	40
Load	168	42	210
Capability	200	50	250
Required reserve (% load)	19.047	19.047	19.047

Obviously, the smaller system's (System B) reserve requirement has increased from 5 to 8 as a result of Coordination on an "Equal Percentage Reserves" sharing basis.

(Footnote continued on next page)

with the FPC charging Florida Power with unlawful disconnection under § 205 and 206 of the Federal Power Act, 16 USC §§ 824d, 824e for failure to agree to an interconnection. (Gainesville, supra, at 521 and footnote 4, at 521).

Following extensive hearings, an examiner for the FPC ruled that the interconnection was in the public interest and that it would not place an undue burden on Florida Power. The Commission affirmed the findings and further found that the interconnection would neither compel Florida Power to enlarge its generating facilities nor impair its ability to serve its customers. The Commission ordered the interconnection but on conditions (1) that Gainesville pay the entire \$3 million cost of the interconnection, and (2) that Gainesville would maintain generating capacity resources at least equal to 115% of its peak load [the so-called "Gainesville Formula"] . . . The order also fixed the rates of compensation to be paid for actual energy transfers across the interconnection. (Gainesville supra at 522).

Florida Power appealed that order on grounds (1) "the Federal Power Act, 16 USCA § 791a, et seq., does not give the Commission jurisdiction to order a

(Footnote 7 continued)

Example 2: Two systems each using the "largest unit in reserve" criterion are combined to form another system which also uses the "largest unit in reserve" criterion. The loads, required reserves, and capabilities are shown below:

	System A	System B	Combined System
Required reserves	10	20	20
Load	(9 x 10) 90	(1 x 20) 20	120
Capability	100	40	140
Required reserves (% of load)	11.11	100.00	16.67

The required reserves of the combined system is $(20 \times 120) \times 100\%$ or 16.67% of the load on the combined system.

If each system is required to keep required reserves equal to the same percentage of its load as the combined system, then the load required reserves and capabilities are shown below.

	System A	System B	Combined System
Required reserve	14.29	5.71	20.00
Load	85.71	34.29	120.00
Capability	100.00	40.00	140.00
Required reserve (% load)	16.67	16.67	16.67

Obviously, the larger system's (System A) reserve requirement has increased from 10 to 14.29 as a result of coordination on an "Equal Percentage Reserves" sharing basis.

privately owned power company to interconnect with those of a municipally owned system that both generates and distributes its own power” and, (2) “the Commission’s basic policy concerning terms upon which an interconnection will be ordered is questioned” (Florida Power, *supra*, at 1197). The Fifth Circuit Court of Appeals held that the FPC could order that interconnection but refused to enforce the order ‘insofar as it fails to compensate Florida Power for making available large quantities of backup power at the interconnection’ and this was inconsistent with the statute (Florida Power, *supra* at 1197).

Both Gainesville and the FPC appealed (Gainesville, *supra*, at 515). “Respondent, Florida Power, does not challenge the Commission’s order except in its omission of a term or condition that Gainesville pay approximately \$150,000 annually as ‘Compensation or reimbursement reasonably due’ respondent for backup service effected by the interconnection.” (Gainesville, *supra*, at 522). The FPC had rejected that contention. “The Court of Appeals for the Fifth Circuit held that, because of the omission of such a term or condition, ‘the terms of the connection do not adequately satisfy the statutory requirements’ because they do not provide Florida Power with the ‘reimbursement reasonably due’ it.” (Gainesville, *supra*, at 517). The Supreme Court reviewed this holding and remanded the case “for the entry of a new judgment enforcing the Commission’s order in its entirety.” (Gainesville, *supra*, at 517). N. B., the only issue before the Supreme Court was the omission of the standby charge. That omission was the only subject objected to by respondent, Florida Power, and the only subject held to be faulty by the Court of Appeals. The Supreme Court based its holding on general law and Section 313(b) of the Federal Power Act, 16 USC §8251(b): “the finding of facts, if supported by substantial evidence, shall be conclusive.” The Supreme Court then examined the studies of the FPC as reported with record of the hearings in the Commission and concluded that substantial evidence existed. Then the Court stated: “[T]he Court of Appeals erred in not deferring to the Commission’s expert judgment.” (Gainesville, *supra*, at 527).

Thus, *neither* the Supreme Court *nor* the Court of Appeals for the Fifth Circuit either explicitly or implicitly approved the “Gainesville Formula”. Neither Court had that “formula” before it. Neither commented on the “formula”. The Supreme Court merely deferred to the expertness of the Commission.

Last, as discussed previously, no formula would be correct in all situations. As the engineering witness for Justice testified:

Q. Would it require a specific study to determine this?

A. Very definitely. If you are attempting to coordinate a small system with a large system, you have to examine the impact upon the large system’s

reliability or the requirement for additional reserves on his part, and this would be accomplished through the appropriate probability studies.

The Gainesville order emphasizes complexity of the balancing. See Florida Power, supra.

The "Gainesville Formula" as shown in the discussion of reserve sharing supra does not provide benefits to all Parties, including the smaller utility, in all cases. The "Gainesville Formula" applied indiscriminately may be unfair to either Party. We find as a matter of fact that the "Gainesville Formula" was not explicitly approved by the courts and is not of universal application. The task of weighing and approving coordination agreements has been allotted by the FPC Act to the FPC. It has primary jurisdiction and is staffed to perform this function. We conclude on a matter of law that any approval of a coordination agreement should be determined after a careful study by the agency with the jurisdiction in the area: The Federal Power Commission.

REFUSAL TO COORDINATE

One specific type of conduct covered by the relevant matters in controversy is refusal by Applicant to coordinate with the smaller utilities in the relevant geographic market. Before examining the facts, we shall explore the legal aspects of such a refusal, assuming that it has occurred. Normally the antitrust laws are concerned with activities as distinguished from refusal to act.

Down through the ages, refusal to assist another who is in dire distress has been lawful in the absence of a specific statutory duty to act. Thus, in the parable of the Good Samaritan (Luke 10:29-37) and of the Rich Man and Lazarus (Luke 16:19-31), while those who failed to help the unfortunate met with divine disapprobation, there is no indication of the breach of a legal duty. At common law, there is no duty to save a drowning man. In order for a statute to impose such a duty, it must be clearly spelled out. For example, statutes requiring that:

The Coast Guard ... shall develop, establish, maintain and operate ... rescue facilities for the promotion of safety ... [14 USC §2].

and further that:

In order to render aid to distressed persons, vessels and aircraft ..., the Coast Guard may (1) perform any and all acts necessary to rescue and aid persons and protect and save property ... [14 USC §88a].

have been uniformly held to fall short of creating a government duty of affirmative action to aid a person in distress, Frank v. U. S., 250 F. 2d 178 (3rd Cir. 1957), cert. den. 356 US 962, 78 S. Ct. 1000, 2 L. Ed. 2d 1069, U. S. v. Sandra & Dennis Fishing Corp., 372 F. 2d 189 (1st Cir. 1967), cert. den. 389 US 836, 88 S. Ct. 48, 19 L. Ed. 2d 98 (1967). Of course, if the Coast Guard

undertakes a rescue, it has a duty not to cause injury by its negligence, U. S. v. Sandra & Dennis Fishing Corp., supra. U. S. v. Gavagan, 280 F. 2d 319 (5th Cir. 1960), cert. den. 364 US 933, 5 L. Ed. 2d 365, 81 S. Ct. 379. However, this latter point is not reached if there is a refusal to give assistance.

The reason that a refusal to give aid is not unlawful is that he who refuses to help does not *cause* injury. Since he does not participate in the events, the causation must be from some other source. On the other hand, if the erstwhile inactive party does go to the rescue, and in so doing causes injury, then liability may be found. See U. S. v. Sandra & Dennis Fishing Corp. and U. S. v. Gavagan, both supra.

In the parable of the Good Samaritan, neither the priest nor the Levite *caused* the condition of the man left by the roadside. The robbers did that. In the parable of Lazarus, the rich man did not *cause* the poverty of Lazarus or Lazarus' sores. They were caused by events extrinsic to the rich man's conduct.

Similarly, where a small utility has difficulties arising from extrinsic causes, a large utility's refusal to aid the small utility is not unlawful in the absence of a statutory duty to render such aid. Here again the reason is that the refusal does not *cause* whatever difficulties the smaller utility may have. The difficulties arise from extrinsic causes. In the utility field, the causes could be geographic location of the smaller utilities, high cost of operating small generating units, destruction or damage to equipment due to storms, etc., none of which were caused by the large utility or by its refusal to aid. It is important to clearly understand this concept of causation. The Parties having the burden of proof keep insisting that Applicant's alleged refusal to aid the smaller utilities is the cause of the handicaps which actually result from extrinsic causes. In a legal connotation, such arguments are illogical, unreasonable and unsound. In law, the refusal to aid someone in trouble is NOT the cause of such trouble.

There remains to be determined whether there is a statutory duty imposed on the larger utility to aid the smaller utility. There is no specific requirement in any antitrust law that an entity must aid its competitor. An entity may choose to mind its own business and leave its competitor to do the same. Such conduct is not anticompetitive. Just as a public utility may quite properly refuse to share with a private utility the tax advantage and cost-of-money advantage accruing to it, so also the larger private utility may refuse to share the various advantages which the size of its facilities and financial assets confer on it.

Under the antitrust laws, mutual assistance agreements between competitors are suspect. See, for example, Timken Roller Bearing Co. v. U. S., 341 US 593, 71 S. Ct. 971, 95 L. Ed. 1199 (1951); U. S. v. Penn-Olin Chemical Co., 378 US 158, 84 S. Ct. 1710, 12 L. Ed. 2d 775. This is because such agreements tend to lessen competition by fostering price fixing, division of territories, agreements not to compete, and other anticompetitive conduct.

The Federal Power Act sanctions and encourages voluntary mutual assistance agreements (coordination in the electric industry). Partly this is because much of

the conduct forbidden by the antitrust laws is not likely to become a part of such coordination. The activities of the state regulatory bodies supervise retail prices of privately-owned utilities and the FPC supervises wholesale prices. To a large extent, geographic areas of service are determined by franchises and by the fact that duplication of service facilities is uneconomical. Partly, coordination is sanctioned and encouraged because it tends to increase reliability and decrease cost of service both of which ends are in the public interest (see §824a(a) of the Federal Power Act). However, this Act does not impose voluntary coordination as a duty. Voluntary coordination is permissive and not mandatory. No other statute is known to us and none has been called to our attention which makes it a duty to engage in voluntary coordination. In fact, if such did exist, coordination would not be voluntary.

We conclude as a matter of law, that unilateral refusal to assist competitors per se is not anticompetitive conduct and is not a scheme or conspiracy the purpose or effect of which is to cause the creation or maintenance of a situation inconsistent with the antitrust laws. Such refusal causes no injury to the competitor. The utility has no duty to benefit its competitor by alleviating the competitor's injuries resulting from extrinsic causes.

We conclude as a matter of law that unilateral refusal to enter voluntarily into coordination agreements with competitors per se is not anticompetitive conduct and is not a scheme or conspiracy the purpose or effect of which is to cause the creation or maintenance of a situation inconsistent with the antitrust laws. Such refusal causes no injury to the competitors. The utility has no legal duty to benefit its competitors by alleviating injury from extrinsic causes. Such refusal would not give rise to a situation inconsistent with the antitrust laws.

If a utility has an anticompetitive scheme, such as monopolization, and if its unilateral voluntary refusal to coordination with its actual or potential competitor is a material element and a substantial factor in said scheme, then there is a misuse of its otherwise lawful refusal to coordinate. Under such circumstances, the refusal can give rise to a situation inconsistent with the antitrust laws. *American Tobacco Co. v. U. S.*, supra, *Otter Tail v. U. S.*, 410 US 366, 35 L. Ed. 2d 359, 93 S. Ct. 1002, reh. den., 411 US 910, 36 L. Ed. 2d 201, 93 S. Ct. 1523 (1973).

Where a monopolist refuses to deal as part of a scheme to illegally extend or prolong his monopoly, the rule was stated by Judge Hughes as follows:

The principles enunciated in these three cases demonstrate that plaintiff has stated a cause of action under Section 2 of the Sherman Act. It is clear that the complaint is sufficient if the refusal of defendant to accept advertising from plaintiff by setting up unreasonable standards or by adopting an arbitrary course of action is for the purpose of destroying plaintiff as an agency and thereby furthering a course toward monopolization. [Twenty-nine Productions, Inc. v. Rollins Telecasting, Inc., 365 F. 2d 478 (5th Cir. 1966)]

Next, consider not a manufacturer but a dealer in services: United Press International. In this case, United Press International did not refuse to deal completely but only refused to deal unless the terms were the same as its other contract customers:

As we pointed out before, our case does not even involve a refusal to deal with plaintiff. UPI was willing to deal with plaintiff on the same basis as its other contract customers. Plaintiff, being an interim newspaper and thus not knowing how long it would be in business, wanted a special deal. Failure of UPI to give plaintiff a special deal and accept its offer of \$3,000 per week, did not operate to create or attempt to create a monopoly. It is not clear to us just how UPI's failure to come to terms with plaintiff could create a monopoly or could be an attempt to monopolize. The proof does not show that UPI had the power to control prices or unreasonably restrain trade. There was no evidence of a specific intent to monopolize. *Kansas City Star Co. v. United States*, 240 F. 2d 643 (8th Cir. 1957), cert. den., 354 US 923, 77 S. Ct. 1381, 1 L. Ed. 2d 1438 (1957). *Daily Press Inc. v. United Press International*, 412 F. 2d 126, 135 (6th Cir. 1969).

If two or more business entities enter into a conspiracy in restraint of trade, such a conspiracy automatically gives rise to a situation inconsistent with the antitrust laws. It is specifically forbidden (see Section 1 of the Sherman Act quoted in Appendix A).

If two utilities enter into a coordination arrangement thereby reaping the benefits of such arrangement and further conspire to prevent other utilities from entering the coordination arrangement with the intent to injure such other utilities, such conspiracy falls squarely within the prohibition of Section 1 of the Sherman Act. A refusal to permit a third utility to enter the coordination arrangement under these circumstances is a material element and a substantial factor in an anticompetitive agreement and is a misuse of the previously legal right to refuse to coordinate with others; provided that the third party brings to the arrangement such contribution as to result in net benefits to all three parties.

REFUSAL TO WHEEL

Another area related to coordination among competitors is involved in refusal to wheel. It is urged that refusal to wheel for competitors is anticompetitive conduct.

Dr. Harold H. Wein, an economist who testified in this case [direct testimony follows Tr. 3979], has an impressive background as a teacher, Principal Economist of the Antitrust Division, U. S. Department of Justice (1945-1951), first Chief Economist of the Federal Power Commission and in other activities (direct testimony pages 1-13).

On page 23 of Dr. Wein's direct testimony, he quotes a paragraph from United States v. (1) Ohio Oil Company, (2) Standard Oil Company, (3) Standard Oil Company of Louisiana, (4) Prairie Oil and Gas Company, (5) Uncle Sam Oil Company, and (6) Robert D. Benson et al, doing business under the partnership name of Tide Water Pipe Company, Limited, 234 US 548, 58 L. Ed. 1459, 34 S. Ct. 956 (1914) which he alleges was brought under the Sherman Act. Actually, the case, usually called the "Oil Pipeline Case", was brought under the Hepburn Act of June 29, 1906 which amended chap. 3591, 34 Stat. at Large 584, U. S. Comp. Stat. Supp. 1911, p. 1288 (the Act to Regulate Commerce) so that the first section reads in part as follows:

That the provisions of this act shall apply to any corporation or any person or persons engaged in the transportation of oil or other commodity, except water and except natural or artificial gas, by means of pipe lines, or partly by pipe lines and partly by water, who shall be considered and held to be common carriers within the meaning and purpose of this act.

Dr. Wein's quotation contains all but the last sentence of the following paragraph:

Availing itself of its monopoly of the means of transportation, the Standard Oil Company refused, through its subordinates, to carry any oil unless the same was sold to it or to them, and through them to it, on terms more or less dictated by itself. In this way, it made itself master of the fields without the necessity of owning them, and carried across half the continent a great subject of international commerce coming from many owners, but, by the duress of which the Standard Oil Company was master, carrying it all as its own. *The main question is whether the act does and constitutionally can apply to the several constituents that then had been united into a single line.* (Emphasis added).

The thrust of this case is in the last sentence of the above quotation (omitted by Dr. Wein). The Oil Pipe Line case was neither brought nor decided under the Sherman Act. Yet Dr. Wein considers transmission facilities for electric energy as analogous to the Oil Pipe Line case. So be it. In the electrical industry, there is no act of Congress requiring wheeling as a public utility. This failure of Congress was not an oversight.

Bills to require wheeling were repeatedly considered. The history of the Federal Power Act, its purpose, and the efforts to include forced wheeling is concisely stated in 35 L. Ed. 2d at page 371, column 2 through page 373, column 1. Forty years of effort failed to result in Congressional enactment of a requirement to wheel. Thus, the analogy, properly applied, is that by Act of Congress, oil pipe line owners must carry oil from others whereas no statute required owners of transmission facilities to do so. Furthermore, in the Oil Pipe Line case, the court held that the Uncle Sam Oil Company which transmitted only oil from its own wells across state lines to its own refinery was not obliged

by the statute to become a carrier for others. By analogy, a power company which builds and operates transmission facilities to carry power generated by itself to other points in the same state, a fortiori, would not even be forced to wheel if Congress were to pass an act concerning wheeling similar to the Hepburn Act.

The Federal Power Commission deems itself without power to order involuntary wheeling [Otter Tail v. U. S., supra]. A Federal Court, having found a party engaged in anticompetitive activities forbidden by the antitrust laws, may, as part of the remedy, require wheeling [Otter Tail v. U. S., supra]. The anticompetitive activity found in this case was *not refusing to wheel per se* but was a scheme intended to prevent the City of Elbow Lake from entering the electric utility business. Refusal to wheel was only one of several activities used to effect the illegal scheme. In determining whether or not a scheme is illegal, it is immaterial whether or not steps taken in furtherance of the scheme are legal or illegal. See American Tobacco Co. v. U. S., supra. In Otter Tail, the courts did not need to address themselves to whether or not refusal to wheel is a per se violation of the antitrust laws and any passing remarks on this point are obiter dicta. By the same line of reasoning and on the same authorities quoted in discussing the refusal to coordinate question, we conclude as a matter of law that unilateral refusal to wheel power for competitors per se is not anticompetitive conduct and is not a scheme or conspiracy the purpose or effect of which is to cause the creation or maintenance of a situation inconsistent with the antitrust laws.

Justice, Staff and Intervenor condemn refusal to wheel as a bottleneck situation. All of the bottleneck cases involve conspiracies. We can do no better than to quote the excellent discussion by the 9th Circuit Court of Appeals in Joseph E. Seagram & Sons, Inc. v. Hawaiian Oke & Liquors, Ltd., 416 F. 2d 71 (9th Cir. 1969):

It is no doubt true that a manufacturer or supplier can do many things independently which he may not combine with others to accomplish. See e.g., United States v. Parke, Davis & Co., 1960, 362 US 29, 80 S. Ct. 503, 4 L. Ed. 2d 505; Associated Press v. United States, 1945, 326 US 1, 14-15, 65 S. Ct. 1416, 89 L. Ed. 2013; United States v. Bausch & Lomb Optical Co., 1944, 321 US 707, 722, 64 S. Ct. 805, 88 L. Ed. 1024. But the mere fact of combination or "conspiracy" does not necessarily result in per se liability.

We turn, then, to the group boycott cases on which plaintiff relies. Such boycotts have been held to be illegal *per se* under Section 1 because they are "naked restraints of trade with no purpose except stifling of competition." White Motor Co. v. United States, supra, 372 US at 263, 83 S. Ct. at 702 (Emphasis added). We find that in all of plaintiff's cases there was a purpose either to exclude a person or group from the market, or to accomplish some other anticompetitive objective, or both.

In several of them, the objective was to put one or more so-called "discounters or price-cutters" out of business. *United States v. General Motors Corp.*, 1966, 384 US 127, 86 S. Ct. 1321, 16 L. Ed. 2d 415. *Ford Motor Co. v. Webster's Auto Sales, Inc.*, 1 Cir., 1966, 361 F. 2d 874, involved a scheme similar to, but less elaborate than the General Motors scheme. Somewhat similar is *Fashion Originators' Guild of America v. FTC*, 1941, 312 US 457, 61 S. Ct. 703, 85 L. Ed. 949, where a combination of manufacturers and designers sought to suppress competition by "style-pirates" who were also price cutters.

In other cases, there was concerted action by one group to put one or more of their competitors out of business, or to impair their ability to compete with the conspirators. See *Silver v. New York Stock Exchange*, 1963, 373 US 341, 347, 83 S. Ct. 1246, 10 L. Ed. 2d 389; *Radiant Burners v. Peoples Gas Light & Coke Co.*, 1960, 364 US 656, 81 S. Ct. 365, 5 L. Ed. 2d 358; *Associated Press v. United States*, *supra*.

Another case involved the exclusion of competitors from the market by monopolistic practices violative of section 2 of the Sherman Act, together with a price-fixing conspiracy. *Continental Ore Co. v. Union Carbide & Carbon Corp.*, 1962 370 US 690, 82 S. Ct. 1404, 8 L. Ed. 2d 777. *Binderup v. Pathe Exchange, Inc.*, 1923, 263 US 291, 311, 44 S. Ct. 96, 68 L. Ed. 308, is similar, although the exclusion was of a customer of some of the conspirators, rather than a competitor of the conspirators. *Eastern States Retail Lumber Dealers' Ass'n. v. United States*, 1914, 234 US 600, 34 S. Ct. 951, 58 L. Ed. 1490, involved a combination of retailers to boycott wholesalers who sold directly to consumers. See also *Montague & Co. v. Lowry*, 1904, 193 US 38, 24 S. Ct. 307, 48 L. Ed. 608. In *Kiefer-Stewart Co. v. Joseph E. Seagram & Sons, Inc.*, 1951, 340 US 211, 71 S. Ct. 259, 95 L. Ed. 219, there was an agreement between sellers to refuse to sell to wholesalers who would not agree to abide by maximum resale prices fixed by the sellers. Thus the boycott of the plaintiff to that case was part of a price-fixing scheme. In *Klor's, Inc. v. Broadway-Hale Stores, Inc.*, 1959, 359 US 207, 79 S. Ct. 705, 3 L. Ed. 2d 741, on which plaintiff most heavily relies, the purpose was to put the plaintiff out of business. That was enough for the Supreme Court. And the facts show, although the Court did not rely on this, that the reason for doing so was that the plaintiff was a price-cutter. Thus, the defendant's motives were doubly anticompetitive.

Group action in denying a market to competitors was also condemned in *Gamco Inc. v. Providence Fruit & Produce Bldg.*, 194 F. 2d 484 (1st Cir. 1952), *cert. den.*, 344 US 817, 73 S. Ct. 11, 97 L. Ed. 636 (1952).

No better summary stated has been found than that of Judge Murrain:

But, a mere declination to sell to competitors or to supply retail outlets in a competitive market is not illegal, unless such refusals to sell or supply can be

shown to be in furtherance of a contract, combination or conspiracy to unduly suppress the free flow rate of trade or commerce. *Shotkin v. General Electric Co.*, supra; *United States v. Bausch & Lomb Optical Co.*, 321 US 707, 722, 64 S. Ct. 805, 88 L. Ed. 1024. [*Blue Bell Co. v. Frontier Refining Co.*, et al., 213 F. 2d, 354, 358, 359 (10th Cir. 1954).]

(See also *Zenith Vinyl Fabrics Corp. v. Ford Motor Company*, 357 F. Supp. 133, 140, 141 (E. D. Mich. 1973)).

We conclude as matter of law, that the bottleneck situation applies only to conspiracies and hence is inapplicable to a unilateral refusal to wheel.

Otter Tail, supra, is relied upon by Justice, Staff and Intervenor for the proposition that a refusal to wheel by a utility having most if not all of the high voltage transmission in relevant geographic market is illegal monopolization.

Court decisions in each and every case are affected by the whole factual situation. In *Otter Tail*, when the franchise from the City of Elbow Lake expired, it was not renewed. Elbow Lake decided, as it had a right to do, to provide retail power as a municipal enterprise. Thereupon *Otter Tail* refused to sell power or to wheel power to Elbow Lake. *Otter Tail* also relied on an illegal contract with the United States. Not satisfied with these negative reactions, *Otter Tail* sought by litigation to prevent Elbow Lake from building its own generating facilities. In other words, the refusals to deal or wheel were only part of a monopolistic scheme to completely block Elbow Lake from setting up a municipal utility. Even in this setting, the Supreme Court upheld the lower court only by a 4 to 3 majority. The minority opinion referred to the repeated failure of efforts to get Congress to require compulsory wheeling and concluded that a refusal to wheel was exempt from the antitrust laws.

The antitrust laws deal with anticompetitive business conduct. An entity not in the business of wheeling cannot violate the antitrust laws by refusing to go into business. The Congress may be able to force an entity to enter a business where the public interest is at stake, but, before *Otter Tail*, no court has ever forced an entity into a business which it did not wish to enter using as the bootstrap excuse refusal to voluntarily embark on such business. We do not believe that *Otter Tail* so held. We believe that the correct interpretation of the majority opinion in *Otter Tail* is that if there has been a violation of the antitrust laws by a willful combination of acts intended to and tending to interfere with lawful completion in violation of the "attempt to monopolize" clause of Sec. 2 of the Sherman Act, then, as a remedy, the defendant may be required to do acts from which it would otherwise have a right to abstain.

In our view, *Otter Tail* is in accord with all the cases that hold that "acts, in themselves legal, lose that character when they become material elements and significant factors of an unlawful scheme." *Continental Ore Co. v. Union Carbide Corp.*, 370 US 690, 706, 8 L. Ed. 777, 789, 82 S. Ct. 1404 (1962) and the cases cited there. Furthermore, the facts in *Otter Tail* fit our analysis of

nexus. The scheme was to prevent Elbow Lake from having an independent municipally owned electric plant. Several acts were substantial factors and material elements in that scheme: Refusal to "wheel", refusal to sell, sham litigation, and contracts which the Court held illegal (see *Otter Tail*, supra, at 368).

In addition, the Department of Justice apparently agreed at one time with this analysis of *Otter Tail* (see Department of Justice "Motion to Affirm" filed in *Otter Tail* appeal from remand proceeding before the U. S. Supreme Court in Part II, General Material, Appendix to Consumers Power's Brief in Support of its Proposed Findings of Fact and Conclusions of Law, No. 49). On page 18 of the Brief, Justice argued:

These findings showed a deliberate purpose to maintain *Otter Tail's* monopoly position by every means available to it, including refusals to deal, refusals to wheel power, and use of restrictive contract provisions to prevent other suppliers from wholesaling power to those *Otter Tail* sought to control. The litigation was an integral and extremely effective part of this effort.

REFUSAL OF ACCESS TO NUCLEAR FACILITIES

Hereinabove, we have concluded that the unilateral voluntary refusal by a utility to enter into coordination agreements with its competitors, without more, is not anticompetitive conduct for the reason that causal relationship is absent between such refusal and any injury or misfortune of such competitors and for the further reason that such utility has no legal duty to benefit its competitors by alleviating such competitors' injuries from extrinsic causes. This broad conclusion includes both operational coordination and developmental coordination. Developmental coordination is the joint planning of facilities, and includes the concepts of joint venture and unit power access to a nuclear generating facility. Accordingly, the aforesaid conclusion comprises refusal to provide competitors with either joint venture or unit power access to a nuclear facility. In addition to this basic legal principle, there is another reason why refusal of such access is not anticompetitive conduct. As has been discussed in connection with the matter of nexus, the use of activities under a grant authorized by Congress is immune from the reach of the antitrust laws. Only if it can be shown that the activities under the license will be misused as a material element and substantial factor in an anticompetitive scheme or conspiracy is it possible to deem refusal of access by joint ownership or unit power to be unlawful. The argument that activities under and within the scope of a license granted pursuant to federal statute can, in and of themselves, create or maintain a situation inconsistent with the antitrust laws is to imply that, in passing such statute, the Congress stultified itself. Such an argument stretches credulity to the breaking point.

Of course, if activities under the license were to be misused as a material element and significant factor in a scheme or conspiracy so as to create or maintain a situation inconsistent with the antitrust laws, there would be nexus between said misused activities and said situation.

We conclude as a matter of law that, if an Applicant for a license intends to construct and operate a nuclear power facility solely for the purpose of supplying power to its customers, unilateral refusal to provide its competitors with access to such facilities is not anticompetitive conduct and is not a scheme or conspiracy the purpose or effect of which is to cause the creation or maintenance of a situation inconsistent with the antitrust laws.

EXPERT OPINIONS

This Board has on occasion [Tr. 6515] informed the parties that the Board would give little weight to opinions of experts as to hypothetical fact situations not based on evidence included in the proceeding. This section discusses the legal basis for that ruling. The Commission Rules (10 CFR 2.743) and the Administrative Procedure Act (5 USC §556(d)) give no guidance and thus we turn to case law.

The 7th Circuit Court of Appeals stated in a case involving an administrative Board:

Opinion evidence, to be of any value, should be based either upon admitted facts or upon facts, within the knowledge of the witness, disclosed in the record. Opinion evidence that does not appear to be based upon disclosed facts is of little or no value. The opinion witnesses here were almost wholly without facts to support their conclusions, and it was within the province of the Board to disregard the opinion evidence and base its opinion upon the facts in the record before it. *The Conqueror*, 166 US 110, 17 S. Ct. 510, 41 L. Ed. 937; *Idaho Power Co. v. Thompson* (D.C.) 19 F. 2d 547. [*Balaban & Katz Corporation v. Commissioner of Internal Revenue*, 30 F. 2d 807, 808 (7th Cir. 1929).]

This holding was recently quoted by the D.C. Court of Appeals (applying to a jury case), *Giant Food Stores, Inc. v. Fine*, 269 F. 2d 542 (D.C. Cir. 1959), reh. den. (1959).

The Supreme Court in discussing the weight of opinions of experts stated:

If they have any probative effect, it is that of expressions of opinion by men familiar with the gas business and its opportunities for profit. But plainly opinions thus offered, even if entitled to some weight, have no such conclusive force that there is error of law in refusing to follow them. This is true of opinion evidence generally, whether addressed to a jury (*Head v. Hargrave*, 105 US 45, 49, 26 L. Ed. 1028, 1030), or to a judge (*The Conqueror*, 166 US 110, 131, 133, 41 L. Ed. 937, 946, 947, 17 S. Ct. 510),

or to a statutory board. *Uncasville Mfg. Co. v. Commissioner of Internal Revenue* (CCA 2d) 55 F. Ed. 893, 897; *Tracy v. Commissioner of Internal Revenue* (CCA 4th) 42 F. 2d 99, 100; *Gloyd v. Commissioner of Internal Revenue* (CCA 8th) 63 F. 2d 649, 650. [*Dayton Power and Light Co. v. Public Utilities Commission*, 292 US 290, at 299, 78 L. Ed. 1267 at 1275 (1933)]

The Seventh Circuit recently stated in a case involving an administrative body citing *Dayton Power* supra:

In fact, we know of no reason why the opinion of an expert such as offered in the instant case may not in the discretion of the trier of the facts be rejected, even though there is no other evidence on the subject. [*R. H. Oswald Co. v. Commissioner of Internal Revenue*, 185 F. 2d 6, at 9, (7th Cir. 1950), reh. den. (1950), cert. den. 340 US 953, 95 L. Ed. 687 (1950)]

The witness in this case was the "sole testimony offered by the Petitioner" who answered questions based on hypotheticals and on facts which he heard in open court. (See also *Tripp v. C.I.R.*, 337 F. 2d 432 (7th Cir. 1964))

Furthermore, it is well established that the "weight of the evidence is a matter for (Administrative Body)", *Concrete Material Corp. v. Federal Trade Commission*, 189 F. 2d 359 (7th Cir. 1951), citing *Corn Products Refining Co. v. Federal Trade Commission*, 324 US 726, 65 S. Ct. 961, 89 L. Ed. 1320 (1944) which the court stated at p. 739:

The weight to be attributed to the facts proven or stipulated and the inferences to be drawn from them, are for the Commission to determine, not the Courts.

The Court in *Corn Products*, supra at 741 also stated:

The only evidence said to rebut the prima facie case made by proof of the price discriminations was given by witnesses who had no personal knowledge of the transactions, and was limited to statements of each witness's assumption or conclusion that the price discriminations were justified by competition. Examination of the testimony satisfies us, as it did the court below, that it was insufficient to sustain a finding that the lower prices allowed to favored customers were in fact made to meet competition.

In addition, Judge Morton in *Cecil Corley Motor Co., Inc. v. General Motors Corp.*, 380 F. Supp. 819 (M.D. Tenn. 1974) stated in a section on "Applicable Legal Standards" that:

Plaintiff introduced its damage theory in part through the testimony of an expert witness, and in part by way of its accountant. Damages calculated by accountants and experts cannot be based upon assumptions which are not supported by the record, and cannot be based upon speculation or guesswork. All of the premises upon which their conclusions are based must be supported by, and comport with, the testimony actually offered in court.

Flintkote Co. v. Lysfjord, 246 F. 2d 368 (9th Cir. 1957) cert. den., 355 US 835, 78 S. Ct. 54, 2 L. Ed. 2d 46 (1957); Sunkist Growers, Inc. v. Winckler & Smith, 284 F. 2d 1 (9th Cir. 1960); Baush Mach. Tool Co. v. Aluminum Co. of America, 79 F. 2d 217 (2d Cir. 1935); and Syracuse Broadcasting Corp. v. Newhouse, 319 F. 2d 683 (2d Cir. 1963).

Experts cannot come into court and offer as proof calculations and theories which they do not themselves support or advocate, but which are designed to reach a desired conclusion, when those calculations have no sound basis in fact or reason. Joseph E. Seagram and Sons, Inc. v. Hawaiian Oke & Liquors, Ltd., 416 F. 2d 71 (9th Cir. 1969). An expert opinion may not, itself, be based upon the opinion of others, either in evidence or not in evidence. Taylor v. B. Heller and Co., 364 F. 2d 608 (6th Cir. 1966).

Applying these legal principles to the evidence offered by plaintiff on this issue, this Court concludes that the plaintiff failed to show actual damages sustained and failed to establish, with any fair degree of certainty, that it lost sales or net profits during the period in question. The jury could not have ascertained plaintiff's probable loss as a matter of reasonable inference. Plaintiff's proof was based upon assumptions not found in, nor supported by, the record, and the jury was required to indulge in speculation, conjecture and guesswork in order to arrive at a figure.

and

In summary, then, this Court finds that the damage theory proffered by plaintiff is wholly inadequate and insufficient to support any award by the jury, for the reasons that it was based: (1) on a profit figure which was not an acceptable net profit; (2) upon assumptions concerning distribution and projected sales which were not supported by the record; (3) upon assumptions and conjectures specifically disclaimed by the witnesses who drew their conclusions therefrom; (4) upon the opinion of an expert who improperly based his assumptions upon that of another witness; (5) upon assumptions which made no attempt to separate lost profits or lost sales relating only to the Pontiac aspect of plaintiff's business as distinguished from its other operations (see note 113, *infra*); (6) upon assumptions which made no attempt to limit damages to the applicable period of potential recovery; and (7) upon speculation, conjecture and guesswork. There being no other evidence on damages, it follows that the proof was insufficient to allow the jury to reasonably infer that plaintiff had suffered damages in any amount.

and

For all of the above reasons, the Court has reached the conclusion that the damage theory offered by plaintiff was legally unsound, and factually unsupported. Therefore, even if the plaintiff had established facts sufficient to support a judgment in its favor, which it did not, this Court would decline to sustain any award of damages for this is not an instance

where the defendant's actions prevented a more precise computation of damages. Rather, the fault lies in the plaintiff's failure to introduce any evidence. To award damages under these circumstances would have been to engage in impermissible speculation and conjecture. See *Siegfried v. Kansas City Star Company*, 298 F. 2d 1, 5-8 (8th Cir.), cert. den., 369 US 819, 82 S. Ct. 831, 7 L. Ed. 2d 785 (1962).

Judge Morton then reversed a jury verdict for the plaintiff.

We are guided further by the Supreme Court to be especially cautious in antitrust cases:

It should be said at the outset, that in considering the application of the rule of decision in these cases to the situation presented by this record, it should be remembered that this Court has often announced that each case arising under the Sherman Act must be determined upon the particular facts disclosed by the record, and that the opinions in those cases must be read in the light of their facts and of a clear recognition of the essential differences in the facts of those cases, and in the facts of any new case to which the rule of earlier decisions is to be applied. [*Maple Flooring Mfrs. Asso. v. United States*, 268 US 563, 579, 69 L. Ed. 1093, 1100, 45 S. Ct. 578 (1924).]

The above is quoted in footnote 22 in *U.S. v. E. I. DuPont de Nemours and Co.*, 351 US 377, 395, 100 L. Ed. 1264, 1280, 76 S. Ct. 994, (1955). Based on these cases and others which follow and which elaborate these cases, this Board in writing its decision has given little weight to opinion testimony of experts relying on hypothetical fact situations which have no basis in the record.

This treatment of opinion testimony will not come as a surprise to the parties. Chairman Garfinckel, during the hearing stated:

I'm not arguing, but you agree that if, when you ask the witness—now we are not talking about a legal question, but when you are asking the witness, in developing fact and you raise hypotheticals and you get answers, that if the answers come out that they are not tied into actual fact in this record, then the answers will fall. [Tr 6515]

Counsel for Justice replied:

Oh, indeed, your Honor. I would expect nothing otherwise. [Tr 6515-6516]

Counsel for the Applicant, Staff and the Intervenors were present [Tr 6455] and remained silent, which we deem to bind them to acquiescence in this exchange.

In view of the antitrust nature of this proceeding, the direct testimony and cross-examinations of fact witnesses were taken orally with each witness on the stand. Written direct testimony was permitted for expert witnesses with live oral cross-examination. In this way, the Board had opportunity to observe the demeanor of each witness.

BACKGROUND FACTS

After a discussion with Counsel for each party and concurrence by them [Tr 93-100] except for possible desires of Justice for some evidence prior thereto [Tr 96]; at the First Prehearing Conference, the Board ruled that the time period to be covered by the evidence would begin January 1, 1960, any prior material being subject to specific Board action [Tr 101].

The record was closed on the 20th day of June 1974 by order of the Board. This opinion will be based on the factual situation as it existed at the close of the record on the 20th day of June, 1974, as disclosed by the entire record.

The State of Michigan is divided by the Straits of Mackinac into two peninsulas. The upper peninsula is bounded on the north and northwest by Lake Superior, on the northeast by Canada from which it is separated by narrow channels (the Sault St. Marie), on the southeast by Lake Huron, on the southeastern tip by the Straits of Mackinac, on the southwest by Lake Michigan and on the west by the State of Wisconsin.

The lower peninsula, which is much the larger both in area and in population, is bounded on the northern tip by the Straits of Mackinac, on the northeast by Lake Huron, on the east by Canada from which it is separated by narrow channels, on the southeast by Lake Erie, on the eastern part of its southern boundary by the State of Ohio, on the western part of its southern boundary by the State of Indiana and on the west and northwest by Lake Michigan [Exhibits DJ 304A and 304B which are maps of the area].

Three types of electric utility systems operate in the lower peninsula of Michigan: (1) investor-owned (or privately-owned) utilities, (2) municipal systems, and (3) rural electric cooperatives [Tr 932]. The five investor-owned utilities in the lower peninsula are: Consumers Power Company, The Detroit Edison Company, Indiana and Michigan Electric Company, Michigan Power Company and the Alpena Power Company [Tr 928-933]. Another investor-owned system, the Edison Sault Electric Company, is located immediately across the Straits of Mackinac in the upper peninsula [Tr 933, Tr 4375-4376, Exhibit DJ 39]. The Indiana and Michigan Electric Company and the Michigan Power Company are subsidiaries of the American Electric Power Company [Tr 928]. The respective service areas of these companies are shown on Exhibits DJ 204A and B. It will be noted that the service area of Consumers Power Company is contiguous to each of the other investor-owned utilities. Of this group, Alpena Power Company alone may be characterized as a "smaller utility". Of the twenty-nine municipal systems in the lower peninsula of Michigan, twenty-three are within or directly adjacent to the Applicant's service area. [Exhibit CP 11,307, DJ 19]. Of these 23, the largest is Lansing, followed in order of peak load size by Holland, Bay City, Grand Haven and Traverse City [Exhibit CP 11,307]. All of the municipal systems distribute electric power to retail

customers and most also own generation facilities [Tr 7878; Attachment JDP-2, Schedule 1, page 1, Column 2 after Tr 7239].

The Wolverine Electric Cooperative (hereinafter called Wolverine) is a generating and transmission cooperative supplying power to four distribution (retail) cooperatives; e.g., Western Michigan Electric Cooperative, Oceana Electric Cooperative, O&A Electric Cooperative and Tri-County Electric Cooperative [Tr 4468]. The Northern Michigan Electric Cooperative (hereinafter called Northern Michigan) is a generating and transmission cooperative supplying power to three distribution (retail) cooperatives; e.g., Top O'Michigan Rural Electric Distribution Company, the Cherryland Rural Electric Cooperative Association and the Presque Isle Electric Cooperative [Tr 958, Tr 1110]. There are three other cooperatives in the lower peninsula; e.g., Southeastern Michigan Electric Cooperative which overlaps Applicant's service area, Fruit Belt Electric Cooperative which partially overlaps Applicant's service area, and Thumb Electric Cooperative which overlaps Detroit Edison's service area. Exhibit DJ 19, a map of the lower peninsula of Michigan, shows the franchise service areas of the investor-owned utilities and the general service areas of the rural electric cooperatives and municipal systems. Its size and markings provide help in visualizing the geographic relationship of the various electric utilities in the southern peninsula of Michigan with which this opinion deals.

Applicant's service area is entirely within the lower peninsula of Michigan. It can be defined as the sum of those counties in which it is franchised, shown in buff on the map identified as Exhibit DJ 204A. Applicant's service area is bounded on the east by that of the Detroit Edison Company, on the southeastern part of its southern boundary by the Toledo Edison Company (in Ohio) and on the southwest by the two subsidiaries of American Electric Power Co., namely Indiana and Michigan Electric Company and Michigan Power Company [Exhibit DJ 204(a) and Exhibit DJ 21, page 18, Exhibit DJ 21A, page facing page 1]. Applicant also, for historical reasons, buys wholesale power sufficient to supply the needs of Pontiac from Detroit Edison and sells such power at retail to that community, which is geographically in Detroit Edison's service area [Exhibit CP 12,022A, page 410 and map facing page 410].

Applicant's Chairman of the Board and President testified that Applicant has no interest in serving the upper peninsula of Michigan [Tr 6463-6465] and, in fact, has no interest in serving anywhere beyond its present service area [Tr 6130-31, Tr 6976]. Although there are no exclusive franchises in Michigan [Tr 7872, Exhibit DJ 2], the unwillingness of The Michigan Public Service Commission (MPSC) to approve a franchise to any applicant utility in the service area of another utility in the absence of unsatisfactory service indicates that Applicant probably would not be permitted to expand its service area in Michigan even if it so desired [Tr Q, 6530, line 248, A, 6532, line 23 to 6533, line 10].

In its existing service area, Applicant has 53 so-called Perpetual Foote Act Franchises,⁸ 961 voted 30-year franchises and 4 revocable franchises. Of the 30-year franchises, 375 have expired and been renewed between January 1, 1960 and October 29, 1973. Between October 29, 1973 and December 31, 1985, 215 franchises representing 11.35% kilowatt hour sales will expire and be considered for renewal [Exhibit CP 11,306]. The communities served by Applicant are listed at page 359 of Exhibit DJ 109].

As of the end of 1973, Applicant's electric retail sales amounted to \$475,720,869 and, expressed as electrical units, 23,263,781,000 kilowatt hours. It served 1,180,046 customers [DJ 21A, page 28, column 1].

From 1960 to 1972, the system requirements (retail sales) of the municipal systems as a whole in the lower peninsula more than doubled, i.e., they increased 114% [Exhibit CP 11,307]. Northern Michigan and Wolverine more than trebled (Idem). Alpena Power Co. almost trebled while Edison Sault Electric Co. in the upper peninsula of Michigan had an increase of about 50% (Idem). During the same time period, Applicant's retail sales went from 9,303,865,000 Kwhr to 21,352,570,000 Kwhr [Exhibit DJ 21, page 28; Applicant's 1970 Annual Report to Stockholders, page 31, gives 1960 data of which we take official notice].⁹ Thus, Applicant's retail sales from 1960 through 1972 increased approximately 130 percent.

From Exhibit CP 11,307, we find that for the year 1972, the total retail sales (System Requirements) of the 23 municipal systems was 3,031,364 Mwhr; the total retail sales of Electric Cooperatives was 938,576 Mwhr; and the total retail sales of Alpena Power Co. was 245,117 Mwhr, or a total of 4,255,053 Mwhr. For the same year, Applicant sold at retail 21,352,570 Mwhr [Exhibit DJ 21, page 28]. By addition, the total sales for this entire group of utilities was 25,607,623 Mwhr. Factoring, we find that Applicant had 84% and the smaller utilities had 16% of the combined retail business in 1972.

Repeating the process for 1960, Applicant had 84% and the smaller utilities had 16% of the retail business in 1960. (Applicant's retail sales for 1960 were obtained from Applicant's Annual Report to Stockholders for 1970, page 31.)

Applicant's retail sales are made at uniform nondiscriminatory rates, terms and conditions subject to the approval of the MPSC [Tr 8286-8287]. The MPSC does a conscientious job of policing rates [Tr 6983-4, Stelzer prepared testimony page 9 after Tr 7224, Tr 8287, Exhibit CP 12,022, pages 109d, 109e, 109f and 109g]. Applicant has failed to earn its cost of equity capital for the six years ending 1973 [Tr 6409, 6983].

A study made in 1968 [Exhibit DJ 225] showed comparison of Applicant's retail rates with municipal utilities and REA Cooperative utilities. For

⁸ For details of the Foote Act, see Exhibit DJ 6 and Tr 1575-1584.

⁹ The Parties were notified by conference call on 8 July 1975 of the Board's intent to take official notice of this document. By phone on 10 July 1975, the Parties advised that they had no objection.

municipals (which are not subject to MPSC jurisdiction) the average was lower than Applicant for smaller customers and higher than Applicant for larger customers, the break-even point being at about 500 Kw/hr. However, for some municipals, rates were consistently lower than Applicant. The retail rates of City of Lansing, the largest municipal system, was approximately 20% below Applicant's. This fact disturbs Mr. Aymond because it makes customers want to leave Applicant for Lansing [Tr 6061] and, because Lansing is used as a yardstick, the MPSC is reluctant to raise Applicant's retail rates [Tr 6062]. Mr. Brush, General Manager of Lansing Board of Water and Light, confirms that the MPSC takes into consideration municipal rates vis-a-vis investor owned rates [Tr 2361]. Lansing's costs of generating power are less than Applicant's wholesale power rates [Tr 2221].

The aforesaid study [Exhibit DJ 225] shows that in 1968, the retail rates of REA Cooperatives were generally higher than Applicant's rates because the Cooperatives serve sparsely settled areas. As is shown above, in spite of the rate differential, the Cooperatives are growing much faster than Applicant.

Competition at retail is limited because the cost of facilities to serve a customer (distribution lines and related equipment) is so high that duplication of facilities is generally viewed as uneconomic. Retail electric energy sales has been recognized as a natural monopoly for this reason. Two municipalities compete with Applicant on a house-to-house and street-to-street basis (Bay City and Traverse City) but these cases are anachronisms resulting from the Foote Act which has long since ceased to be a mechanism for franchising. The MPSC will not permit the franchising on electric utility to serve in an area already receiving adequate services from another utility [Exhibit DJ 3, Tr 6533]. Municipalities having their own utility systems do not franchise other competitive utilities. Thus, while there are no exclusive franchises in Michigan [Tr 7872 Exhibit DJ 2], competition by dual distribution facilities is rare. In 1965, the MPSC took jurisdiction over rural electric cooperatives and by issuance of the single phase rule [Exhibit DJ 9], prevented pirating of old customers by either cooperatives or by privately-owned utilities [Tr 7850]. This rule also severely limited competition for new customers in peripheral areas where it might otherwise occur.

The statutory 25% rule limited sales by municipalities outside of city limits to 25% of sales within city limits [Page 17-18 after Tr 7239; Tr 975-976; Tr 2243; Tr 6061-6062; Mich. Const., 1963, Art. VII §24 (Appendix to Applicant's Brief in Support of its Proposed Findings from Part I, No. 23)]. This Michigan Statute has recently been amended [Public Act No. 179—No. 24 to Part I of Appendix to Applicant's aforesaid Brief]. The amendment is so new that its effect on retail competition is yet to be demonstrated.

In areas where retail competition is feasible, there is competition between Applicant and the smaller utilities [Tr 985; 1013; 1052; 2026-2027].

Excluding the acquisitions by Applicant discussed hereinafter, there has been neither entry nor departure by smaller utilities during the period between January 1, 1960 and June 20, 1974. Although details of the industry prior to January 1, 1960 have been excluded in determining whether or not a "situation" exists, nevertheless, it is not improper to note that during the period of Applicant's substantial growth prior to that date, the existing municipal utilities were on the scene. All of the municipals were in existence by 1933, all but two began before 1913, and fifteen began before the turn of the century [Exhibit DJ 199, pages 3 and 4]. Seven of them serve other communities and three serve nearby summer resorts [Exhibit DJ 198, page 6]. They have been able, tough and aggressive competitors of Applicant for a long time. The growth rates of Northern Michigan and Wolverine attest to their competitive viability.

It is Applicant's policy to generate in its own facilities the electric energy needed for its sales. Hence, normally there is no competition for the bulk power requirements of Applicant. In other words, Applicant is vertically integrated from generation through delivery of electric energy. In recent years, construction delays and operational difficulties have forced Applicant to purchase on a short-term basis substantial quantities of wholesale power [Exhibit CP 12,022, p. 423, Tr 8692, Tr 8694, Tr 9798].

Ten of the 23 municipal systems generated all of their electric energy requirement or bought from other than Applicant in 1972 [Exhibit CP 11,307]. In addition, Lansing, which bought 3.8% of its requirements from Applicant in 1972 [Exhibit CP 11,307], is now generating all of its needs [Tr 7884]. Coldwater purchased 25.4%, Hillsdale 54.8%, Portland 58.1% and nine others purchased from 81.5 to 100% from Applicant in 1972 [Exhibit CP 11,307]. The rest of their requirements were either self-generated or purchased from others. The G&T cooperatives, Northern Michigan and Wolverine, supply the needs of seven distributive co-ops, save for small amounts. Southeastern Michigan Electric Cooperative purchased 17.1% of its needs from Applicant in 1972 while Fruit Belt Electric Corporation and Thumb Electric Cooperative were independent of Applicant. Alpena, which owns some old hydroelectric generation bought 80% of its needs from Applicant in 1972 [Exhibit CP 11,307]. Summaries for 1972 show that the smaller systems self-generated 70% of their needs, bought 17% from Applicant and 13% from others [Tr 7878]. Since 1972, there has been a trend toward self-generation among the smaller utilities [Tr 7884-7885]. Northern Michigan, Wolverine, Grand Haven Board of Light and Power, and the City of Traverse City are interconnected so as to form a power pool as the Michigan Municipal and Cooperative Power Pool [Exhibit DJ 104, Tr 1117-1118]. It is sometimes referred to as the M-C Pool and as the Muni-Co-op Pool [Tr 1117]. Its general capabilities are discussed at Tr 1285-1289. Its transmission facilities will be hereinafter discussed under the heading SITUATION 4—PREVENTION OF COORDINATION BY REFUSAL OF APPLICANT TO WHEEL.

Applicant has been offering firm wholesale power to the smaller utilities since prior to January 1, 1960 [Tr 8298-8300]. Applicant has never refused to sell wholesale power in its service area [Tr 6064 to 6072]. Applicant claims to have no interest in serving beyond present service area [Tr 6130]. Applicant has never had an oral or written agreement prohibiting wholesale sales beyond its present service area [Tr 6070-6071]. Because of inability to earn minimum return, Applicant would be reluctant to incur added responsibilities [Tr 6063]. Applicant's policy not to sell outside of Michigan is unilateral [Tr 6476].

Wolverine's cost to generate and deliver power to consumers is less than Applicant's wholesale rate [Tr 4489].

Bay City buys bulk power from Applicant and sells retail at 10-15% below Applicant's retail prices [Tr 1576-1577; 2023; 6463-65; 7808-7809]. Lansing can generate at less than Applicant's bulk power rate [Tr 2221; 2332].

The proposed Midland Plant (Units 1 and 2) will consist of two units each having the equivalent of 800 electrical megawatts nuclear sources; i.e., the nuclear steam supply system is sized at the 800 megawatt electrical level. Unit 2 will have a generator capable of producing approximately 815 megawatts. However, Unit 1 will have a smaller generator capable of producing approximately 485 megawatts. The surplus steam from Unit 1 will be sold to the Dow Chemical Company for use as process steam [Tr 7937; 8528-8529; 9160-9161]. The sizes of these units were fixed and the proposed plant was publicized in 1967 [Exhibit DJ 183, Tr 8529]. The estimated cost of electric energy from the Midland plant is 16 mills per kilowatt-hour. This is based on an estimated capital cost of \$569 per kilowatt, 3 mills fuel cost and 6 mills for operation and maintenance cost per kilowatt-hour [Tr 8532]. This compares with Applicant's 1973 system-wide average cost of generation of 13 mills per kilowatt-hour [Tr 8532-8533]. One witness, Mr. Mosley, refused to speculate on system-wide costs when the Midland plant goes operative [Tr 8533]. Mr. Aymond also refuses to speculate on such future system-wide costs [Tr 6352]. However, Mr. Jefferson, Applicant's Executive Director of Rates, Research and Data Control [Tr 8274], estimates that costs for Midland will be somewhat higher than the system average when Midland goes into effect [Tr 8434].

On this state of the evidence [Tr 6352; 8434; 8533], the relation of cost of power from Midland to Applicant's system average cost is speculative but the chances are that Midland costs will exceed Applicant's average system cost. Certainly, there is no evidence that Midland power will be cheaper.

The electric power generated by the Midland plant will be fully integrated into Applicant's system [Tr 9160]. Such power will be commingled with that of the Applicant's other sources of bulk power and will be utilized by Applicant solely as undifferentiated power produced by the system as a whole [Tr 9160]. Applicant requires the entire power output of the Midland plant to serve the requirements of its customers [Tr 9159].

Since this proceeding is under the grandfather provision of the 1970 amendments to the Act [Sec. 105c(8)], construction permits for the Midland

units were issued December 15, 1972 and the units are scheduled to become operational in 1979 and 1980 [Exhibit DJ 21A, page 10, Tr 9161].

Applicant has a small nuclear fueled plant, 75 Mw rating, Big Rock Point, which went on stream in 1962 [Exhibit CP 12,022, pages 436A and 437A]. We compute the cost per Kwhr because the record does not disclose the figure.

To get capacity cost per Kilowatt-hour at full production:

(1) multiply cost per Kw by a percent which equals cost of money plus depreciation.

Cost per Kw for Big Rock Point = \$197.53

[Exhibit CP 12,022, page 432f]

Cost of money in 1973 = 7.5%

[Exhibit DJ 228A, page 4, Schedule III (D)]

Depreciation at 40 years linear = 2.5%

$\$197.53 \times 10\% = \19.753

(2) divide product of (1) by total hours in 1 year; i.e., 8760

$$\frac{19.753}{8760} = \$0.00225 = 2.25 \text{ mills (Kwhr)}$$

To get capacity cost at less than full production; divide product of (1) by total number of hours of operation.

In 1973, Big Rock Point operated 6994.3 hours [Exhibit CP 12,022, page 432f].

$$\frac{19.753}{6994.3} = \$0.00282 = 2.82 \text{ mills}$$

Total capital cost = 2.82 mills

O&M cost 6.28

Fuel cost 2.50

Big Rock Point

Total Cost

(1973) 11.60 mills/Kwhr

This cost compares favorably with system-wide average costs for 1973 of 13 mills. Applicant deems Big Rock Point an experimental plant [Tr 8077]. Yet it was so successful in 1973, that it outperformed Applicant's system average. In October 1973, it outperformed all commercial boiling water reactors in the United States regardless of size [Exhibit DJ 21A, page 11].

Applicant has a large nuclear fueled plant, Palisades, 815.7 Mw rating which became operative in 1967. Its operation in 1973 was limited by mechanical troubles [Exhibit DJ 21A, page 10, Tr 8692; 8694; 8708]. Using the formulas above and the data from page 432f of Exhibit CP 12,022, the cost of power from this plant for 1973 was:

Total capital cost =	5.17 mills
O&M cost	3.99 mills
Fuel cost	<u>2.70 mills</u>
Palisades Total	
Cost (1973)	11.86 mills/Kwhr

which compares favorably with the system average of 13 mills.

Palisades continued to be plagued by mechanical troubles in 1974. However, Mr. Aymond continued to view nuclear power as being the lowest base load power available. He thought the older nuclear power plants would have lower costs because construction costs keep going up all the time [Tr 6353].

Applicant now has no definite plans for future nuclear power plants. Its needs in the near future will be supplied by fossil fuel plants, two units at Applicant's Karn site totalling 1300 Mw of capacity and one unit at Applicant's Campbell site at 800 Mw capacity [Tr 9188]. Mr. Aymond testified that Applicant does not desire to pioneer large units [1000 or over Mw] and will stay with units in the 600 Mw-800 Mw range for a while [Tr 8500-8501]. The capital costs of the fossil fuel units are estimated to be considerably less than those predicted for Midland. Thus, for Midland, capital costs were predicted to be \$569 per Kw [Tr 8532] while for the projected fossil fuel units, they are predicted to be \$184 and \$337.40 per Mw respectively (capacity in Mw divided by cost equals cost per Mw) [Exhibit CP 12,022, page 406; Exhibit DJ 21A, page 10 uses slightly different estimates].

In the record of these proceedings, there are references to Applicant's future nuclear plant, Quanicassee [Tr 1736-1737; 2316-2317; 2319; 2483, Exhibits DJ 21, p.8; DJ 21A, p. 12]. For completeness, we note that a license application for that plant was tendered to the Commission on October 29, 1973. On June 28, 1974, Applicant publicly announced that it was cancelling plans to construct the Quanicassee units [CLI-74-29, RAI-74-7, p. 10]. On October 29, 1974, Applicant's request for withdrawal of its application as to these units was granted [CLI-74-37, RAI-74-10, p. 627].

APPLICANT'S NEW POLICY

The statement of Applicant's policy put in the record on February 12, 1974 [Tr 6048] and the modified statement of Applicant's policy as approved by Applicant's Board of Directors put in the record on March 6, 1974 [Tr 8106-8109] have been considered. The first statement is rejected as superseded. In general, the final statement of policy appears to reaffirm other evidence of record concerning policies dealing with coordination, acquisitions, and sales at wholesale and retail; and to announce a new policy dealing with wheeling. To the extent that the final statement [Tr 8106-8109] reflects Applicant's existing policy as shown by evidence of record, it adds nothing to the record. To the

extent that the final statement is a change in policy or the enunciation of new policy, the new policy is deemed to be timed to influence the Board in this proceeding and offers little assurance of a permanent change in policy, see U. S. v. Oregon State Medical Society and U. S. v. Grant, both supra. See also discussion hereinabove under heading MOOTNESS. The amended policy put in the record on March 6, 1974 is therefore rejected as not a change in Applicant's position which should influence the decision in this proceeding. The said amended policy does not render moot any situation existing prior thereto.

**SEARCH OF THE RECORD FOR POSSIBLE SITUATIONS
WITHIN THE RELEVANT MATTERS IN CONTROVERSY
WHICH MIGHT BE CREATED OR MAINTAINED BY
ACTIVITIES UNDER THE LICENSES**

**SITUATION 1—PREVENTION OF COORDINATION BY
CONTRACT PROVISION**

Provision 9 of an agreement dated 15 May 1964 between Applicant and the City of Lansing [Exhibit DJ 91] reads as follows:

9. CONNECTIONS WITH OTHERS INVOLVING INTERSTATE OR FOREIGN COMMERCE: Lansing agrees that without the written consent of Consumers, it will make no interconnection with any person, firm, corporation, government agency or other agency or other entity which might result in either party hereto becoming engaged directly or indirectly in the transmission or sale at wholesale of electric energy in interstate or foreign commerce.

At the time this Provision 9 was incorporated in its agreements with the smaller utilities, Applicant did have the power to insist upon its inclusion. We must consider whether this was power to prevent coordination among the smaller utilities and whether such power was used in anticompetitive fashion so as to bring into existence a situation inconsistent with the antitrust laws. Applicant's reason for including this Provision in this and other similar agreements was to avoid inadvertently becoming subject to the jurisdiction of the FPC [Tr 7941; 8300]. After Applicant submitted to the jurisdiction of FPC, this Provision was omitted from its contracts as they were amended, renewed, or replaced. It has now disappeared from all of Applicant's contracts [Tr 7941-7942]. During the time the Provision was in vogue, no other contracting party requested or was denied permission to interconnect with a third party [Tr 7942].

Witness Brush of Lansing testified that Provision 9 prevented Lansing from interconnecting with the M-C Pool without permission of Applicant until the effective date (February 1973) of the current agreement [Tr 2090-2091; 2234-2239]. Northern Michigan did not so interpret the Provision. It inter-

connected with the City of Traverse City without consulting Applicant [Tr 7942-7943].

There is no evidence that an interconnection between any two of the smaller utilities in the relevant geographic market would result in the transmission or sale of wholesale electric energy in interstate or foreign commerce. Absent such a possibility, Provision 9 is a nullity. Mr. Brush's interpretation of the language so as to prevent coordination between Lansing and the M-C Pool is completely unrealistic. We find as a fact that the insertion of Provision 9 in Applicant's contract did not give it the power to grant or deny coordination among the smaller utilities.

Assuming *arguendo* that the presence of Provision 9 did give Applicant the power to grant or deny coordination, there is no evidence that Applicant ever exercised such power. The purpose of inclusion of Provision 9 in its contracts has disappeared and there is total absence of the Provision in any existing contract. Using the criteria discussed hereinabove under the heading: MOOTNESS, we find as a fact that the chance of Applicant again using the Provision or of using it in an anticompetitive fashion against the smaller utilities is so remote as to render the matter moot.

We find as a fact that if Applicant ever had the alleged power and if Applicant ever used it in anticompetitive fashion and if such use ever brought into existence a situation inconsistent with the antitrust laws; the power, the use of such power and the resulting situation have all ceased. We conclude as a matter of law that no such situation exists.

Assuming *arguendo* that there is, or could be, a situation inconsistent with the antitrust laws arising out of Applicant's use of Provision 9; there is no evidence of an anticompetitive scheme or conspiracy having as a material element and significant factor the misuse of activities under the licenses which would maintain or create such situation. We conclude as a matter of law that there is no nexus between the activities under the license and said assumed situation.

SITUATION 2—PREVENTION OF OPERATIONAL COORDINATION BY REFUSAL OF APPLICANT TO COORDINATE

The allegation that the Applicant has the power to grant or deny access to coordination has two facets: (1) coordination between Applicant and one or more of the smaller utility systems in the relevant geographic market; (2) coordination between two or more of the smaller utility systems in the relevant geographic market. The second facet will be discussed hereinafter. Coordination, as discussed under Situation 2, will be operational coordination.

With regard to the first facet, of course Applicant can deny *voluntary* access to operational coordination between itself and any other utility. It is equally clear that any utility in the relevant geographic market can force *involuntary* interconnection with Applicant to provide some of the features of operational

coordination if such smaller utility initiates proceedings before FPC and convinces FPC that such interconnection is in the public interest (Section 202(b) of the Federal Power Act). (See also Gainesville Utilities Department *et al v.* Florida Power Corporation, 40 FPC 1227; 41 FPC 4; 425 F. 2d 1196; 402 US 515, L. Ed. 2d 74, 91 S. Ct. 1592 (1971)).

The Board finds as a matter of fact that the Applicant does have the power to deny voluntary operational coordination between itself and another utility.

In 1964, representatives of Northern Michigan and Wolverine sought alleged operational coordination with Applicant [Exhibit DJ 38, Tr 1325]. They listed benefits which they desired. Applicant refused to enter into negotiations for the alleged coordination [Exhibit DJ 39]. Applicant was urged to reconsider [Exhibit DJ 40]. Applicant, in refusing to proceed [Exhibit DJ 41], stated:

As indicated in my letter to Mr. Lee, any interconnection and pooling arrangement should create similar benefits for both parties. After careful and considered review, we conclude there are insufficient benefits for Consumers Power Company through such an arrangement to adequately protect the best interests of our stockholders and existing regular customers. We are still of the opinion that the revised proposed contract offers the best short and long-range solution to the cooperative power supply requirements.

In testimony during this proceeding, Northern Michigan's system manager, Mr. Steinbecker, conceded that both his system and Wolverine were "deficient" in 1964; i.e., that these systems had insufficient dependable generation capacity to cover projected peak load. [Tr 1411-1416] This testimony is confirmed by the systems' 1964 Forms 12 filed with the FPC which show a combined system peak load of 59.84 Mw and only 55.93 Mw in dependable generating capacity [Tr 1413-1417, 1420-1421, 1949-1953].

In 1967, the Wolverine again sought alleged operation coordination with Applicant.

Applicant again found no prospect of mutual benefits from the arrangement [Tr 7925]. Applicant's decision was clearly correct since, in 1967, Northern Michigan's system peak load was 43.52 Mw, its installed capacity was 45.10 Mw and the size of its largest unit was 23.5 Mw [Tr 1441; Exhibit 12,001, May 18, 1967 letter]. Thus, Northern Michigan's 1967 installed reserves covered less than 10 percent of the system's largest unit and its total reserves amounted to approximately 1.6 Mw or 4 percent reserves [Tr 1446].

In 1968, the City of Traverse City sought alleged coordination with Applicant. It was turned down for lack of reserves [Tr 7925].

In 1972, Applicant refused to enter into an alleged coordination agreement with Edison Sault Electric Co. (located on the eastern end of the northern peninsula) because Edison Sault did not have sufficient generating capacity for its own load [Tr 4416, Exhibit DJ 85]. Edison Sault's representatives reviewed filings with FPC and MPSC and satisfied themselves that they (Applicant) did

not have a (coordination) contract with anyone whose system was deficient in reserves [Tr 4419].

In all of these situations, true coordination with benefits to both parties was not feasible. We conclude as a matter of law that Applicant's management had a duty to its customers and stockholders to refuse such alleged operational coordination. (See discussion hereinabove under the heading: COORDINATION-NET BENEFITS.)

Applicant has a coordination agreement with its neighbor to the east in the lower peninsula of Michigan, Detroit Edison Company [Exhibit DJ 67]. The coordination features, which include joint economics dispatch by highly sophisticated equipment costing Applicant annually at least \$1,680,000 [Tr 8518-8520], have so intimately correlated the operation of the participants as to result in it being referred to as the Michigan Pool. The members of this Pool also coordinate jointly with Indiana and Michigan Electric Company and large utilities outside of Michigan; namely, the Hydro-Electric Power Commission of Ontario [Exhibit CP 11,106], The Toledo Edison Company, Northern Indiana Public Service Co. and Commonwealth Edison Co. [Exhibits DJ 74, 75; and 76; CP 11,108, 11,109 and 11,119]. Each agreement is tailored to the capabilities and the needs of the parties so as to achieve net benefits to each party. For example, all of the agreements provide for exchange of emergency power while only one, that with the Hydro-Electric Power Commission of Ontario, provides for exchange of diversity power. The agreements were each separately negotiated. Differences in terms reflect not only the factual differences but also the skills of the negotiators. Each agreement was approved by the FPC.

As has been described hereinabove, operational coordination usually has reserve sharing as its cornerstone. This is because a utility with no reserve capacity or with inadequate reserve capacity cannot confer a net benefit on the other part to a sharing arrangement. Thus, in 1964, when Northern Michigan and Wolverine had inadequate reserves, Applicant could find no net benefit in reserve sharing with them. Again in 1967 when Wolverine sought an alleged coordination arrangement, no net benefits were found by Applicant and no arrangement resulted. Since then, both Northern Michigan and Wolverine have increased their reserves. As a result, a coordination agreement has been negotiated between Applicant and the members of the M-C Pool; e.g., Northern Michigan, Wolverine, the City of Traverse City and the City of Grand Haven [Exhibit DJ 105]. Applicant also is coordinated with the City of Lansing [Exhibit DJ 92] and the City of Holland [Exhibit CP 11,111]. Each agreement is as individually tailored to the capabilities and needs of the parties so as to achieve net benefits to each party. As in the instances of coordination with large utilities, each agreement reflects not only factual differences but also the skills of the negotiators. Each agreement was approved by FPC. None of the agreements restrict further coordination by parties thereto with third parties. Lansing and the M-C Pool are currently negotiating a coordination agreement among themselves [Tr 2240].

Save for the smaller utilities with which Applicant is coordinated, the record shows no smaller utility in the relevant geographic market which has adequate reserves to support a coordination agreement.

We find as a matter of fact that Applicant has never refused operational coordination with a smaller utility in the relevant geographic market and that Applicant has operational coordination agreements with every smaller utility in the relevant geographic market capable of coordinating.

There is no evidence that Applicant has ever used in anticompetitive fashion its power to grant or deny voluntary operational coordination between Applicant and the smaller utilities. There is substantial and convincing evidence to the contrary. Moreover, a refusal to coordinate is not per se anticompetitive conduct—see hereinabove under the heading REFUSAL TO COORDINATE. We conclude as a matter of law that there is no situation inconsistent with the antitrust laws arising out of Applicant's alleged refusal to voluntarily operationally coordinate with the smaller utilities.

Assuming arguendo that there is, or could be, a situation inconsistent with the antitrust laws arising out of Applicant's alleged denial of voluntary operational coordination between Applicant and the smaller utilities; there is no evidence of an anticompetitive scheme or conspiracy having as a material element and significant factor the misuse of activities under the license which would maintain or create such situation. We conclude as a matter of law that there is no nexus between the said activities under the license and the said assumed situation.

SITUATION 3—PREVENTION OF COORDINATION BY EXCLUSION FROM THE MICHIGAN POOL

As has been stated hereinbefore, Applicant is closely coordinated with the Detroit Edison Company to form the Michigan Pool. The coordination agreement between the Parties dated December 22, 1962 did not specifically foreclose the addition of additional members to the Pool. In reviewing the application of Detroit Edison for a license for the Enrico Fermi Atomic Power Plant, Unit 2, Justice negotiated certain agreements and interpretations with Detroit Edison which spelled out rights of other utilities to join the Pool [Attorney General advice letter dated Aug. 16, 1971 re Fermi Plant 2, 36 *F.R.* 17883 (1971)]. The December 22, 1962 agreement was replaced by a new agreement dated May 1, 1973 which incorporated the provision desired by Justice [Exhibit DJ 67, compare letter of Aug. 13, 1971 from Detroit Edison to the Commission re Docket No. 50-341]. The only smaller utility (Lansing) which has discussed admission to the Michigan Pool was advised by Applicant that Applicant would not oppose Lansing's entry in the Michigan Pool [Tr 2533].

There is evidence in Applicant's internal documents that the conditions of entry were designed to prevent "undesirable third parties" from entry [Exhibits

DJ 170 and 171]. There is nothing sinister in this language. As is noted elsewhere in this opinion, most of the smaller utilities in the relevant geographic market are so deficient in reserve generation that they cannot confer a benefit on the other party in a simple reserve sharing arrangement. Probably only a few, possibly only Lansing and the M-C Pool, have the capacity to confer sufficient benefits to be able to participate in the complex Michigan Pool. To encourage others to seek entry would be to foster a cruel disappointment at the end of useless negotiation. We find as a fact that the requirements for membership approved by Justice and incorporated in the existing Pool agreement are fair and reasonable, and we conclude as a matter of law that they are not anticompetitive.

We find as a fact that Applicant does have the power to exclude the smaller utilities from the Michigan Pool. (Applicant can renege on the terms of the agreement.)

There is no evidence that Applicant has ever exercised such power in an anticompetitive fashion against the smaller utility system.

We conclude as a matter of law that there is no situation inconsistent with the antitrust laws arising out of Applicant's alleged use of its power to exclude the smaller utilities from the Michigan Pool.

Assuming arguendo that there is, or could be, a situation inconsistent with the antitrust laws arising out of Applicant's alleged exclusion of the smaller utilities from the Michigan Pool; there is no evidence of an anticompetitive scheme or conspiracy having as a material element and significant factor the misuse of activities under the license which would maintain or create such situation. We conclude as a matter of law that there is no nexus between the said activities and said assumed situation.

SITUATION 4—PREVENTION OF COORDINATION BY REFUSAL OF APPLICANT TO WHEEL BETWEEN OR AMONG THE SMALLER UTILITIES

Justice, Staff and Intervenors argue that, by having the power to grant or deny access to Applicant's transmission facilities, Applicant has the power to grant or deny access to coordination between or among the smaller utility systems.

Applicant has an extensive transmission grid to which all of the smaller utility systems are interconnected directly or indirectly. These transmission facilities were built and are maintained by Applicant for the principal purposes (1) of transporting electric energy from its sources to distribution points from whence it is distributed to Applicant's customers, and (2) of increasing the reliability of the firm power sold to its customers. To some extent, these facilities are used in carrying out coordination agreements between Applicant, Detroit Edison and other privately owned utilities outside the relevant geographic market.

The Applicant's transmission system is not a unique facility, without which the smaller systems cannot coordinate among themselves as demonstrated by the exhibits of Justice. Exhibit DJ 18 dated "December 1972" [received in evidence November 29, 1973, Tr 1298] shows in red 1182 miles of lines of either 60 or 46 Kv of Northern and Wolverine [Tr 1294].

Exhibit DJ 20 [received in evidence on November 28, 1973, Tr 1134] showed in black the existing transmission network shown in red on Exhibit DJ 18 [Tr 1135], and also showed in red a proposed 138 Kv transmission line for Northern and Wolverine [legend on Exhibit DJ 20, Tr 1135]. Part of this proposed system had been constructed prior to the date of the testimony (November 28, 1973). This part is shown in red on Exhibit DJ 1 [Tr 1137].

Now returning to Exhibit DJ 20, we note that although the M-C Pool (Northern and Wolverine) already had 1182 miles of right-of-way for transmission lines in 1972, the M-C Pool was at that time planning approximately 525 miles (using map scale) of 138 Kv over entirely different rights-of-way.

From this evidence, it is fair to conclude that the M-C Pool deemed 138 Kv transmission to be adequately high voltage for its needs and that the M-C Pool deemed the construction of over 500 miles of such line over new rights-of-way (not economizing by use of old rights-of-way) to be economically feasible.

Justice witness, Mr. Steinbecker, the general manager of Northern did not testify that Applicant's transmission facilities or any facilities in excess of 138 Kv were necessary for the successful operation of the M-C Pool. On the contrary, he gave the impression of being quite self-satisfied with the plans of the M-C Pool to have its own transmission system.

It is fair to conclude from the evidence and the demeanor of the witness that neither Mr. Steinbecker nor the M-C Pool management deems the Applicant's transmission system as a "unique facility" as this term is used in the bottleneck cases.

The program of the M-C Pool to build its own transmission facilities thereby backing its opinion with its money shouts so loud that we cannot hear the contrary testimony of the experts.

There is no evidence that any of the smaller utilities except those in the M-C Pool, Lansing and Holland, are capable of coordination (have adequate reserves to enter into a mutual benefit agreement). The M-C Pool (Northern Michigan, Wolverine, Grand Haven and Traverse City are coordinated without use of Applicant's transmission facilities. Lansing is only about 20 miles from the M-C Pool's projected 138 Kv line and a less distance from the M-C Pool's existing 69 Kv line. Holland is only about 10-12 miles from the M-C Pool's existing 69 Kv line and less from the projected 138 Kv line [Exhibits DJ 18 and 20]. When we consider the 1182 miles of transmission facilities and the over 500 miles of 138 Kv facilities projected for the M-C Pool, these distances are very short. About all that can be said in favor of wheeling over Applicant's system is that it might possibly be cheaper. Also, it could be more expensive [Tr 2426-2427].

We find as a fact that Applicant does not have the power to grant or deny operational or planning coordination between or among the smaller utility systems capable of coordination.

Assuming arguendo that Applicant does have the power to grant or deny coordination between or among the smaller utilities by refusal to wheel power for them, we now examine whether Applicant has used this power, and if used, whether such use is anticompetitive conduct.

There is no evidence that any two or more of the smaller utilities ever agreed to coordinate subject to obtaining wheeling, or requested wheeling from Applicant and were denied. Technically, it can be argued that there can be no refusal to deal without a specific request. However, there is evidence that a number of the smaller utilities "sounded out" Applicant and received discouraging replies. The evidence does not show what was to be wheeled where. For example, Coldwater asked about wheeling [Exhibit DJ 26] but this query does not seem to be related to coordination, especially since Coldwater has generation capacity materially less than sales requirements [Exhibit 12,010 (Addition)]. Southern Michigan Corporation Power Supply inquired as to the possibility of wheeling by Applicant and was told that Applicant had no provision for wheeling [Exhibit DJ 125]. Mr. Keen of Wolverine testified:

As far as wheeling is concerned, I had my ears chopped off by a Consumers Power representative prior to that date [1964-65], and I—in regard to wheeling—and I never asked them again for the reason of the reaction I had at that time from the Consumers Power representative. [Tr 4533].

Mr. Wolfe testified that his belief was that it would not be possible to arrange a wheeling transaction with Applicant [Tr 1971]. The state of the evidence is not very satisfactory; however, on balance, we find that Applicant's conduct amounted to a general refusal to wheel.

A refusal to wheel is not per se anticompetitive conduct—see discussion under heading REFUSAL TO WHEEL.

There is no evidence that Applicant's refusal to wheel was part of a larger scheme or conspiracy to bring into being a situation inconsistent with the antitrust laws.

We conclude as a matter of law that there is no situation inconsistent with the antitrust laws arising out of Applicant's refusal to wheel for the smaller utilities.

Assuming arguendo that there is, or could be, a situation inconsistent with the antitrust laws arising out of inability of the smaller utilities to coordinate with each other because of Applicant's refusal to wheel, there is no evidence of an anticompetitive scheme or conspiracy having as a material element and significant factor the misuse of activities under the license which would maintain or create such situation. We conclude as a matter of law that there is no nexus between the activities under the license and said assumed situation.

SITUATION 5—PREVENTION OF COORDINATION BY APPLICANTS REFUSAL TO GRANT UNIT POWER OR JOINT-VENTURE ACCESS TO MIDLAND PLANT, UNITS 1 & 2

In Situation 1, we discussed the topic of operational coordination between Applicant and the smaller utilities. We turn now to developmental or planning coordination between Applicant and the smaller utilities. This has to do with mutual assistance in the planning of new generating facilities and the carrying out of such plans so as to confer net benefits on each party. For example, the parties can take turns at building new facilities in accordance with a joint plan, and each may temporarily buy from the other surplus energy (unit power) generated from a facility larger than the owner needs at the time it becomes operative. Another possibility is for the parties to plan a facility large enough to meet the needs of two or more parties and then build it as a joint venture, each being entitled to the output of the facility in proportion to its capital investment share therein. In each case, the parties plan to take advantage of the economies of scale.

The electric power generated by the Midland plant will be fully integrated into Applicant's system [Tr 9160]. Such power will be commingled with that of the Applicant's other sources of bulk power and will be utilized by Applicant solely as undifferentiated power produced by the system as a whole [Tr 9160]. Applicant requires the entire power output of the Midland plant to serve the requirements of its customers [Tr 9159].

It is argued that a refusal to grant either unit power or joint-venture access to the Midland Plant is a refusal by Applicant to engage in developmental coordination. The argument is unsound. The Midland Plant was planned in 1967 and its plan was publicized in that year [Tr 8529, Exhibit DJ 183]. Four years later, in 1971, the smaller utilities showed interest in access to Midland [Tr 1202-1203; 1215; 1485-1486; 1735; 4516; 4520; 4521; 7934; Exhibits DJ 22; 24; 27; 58]. Most, but not all, of the inquiries specifically mentioned Midland. None of the smaller utilities requested participation in the Midland Plant. They wanted the option to decide whether or not they wanted access, and if so, what kind of access, when and how much [Note page 21 of Brief on Proposed Findings of Michigan Cities and Cooperatives dated October 8, 1974]. In developmental or planning coordination, each Party binds itself at the beginning of the project as to the terms of participation in the projected facility. By no stretch of the imagination can it be deemed to be developmental coordination where a smaller utility, years after Applicant's plans and commitments are fixed, requests the right to look things over and chose such participation, if any, the smaller utility desires to have. In developmental planning involving staggered construction, surplus power is sold by the facility owner to the other party as unit power. In this case, there is no surplus power to be sold, since Applicant needs all of power from the facility to serve its own customers [Tr 9160]. In a joint-venture, each party gets the portion for which it planned. In this case,

Applicant has planned for all of the power and the smaller utilities have planned for none. If the smaller utilities should get either unit power or joint-venture participation in Midland, Applicant would be short of planned power by the amount taken by the smaller utilities. Applicant would have to buy wholesale power to cover the shortage. This would increase Applicant's costs [Tr 9162]. In other words, the grant of access to either unit power or joint-venture would result in a detriment and a financial burden to Applicant and, hence, would NOT be coordination—see topics under the heading: COORDINATION—MUTUAL BENEFITS.

Let us ignore the concept of developmental coordination and consider whether or not Applicant has any duty to offer or agree to grant to the smaller utilities access to Midland in the form of unit power or joint-venture. The argument in favor of forcing Applicant to grant such access can be stated briefly. The smaller utilities are handicapped by their small size and limited financial assets. Therefore, as a good Samaritan, Applicant should share with its small competitors the benefits which it possesses due to Applicant's larger size and greater financial assets. If Applicant does not choose of its own volition to do so, then the Board should deem Applicant's behavior to be anticompetitive and force Applicant to help its competitors. The difficulty with this argument is that neither the antitrust laws nor the policy underlying them require an entity to be a good Samaritan to its competitors—see topics headed: REFUSAL TO COORDINATE, REFUSAL TO WHEEL and REFUSAL OF ACCESS TO NUCLEAR FACILITIES.

We find as a fact that Applicant's response, to the belated inquiries, concerning access to Midland, which response was a refusal to grant the smaller utilities an option to participate in Midland by purchase of unit power or by joint-venture is not a refusal to enter into developmental coordination with the smaller utilities.

We find as a fact that Applicant has the power to refuse to enter into voluntary developmental coordination with the smaller utilities.

There is no evidence that Applicant has ever exercised such power in an anticompetitive fashion against the smaller utilities. We conclude as a matter of law that there is no situation inconsistent with the antitrust laws arising out of Applicant's alleged use of such power to prevent developmental coordination between Applicant and said smaller utilities.

Applicant proposes to use the activities under the license in the very manner and for the very purpose for which the license grant was authorized by statute. Such conduct is not anticompetitive.

Assuming arguendo that there is, or could be, a situation inconsistent with the antitrust laws arising out of Applicant's alleged refusal to enter into developmental coordination, there is no evidence of an anticompetitive scheme or conspiracy, having as a material element and significant factor the misuse of activities under the licenses which would maintain or create such situation. We

conclude as a matter of law that there is no nexus between the activities under the license and said assumed situation.

SITUATIONS NOT WITHIN THE RELEVANT MATTERS IN CONTROVERSY AND NOT WITHIN THE RELEVANT MARKET

During the hearing, evidence was presented concerning situations which were not within the relevant matters in controversy and not within the relevant market. While rulings on such situations are deemed neither essential nor necessary to the disposition of the case, for the sake of completeness, several of them will be discussed. Comments as to relevancy to the proceedings and as to nexus of the discussed situations apply with equal force to any alleged situation not discussed in detail.

SITUATION 6—ATTEMPT TO MONOPOLIZE THE ENTIRE RETAIL AND WHOLESALE MARKETS

The record contains a copy of a speech dated May 17, 1966 by Mr. Robert Paul (then general power sales engineer [Tr 7805]) to a group of Applicant's employees in which he said:

The first goal of our marketing activity or program concerning utility systems in our service area is, of course, to acquire these systems [Exhibit DJ 188, Tr 8043].

Mr. A. H. Aymond, who is Chairman of the Board and President of Applicant, testified [Tr 6064] that the acquisition of all of the smaller utilities "has not and never has been our policy".

Mr. Paul testified that he never set Company policy [Tr 7962-63]. It was part of his duties to advise others as to company policy [Tr 7959]. He further testified that it is fair to assume that if he tells other people in the company that such-and-such is the policy, he believes that that is the policy enunciated or approved by his management [Tr 8268].

There is no direct evidence of record that Mr. Paul ever discussed his theory of company policy with his management, but it is difficult to believe that communications between him and management were so lacking as to cause management to be unaware of Mr. Paul's thinking. Moreover, it was a duty of management to advise Mr. Paul of its policies and to assure that an employee whose duties included policy enunciation be disabused of false notions of such policy. Although we accept Mr. Aymond's testimony on policy as true, nevertheless, we conclude as a matter of law that the Applicant is bound by Mr. Paul's statement because of Mr. Paul's apparent authority to speak for management and because of management's failure to keep Mr. Paul informed of any different policy. See *Continental Baking Co. v. U. S.*, 281 F. 2d 137 (6th Cir. 1960) at pages 149-150 and cases cited therein.

During the period January 1, 1960 through December 31, 1973, Applicant acquired franchises in three small municipalities as follows:

The municipal system of Grayling was acquired by Applicant in 1961. The system requirement for this municipality in 1960 was 7,805 Mwhr [Exhibit CP 11,307, item 25].

The private utility serving Rogers City was acquired by Applicant in 1967. The system's requirement for this utility in 1960 was 19,331 Mwhr [Exhibit CP 11,307, item 34]. The acquisition was approved by 100% of the stockholders of Rogers City Power Co., by the MSPC, case U-2737, June 29, 1957, and by FPC, Docket E-7803, September 6, 1967, 38 FPC 580. The system served 1,532 residential and commercial customers [38 FPC 580]. The Rogers City Power Co. had no generating equipment and bought 100% of its power from Applicant [Exhibit CP 11,307, item 34].

The municipal system of Allegan was acquired in 1968. The system requirement for 1960 was 14,758 Mwhr [Exhibit CP 11,307, item 24]. Approximately 1,822 customers were served by this system in 1967 [39 FPC 104]. This city generated 100% of its power requirements [Exhibit CP 11,307, item 24]. On a referendum to the electors, the vote was 798 for and 438 against. Thus, over the 60% majority required was in favor of the acquisition. The acquisition was approved by the MSPC and by the FPC, Docket No. E-7360, 39 FPC 103, January 29, 1968. The FPC action was unsuccessfully opposed by a minority group. The take-over was opposed unsuccessfully by a minority of the citizens in Citizens for Allegan County, Inc. v. FPC, 414 F. 2d 1129 (1969).

System requirements data for these three utilities for 1960 are 31,894 Mwhr, compared with Applicant's requirement for 1960 of 4,896,066 Mwhr Applicant's 1970 Annual Report to Stockholders, page 31, residential and commercial sales] represents less than 1% of Applicant's sales. By customers, the three acquired utilities totaled approximately 4,700 compared with either 873,834 in 1960 [Applicant's 1970 Annual Report to Stockholders, page 34] or 1,112,000 in 1972 [Tr 7917], or 1,147,507 in 1972 [Exhibit DJ 21, page 27], or less than 0.6%. See also Exhibit CP 11,308. During the same period 1960-1973, Applicant's internal growth was approximately 130%. By any comparison, these acquisitions had a de minimis effect on Applicant's growth during the period.

Applicant made an attempt to lease the electric system of Traverse City in 1965 where the City of Traverse City preferred to build new generating facilities and be independent of Applicant. It wrote a letter to the Mayor and City Commissioners of the City of Traverse City dated April 16, 1965, with copies to the City Manager, the City Clerk and the Traverse City Record Eagle [Exhibit DJ 30], which was characterized by witness as disruptive influence [Tr 1589]. The history of Applicant's activities in this matter is to be found at Tr 1585-1589, Tr 1791-1798. Traverse City defeated Applicant's position 2 to 1. The City of Traverse City installed the new generating equipment and continued to compete vigorously with Applicant [Tr 2023-2025]; the rates of Traverse City in 1965 were 10% less than Applicant's [Tr 1024].

In 1965, Applicant tried to prevent a loan of \$12,446,000 to Northern Michigan and Wolverine [Exhibits DJ 143 and 145, Tr 1233-1241, Exhibit DJ 42, DJ 224, Tr 1242, 1270] on the grounds that Applicant could supply wholesale power cheaper than Northern Michigan and Wolverine could generate it. REA was not impressed and approved the entire loan at 2% interest [Tr 1277-1278].

In 1969 Applicant sought in vain to acquire the Southeastern Michigan Cooperative [Exhibit DJ 125].

In 1970, Mr. Paul evidently still believed that company policy was to compete in the wholesale power market by acquisition of its competitors. In a memo dated March 20, 1970 to his superior, Mr. Conden, he recommended acquisition of the G & T cooperatives Northern and Wolverine [Exhibit DJ 187].

It can be argued and found as a fact that the occasional acquisition of a competitor, such acquisition having little effect on competition, is fair competition in the retail electric milieu. It can also be argued that the same philosophy applies to the acquisition of a wholesale competitor in the wholesale electric milieu. Pages 43-50 of Applicant's Brief in Support of its Proposed Findings of Fact and Conclusions of Law, dated October 8, 1974, forcefully presents this point of view. However, we are not here concerned with individual acquisition or with a group of individual acquisitions. We are concerned with a goal or policy to acquire all of the smaller utilities in the relevant geographic market. The goal is not really to improve economy or reliability of service by retiring small utilities which are either nonviable or on the verge of becoming nonviable. The intent is to monopolize the retail and wholesale power markets by destroying competition from a group of healthy, growing, effective and aggressive competitors. We find as a fact that constitutes an anticompetitive scheme. Each acquisition or attempted acquisition whether or not innocent, in and of itself, is a material element and a substantial factor in such scheme. Applicant's goal to acquire all of the smaller utilities in the relevant geographic market is an anticompetitive scheme to monopolize. Such schemes are forbidden by Section 2 of the Sherman Act. Mr. Aymond's disavowal of the scheme is an assertion that it never existed. The testimony shows no intent to abandon an existing scheme [Tr 6063]. We find that as matters of fact that the scheme still exists and that the matter is not moot.

Mr. Paul's scheme in every instance has been to use the argument that "we can provide the services cheaper."

There is an important factor which prevents Mr. Paul's scheme from being a violation of the "attempt to monopolize" part of Section 2 of the Sherman Act. In order to violate this provision, there must be not only *intent* but also the *power* to carry out the scheme. *American Tobacco Co. v. U.S.*, 328 US 781, 66 S. Ct. 1125, 90 L. Ed. 1575 at p. 1596, (1945); *U.S. v. Aluminum Co. of America*, 148 F. 2d 416 at page 432, (2nd Cir. 1945); and cases therein cited.

Mr. Paul's scheme had the characteristic of a daydream totally divorced from reality. The staying power of the municipals and the growth of the cooperatives together with their aggressive and even hostile attitude as displayed by witnesses in the proceedings makes any possibility of achieving the aim so remote as to be negligible. The repeated failures of specific instances noted above reinforce this finding.

We conclude that, because the evidence totally fails to show the power to carry out the scheme, no situation inconsistent with the antitrust laws arose out of the scheme.

The Parties were advised by the Chairman at an early stage in these proceedings that acquisition program of the Applicant was not within the relevant matters in controversy [Tr 3986-3987]. The Board, as now constituted, agrees with Chairman Garfinkel's ruling and holds that, assuming *arguendo* that such a situation has arisen, it is not within the relevant matters in controversy, all of which relate to coordination, and hence is not a matter within the scope of this proceeding.

Moreover, assuming *arguendo* that there is, or could be, a situation inconsistent with the antitrust law arising out of Applicant's acquisition policy and assuming that some way can be found to bring such situation within the scope of this proceeding, there is no evidence of an anticompetitive scheme or conspiracy, having as a material element and significant factor the misuse of activities under the licenses, which would maintain or create such situation. We conclude as a matter of law that there is no nexus between the activities under the licenses and the said assumed situation.

SITUATION 7—CONSPIRACIES TO LIMIT RETAIL COMPETITION

The record contains a number of allegations or references to "gentleman's agreements" not to compete. A gentleman's agreement is an informal oral understanding not reduced to writing. Mr. Westerbrock, General Manager of Top O'Michigan Rural Electric, expressed opinion concerning written policies [Exhibit DJ 110 and 144]. He used the term "gentleman's agreement" but the policy agreement [Exhibit DJ 144] between Applicant and Detroit Edison is not an oral agreement. Therefore, it should not be characterized as a "gentleman's agreement". Also, his testimony is pure speculation—"there seems to be a gentleman's agreement" [Tr 1018]. Mr. Westerbrock further characterized relations between his co-op and neighboring co-ops as "a sort of loose gentleman's agreement" [Tr 1048]. Here he means case-by-case settlement of disputes. On redirect, he changed a little to cover a continuing unilateral policy of Top O'Michigan by the term "sort of a loose gentleman's agreement" [Tr 1068].

Mr. Sundstrand, legal counsel for the village of Paw Paw [Tr 3890], testified that Mr. Paul of Applicant phoned to him in answer to his letter of December 4,

1963 [Exhibit DJ 129] and “stated that there was a more or less gentleman’s agreement” between Applicant and Michigan Gas and Electric Company not to compete [Tr 3903]. Mr. Sundstrand further testified that he “felt as an attorney, and believed as an attorney that this so-called ‘gentleman’s agreement’ was illegal” [Tr 3906]. After further prodding, Applicant made an offer to serve Paw Paw in 1966 [Tr 3911]. But Paw Paw then got a better rate from American Electric Power (owner of Michigan Gas and Electric [Tr 3913]). If there was such a gentleman’s agreement, Applicant broke it.

Mr. Rogers of the firm of Southern Engineering Company of Georgia, an expert witness for Intervenors, also used the term “gentleman’s agreement” in his testimony. He quoted Mr. Campbell of Applicant as having said that Applicant had not taken customers away from Southern Michigan Co-op because of some gentleman’s agreement. He further testified that while Mr. Campbell used the phrase “gentleman’s agreement”, “from the way he used it, I really could interpret it only to mean a unilateral policy of Consumers” [Tr 5615]. There was also hearsay evidence [Exhibit DJ 128] of an “understanding” between Applicant and Toledo Edison [Tr 5480]. Mr. Brush, General Manager of the Lansing Board of Water and Light which operates the city’s municipal electric system [Tr 2067], testified that there was a gentleman’s agreement between Lansing and Applicant on what is service area [Tr 2259].

Exhibit DJ 153 is an internal memo among Applicant’s personnel referring to the failure of the City of Holland to honor our so-called gentleman’s agreement.

Applicant’s Chairman of the Board and President, Mr. Aymond, testified that Applicant’s policies were unilateral [Tr 6476] and that if anyone in Consumers Power were a party to such an understanding, he would discharge him immediately [Tr 6481].

Counsel for Justice accurately and wittily summed up the whole topic of gentleman’s agreement thus:

MR. BRAND: I just wanted to say that on the news report last night Mr. Sam Goldwyn, who just died, was quoted as saying: “An oral contract isn’t worth the paper it’s written on.” And I think this controversy has about the same weight. [Tr 5382]

We find as a matter of fact there is no substance to the testimony concerning “gentleman’s agreement”.

There is written evidence of an informal agreement between Applicant and its neighbor, Detroit Edison, concerning retail competition at the boundary of their territories [Exhibit DJ 110]. Mr. Paul of Applicant deems the agreement to be consistent with the single phase rule promulgated by MPSC [Tr 7864-65]. At first blush, the informal agreement appears to be an agreement not to compete at the boundary between the two utilities. Let us, however, examine the last draft of the agreement [Letter of May 2, 1968—a part of Exhibit DJ 110] in detail. Provision 1 requires each party to serve only in its own franchised area.

This is required by the MPSC and no exception can be made in the absence of inadequate service [Tr 6533]. Provision 1 also goes on to provide exceptions where the franchised party has no adjacent service line. This also agrees with the said MPSC policy. Provision 2 calls for a request for service from a nonfranchised party to be referred to the franchised party, thereby conforming to proper Provision 1. Provision 3 calls for customer's choice in areas where both are franchised if the chosen party has or can reasonably provide facilities to give service. This does not prevent competition prior to the customer's choice, but rather is an agreement to accept the customer's decision as final. This is not illegal. Where the party approached has no adjacent distribution facilities, it may refer prospective customers to the other party having such facilities. Again, this is in accord with MPSC philosophy. Provision 4 provides for "up-the-line" arbitration of disputes. Insofar as is discernable, this is not an agreement "not to compete" but is an agreement to implement MPSC policies and minimize need to recourse to MPSC in the event of disputes. Compare the single phase rule [Exhibit DJ 9].

For the sake of conciseness, we shall refer to the above described oral and written agreements as boundary agreements.

We find no substantial evidence of a situation inconsistent with the antitrust laws arising out of boundary agreements.

Assuming *arguendo* that each boundary agreement is a conspiracy in restraint of trade or, alternatively, that the sum total of the boundary agreements is an industry-wide conspiracy in restraint of trade, and assuming further *arguendo* that a situation inconsistent with the antitrust laws arises out of each or all of such boundary agreements, no such situation has any connection with the relevant matters in controversy. Hence, we conclude that no such situation is within the scope of this proceeding.

Assuming *arguendo* that there is, or could be, a situation inconsistent with the antitrust laws arising out of boundary agreements and that some way can be found to bring such situation within the scope of this proceeding, there is no evidence of an anticompetitive scheme or conspiracy, having as a material element and significant factor the misuse of activities under the licenses, which would maintain or create such situation. We conclude as a matter of law that there is no nexus between the activities under the licenses and the said assumed situation.

SITUATION 8—THE REGIONAL POWER EXCHANGE MARKET

Applicant is interconnected and coordinated with a number of large privately-owned utilities outside of the relevant geographic market. These interconnections have enabled Applicant to buy wholesale power in times of need which coincided with the availability of surplus power which could be delivered through these interconnections. Without attempting to make any

precise geographic limits of such wholesale power sources, Justice has designated them as the "regional power exchange market".

Some of the smaller utilities in the relevant geographic market are sufficiently close to large privately-owned utilities other than Applicant to permit them to buy wholesale power from such other utilities. For example, Clinton, Paw Paw, South Haven, Sturgis, Fruit Belt Electric Cooperative, Southeastern Michigan Electric Cooperative and Thumb Electric Cooperative buy wholesale power from utilities in the "regional power exchange market". Most of the smaller utilities in the relevant geographic market are too remote from such power sources to make such purchases unless they are able to obtain wheeling services from Applicant. These smaller utilities have "the make or buy from Applicant" option for wholesale power supplies. They buy from Applicant or generate their own power.

Justice and Intervenors contend that such smaller utilities have a right to insist that Applicant enter the wheeling business so as to give the smaller utilities a wider choice of sources of wholesale power. The contention is that refusal to wheel power to and from the "regional power exchange market" is unfair competition as a result of which there has arisen a situation inconsistent with the antitrust laws, which situation will be maintained by activities under the licenses.

This argument is another instance of assertion of a legal duty to be a good Samaritan. We reject such argument for reasons discussed in the first part of the topic: REFUSAL TO COORDINATE. We reiterate our conclusion of law that the unilateral refusal to assist competitors per se is not anticompetitive conduct and is not a scheme or conspiracy the purpose or effect of which is to cause the creation or maintenance of a situation inconsistent with the antitrust laws.

Under the topic: REFUSAL TO WHEEL, we held that as a matter of law, the bottleneck situation applies only to conspiracies and hence, is inapplicable to unilateral refusal to wheel. We adhere to this conclusion.

In our discussion of Situation 4: PREVENTION OF COORDINATION BY REFUSAL OF APPLICANT TO WHEEL BETWEEN OR AMONG THE SMALLER UTILITIES, we advanced, as an additional reason for inapplicability of the bottleneck theory, the fact that Applicant's transmission system was not a bottleneck. This latter reason is not applicable here. If as a matter of law the smaller utilities have a right to exchange wholesale power with utilities outside the relevant geographic market using the transmission facilities of Applicant (and the transmission facilities of any other utility geographically located between such smaller utilities and a utility geographically removed) even though such right will require Applicant to enter the business of wheeling (a business from which Applicant has heretofore abstained); then we cannot excuse Applicant on the plea that the smaller utilities can build their own transmission facilities.

While we are firmly convinced that the smaller utilities have no such right, if, in fact, such right exists, this is the wrong forum for the enforcement thereof.

The alleged right to such wheeling is not within the relevant matter in controversy and, hence, is not within the scope of this proceeding.

Moreover, assuming *arguendo* that there is, or could be, a situation inconsistent with the antitrust law arising out of Applicant's refusal to wheel in the regional power exchange market, and assuming that some way can be found to bring such situation within the scope of this proceeding, there is no evidence of an anticompetitive scheme or conspiracy, having as a material element and significant factor the misuse of activities under the license, which would maintain or create such situation. We conclude as a matter of law that there is no nexus between the activities under the license and the said assumed situation.

SUMMARY

(1) The record in this proceeding does not disclose substantial evidence of any fact or facts within the relevant matters in controversy which constitute a scheme or conspiracy the purpose or effect of which is to cause the creation or maintenance of a situation inconsistent with the antitrust laws.

(2) Applicant's activities under the Midland licenses are not a material element and significant factor in any actual or alleged scheme or conspiracy the purpose or effect of which is to cause the maintenance of a situation inconsistent with the antitrust laws.

(3) No nexus exists between Applicant's activities under the Midland licenses and any actual or alleged situation inconsistent with the antitrust laws.

MISCELLANEOUS TOPICS

I. RELATION OF PUBLIC INTEREST TO THIS OPINION

The Board has been urged to consider the public interest in reaching a decision in this proceeding. The public interest has been the basis for many federal statutes. These statutes cover such diverse areas of public interest as the establishment and maintenance of the armed services, the regulation of interstate commerce, the advancement of agriculture, the regulation of banks and many others too numerous to mention. The antitrust laws have for their purpose the promotion of competition among concerns engaged in interstate commerce by forbidding anticompetitive practices. The antitrust laws are in an area affected by the public interest. We can confidently conclude that conduct inconsistent with the antitrust laws is contrary to the public interest. However, it is readily apparent from the brief list above of areas affected by the public interest that behavior contrary to the public interest is not necessarily conduct inconsistent with antitrust laws. "The antitrust laws were never meant to be a panacea for all wrongs" [*Parmelee Transportation Co. v. Keeshim*, 292 F. 2d 794, 804 (7th Cir. 1961), cert. den., 368 US 944, 7 L. Ed. 2d 340, 82 S. Ct. 376 (1961), reh. den., 368 US 972, 7 L. Ed. 2d 401, 82 S. Ct. 289 (1962)].

Some regulatory agencies are empowered and required to take into consideration the public interest in carrying out their regulatory function. The general rule is that in determining whether or not the exercise of its regulatory power will promote the public interest, such an agency must consider anticompetitive consequences, *Denver & Rio Grande Western Railroad Co. v. U.S.*, 387 US 485, 87 S. Ct. 1754, 18 L. Ed. 2d (1967). Said case was concerned with §20a of the Interstate Commerce Act, as amended, 49 USC §20a.

In considering the meaning of public interest under §204 of the Federal Power Act, 16 USC §824c, the United States Court of Appeals for the District of Columbia in *City of Lafayette v. Security and Exchange Commission*, *City of Lafayette v. Federal Power Commission*, 147 U.S. App. D.C. 98, 454 F.2d 941 ruled that the FPC must consider anticompetitive aspects of the matter as part of the public interests. The Supreme Court affirmed, *Gulf States Utilities v. FPC*, 411 US 747, 93 S. Ct. 1870, 36 L. Ed. 2d 635 (1973), reh. den. 412 US 944, 931 S. Ct. 2767, 37 L. Ed. 2d 405.

The Nuclear Regulatory Commission's authority under the Atomic Energy Act §105c(5) as amended is limited to a determination as to whether activities under its licensing procedure would create or maintain a situation inconsistent with the antitrust laws specified in §105(a). If such finding is in the affirmative, then under §105c(6), the Commission is required also to consider such other factors, including the need for power in the affected area as the Commission in its judgment deems necessary to protect the public interest. The Commission has the authority to issue or continue a license as applied for, to refuse to issue a license or amend it, and to issue a license with such conditions as it deems appropriate. The authority delegated to this Board is, of necessity, no broader than that of the Commission. Thus, under Sec. 105, matters of public interest, other than anticompetitive conduct, cannot be considered by the Board until after an affirmative determination has been made that activities under the license will create or maintain a situation inconsistent with the antitrust laws.

II. INFLUENCE OF MINIMUM PLANT SIZE ON DECISION

One of the arguments for granting access, in the form of joint-venture or unit power purchase, to nuclear power facilities is that it is not economic to build nuclear units below a size too large to be built by smaller utilities, either alone or in a joint-venture. Mr. J. O. Wolfe, a witness for Justice, is an electrical engineer [Tr 1637]. He testified that "Several sources that I have heard from, including consulting engineers who talked on the subject, indicate that approximately 500 megawatts is the smallest size nuclear unit that can economically be built." [Tr 1678A] Mr. William R. Mayben, a witness for Justice, is an electrical engineer [Tr 2538-2540]. Mr. Mayben testified:

... I think the experience of the industry now is that nuclear plants' capacity in less than 500,000 kilowatts, the cost per kilowatt rises so sharply

as to virtually be infeasible compared to other forms of base load capacity. [Tr 2558]

I don't want to imply to the Board or to the record that I am a nuclear power expert, by any means. [Tr 2559]

... I won't pass any judgment with regard to whether or not 500 (megawatt) is an appropriate level or not. [Tr 3700]

Other witnesses just assume, as a matter of course, that nuclear power plants are too big to be built by smaller utilities. Mr. Helfman, another witness for Justice, is an electrical engineer [Page 1 of prepared statement following Tr 3210]. He conducted studies which included theoretical construction of a 529 Mw nuclear power plant by a selected group of smaller utilities. Apparently, Mr. Helfman also assumed that approximately 500 Mw capacity was the smallest feasible nuclear power facility.

This basic assumption, as to which there is only hearsay evidence, is urged as proving that the refusal to grant access to the Midland units by joint venture or unit power participation is the denial of any meaningful participation in the unique nuclear industry. Such denial seems to be equated conceptually to the creating or maintaining of a situation inconsistent with the antitrust laws.

We have concluded that activities under the license for Midland Plant Units 1 and 2 will not create or maintain a situation inconsistent with the antitrust laws. The Parties having the burden of proof seem to seek a ruling as to whether the alleged size limitation on nuclear power plants justifies an extension of the antitrust laws beyond their previous scope. The evidence in this proceeding makes it inappropriate for us to even consider the matter. The expert testimony is based on hearsay testimony of gossip in the industry and not on facts of record. We reject this testimony. The facts of record are that the 75 Mw Big Rock Point Plant (which began as an experimental unit) is an efficient facility for the commercial production of electric energy. The evidence is that this small 75 Mw plant outperformed all of the commercial boiling water reactors in the United States in 1973 regardless of size. There is no substantial evidence in the record of this proceeding that the smaller utilities are precluded from building their own nuclear power facilities because of size limitations.

III. WHOLESALE POWER AS ADEQUATE ACCESS TO THE MIDLAND PLANT

In dealing with the contention that refusal to grant access to Midland in the form of unit power or joint-venture, we have met the contention head-on without consideration of whether access to Midland by sale of power by Applicant would be adequate access.

In this case, and in the legislative history of the Sec. 105c, one argument that has been put forth is that Federal funds provided by all citizens of the United

States has paid for the development of peaceful uses of atomic energy and therefore direct access to a nuclear power plant is a right of any utility.

First, the simple fact is that in the relevant geographic market, most of the taxpayers are directly receiving benefits of nuclear power because most of the users of electrical energy are direct retail customers of Applicant. Many of the remaining taxpayers are retail customers of Applicant's wholesale customers. By exercising the option to buy wholesale power from Applicant, the remaining smaller utilities could participate directly. In other words, the facts in this case show that most taxpayers in the relevant geographic market benefit from nuclear power. The others do not benefit at their choice or at the choice of the management of the smaller utilities supplying power to them.

Second, the argument has been made that nuclear power is low-cost and, therefore, the smaller utilities have to have direct access to low-cost power in order to be competitive.

The record shows that the wholesale customers who buy from Applicant are viable, growing, active competitors of Applicant. There is no substantial evidence that any reduction in Applicant's system average-cost will not be passed on to wholesale customers. The record further shows that the smaller utilities which generate their own power are likewise viable, growing, active competitors. There is no substantial evidence that the latter cannot build their own nuclear power plant if they so desire. The record shows that a small 75 Mw plant can operate efficiently and economically.

If access to Midland by unit-power or joint-venture were to result in lower costs to the smaller utilities than access by purchase of wholesale power, these lower costs would have to be made up by charging the remaining customers of Applicant higher rates. This would be a detriment to most of the citizens in the relevant geographic market. No sound reason is advanced why the many should be penalized to help the few. Accordingly, based on the record in this proceeding, we find that adequate access to nuclear power is provided to both the citizens and the competing utilities by the sale of power by Applicant at its retail and wholesale rates.

IV. APPLICANT'S MONOPOLY POWER

At the first prehearing conference, Justice took the position that Applicant had monopoly power and that such monopoly, insofar as was known at that time, was a lawful monopoly. Justice's case was that said monopoly power had been used in such a way that it violated the principles of the antitrust laws [Tr 60-61]. There is no evidence in the record that any monopoly possessed by Applicant on January 1, 1960 was other than lawful in and of itself. As agreed by Justice, we take the Applicant as we find Applicant on January 1, 1960 [Tr 62]. The only evidence involving situations of possible unlawful use of or extension of monopoly power by Applicant in the wholesale and retail market were dealt with in Situations 1 to 3 and 5 to 7 hereinabove. The only evidence

involving situations of possible use of monopoly power in the transmission field were dealt with in Situations 4 and 8 hereinabove. Assuming without deciding that Applicant has or had monopoly power in the relevant geographic market, situations involving misuse of such power have been dealt with hereinabove.

V EXCLUSION OF EVIDENCE AS TO APPLICANT'S GAS BUSINESS AND POLITICAL ACTIVITIES

The Board early in the proceeding excluded consideration of Applicant's gas business and political activities (see Order of Board, November 28, 1972). The relevant matters in controversy all relate to coordination. Nothing was alleged to indicate either the gas business or political activity was related to coordination.

Coordination is carried out pursuant to the contractual Parties. The Board at the time of its ruling could find no way in which these private arrangements would be affected by Applicant's gas business or by political activities. None has since been suggested. The areas which the Parties attempted to explore during the proceeding certainly could not have affected findings concerning the relevant matters in controversy

The Board reiterates the prior ruling that evidence as to the gas business and as to political activities would have been irrelevant and immaterial to the matters in controversy that such evidence was properly excluded, and that they are matters outside the scope of this proceeding.

VI. LIMITATION OF TIME FOR CROSS-EXAMINATION

During the hearing, Justice complained several times about limitation on time allotted for cross-examination of adverse witnesses. In the judgment of the Board, adequate opportunity for cross-examination was afforded and more extensive cross-examination would have had little, if any effect on this decision. The regulations of the Commission give ample authority to the Board to limit cross-examination which is "argumentative, repetitious or cumulative" (10 CFR 2.757(c)) and to control the hearing (10 CFR 2.718(e)). In addition, case law supports the right of a Board to limit cross-examination:

The right to cross-examine does not extend to the right to cross-examine endlessly however. [Food Store Emp. U. Local 347 AMC 8 B.W. v. NLRB 422 F. 2d 685, 692 (D.C. Cir. 1969).]

See also Northern States Power Co. (Praire Island Units 1 and 2) ALAB 244, RAI-74-11 857 868 (November 21 1974) and Smith v. Illinois, 390 US 129 132, 19 L. Ed. 2d 956, 959 88 S. Ct. 748 (1968).

The Board's action was an appropriate exercise of its authority

DECISION AND ORDER

The broad issue before the Board has two facets; e.g., *create* and *maintain*.

In the letter dated June 28, 1971 from Justice to the Commission re licensing of the Midland Units 1 and 2, Justice's recommendation, that an antitrust hearing be held to consider the antitrust aspects of activities under the proposed licenses, was limited to the *maintain* facet. This limitation was adopted by all Parties in agreeing to the scope of the relevant matters in controversy. Such agreement of the Parties was, in effect, a stipulation that the activities under the licenses *will not create* a situation inconsistent with the antitrust laws. This agreement or stipulation permitted the Board to resolve the *create* facet of the broad issue without more ado. In dealing with the record, it was only necessary for the Board to focus upon the *maintain* facet.

In its consideration of the record, the Board focused upon and made findings and conclusions as to both facets. The holding of the Board on the broad issue as to the *maintain* facet is based upon the findings and conclusions in this opinion. Its holding on the broad issue as to the *create* facet is based upon the aforesaid agreement or stipulation of the Parties, buttressed by the findings and conclusions in this opinion.

The Board has reviewed the entire record of this proceeding, including the proposed findings of fact and conclusions of law submitted by the Parties. The facts of record not specifically mentioned in the opinion have been considered. All of the proposed findings and conclusions submitted by the Parties which are not incorporated directly or inferentially in this Initial Decision are herewith rejected as being contrary to the Board's findings and conclusions or unnecessary to the rendering of the Decision.

As to the broad issue, we hold that activities under the licenses will not create or maintain a situation inconsistent with the antitrust laws as specified in Subsection 105a of the Atomic Energy Act of 1954, as amended.

Based on the Board's holding as to the broad issue, and pursuant to the Atomic Energy Act of 1954, as amended, and the Commission's Regulations, IT IS ORDERED, that the Director of Regulation is authorized to continue, as issued, the permits to the Consumer's Power Company for construction of the Midland Plant, Units 1 and 2 (Construction Permits CPPR-81 and CPPR-82, both dated December 15, 1972), without the imposition of any antitrust conditions.

IT IS FURTHER ORDERED in accordance with 10 CFR §2.760, §2.762, §2.764, §2.765 and §2.786 that this Initial Decision shall become effective immediately and shall constitute with respect to the matters covered therein the final action of the Commission forty-five (45) days after the date of issuance hereof, subject to any review pursuant to the Commission's Rules of Practice. Exceptions to this Initial Decision may be filed by any Party within seven (7) days after service thereof. Within fifteen (15) days thereafter (twenty [20] days in the case of the Staff), any Party filing such exceptions shall file a brief in support thereof. Within fifteen (15) days (twenty [20] days in the case of the

Staff) after the filing of the brief in support of exceptions, any other Party may file a brief in support of, or in opposition to, the exceptions.

IT IS SO ORDERED.

ATOMIC SAFETY AND LICENSING
BOARD PANEL

J. Venn Leeds, Member

Hugh K. Clark, Chairman

Issued this 18th day of July
1975 at Bethesda, Maryland.

Postscriptum: We are unable to leave this Initial Decision without mentioning Jerome Garfinkel, Esq., the Chairman of this Board until his untimely death. As Chairman until after the closing of the record, he contributed in a major way to the course of this proceeding. The legal profession, the Atomic Safety and Licensing Board Panel, and this Board have lost a capable and wise counselor, and the remaining members of the Board have lost a fine friend.

Attachment: Appendix A

Appendixes B (List of Exhibits) and C (Transcript Corrections) are omitted from this publication, but they are available at the Commission's Public Document Room, Washington, D. C.

APPENDIX A

SECTION 105 OF THE ATOMIC ENERGY ACT OF 1954,
AS AMENDED

SEC. 105 ANTITRUST PROVISIONS.

a. Nothing contained in this Act shall relieve any person from the operation of the following Acts, as amended, "An Act to protect trade and commerce against unlawful restraints and monopolies" approved July second, eighteen hundred and ninety sections seventy-three to seventy-seven, inclusive, of an Act entitled "An Act to reduce taxation, to provide revenue for the Government, and for other purposes" approved August twenty-seven, eighteen hundred and ninety-four; "An Act to supplement existing laws against unlawful restraints and monopolies, and for other purposes" approved October fifteen, nineteen hundred and fourteen; and "An Act to create a Federal Trade Commission, to define its

powers and duties, and for other purposes” approved September twenty-six, nineteen hundred and fourteen. In the event a licensee is found by a court of competent jurisdiction, either in an original action in that court or in a proceeding to enforce or review the findings or orders of any Government agency having jurisdiction under the laws cited above, to have violated any of the provisions of such laws in the conduct of the licensed activity the Commission may suspend, revoke, or take such other action as it may deem necessary with respect to any license issued by the Commission under the provisions of this Act.

b. The Commission shall report promptly to the Attorney General any information it may have with respect to any utilization or special nuclear material or atomic energy which appears to violate or to tend toward the violation of any of the foregoing Acts, or to restrict free competition in private enterprise.

c. (1) The Commission shall promptly transmit to the Attorney General a copy of any license application provided for in paragraph (2) of this subsection, and a copy of any written request provided for in paragraph (3) of this subsection; and the Attorney General shall, within a reasonable time, but in no event to exceed 180 days after receiving a copy of such application or written request, render such advice to the Commission as he determines to be appropriate in regard to the finding to be made by the Commission pursuant to paragraph (5) of this subsection. Such advice shall include an explanatory statement as to the reasons or basis therefor.

(2) Paragraph (1) of this subsection shall apply to an application for a license to construct or operate a utilization or production facility under section 103: *Provided, however* That paragraph (1) shall not apply to an application for a license to operate a utilization or production facility for which a construction permit was issued under section 103 unless the Commission determines such review is advisable on the ground that significant changes in the licensee’s activities or proposed activities have occurred subsequent to the previous review by the Attorney General and the Commission under this subsection in connection with the construction permit for the facility

(3) With respect to any Commission permit for the construction of a utilization or production facility issued pursuant to subsection 104b prior to the enactment into law of this subsection, any person who intervened or who sought by timely written notice to the Commission to intervene in the construction permit proceeding for the facility to obtain a determination of antitrust considerations or to advance a jurisdiction basis for such determination shall have the right, upon a written request to the Commission, to obtain an antitrust review under this section of the application for an operating license. Such written request shall be made within 25 days after the date of initial Commission publication in the *Federal Register* of notice of the filing of an application for an operating license for the facility or the date of enactment into law of this subsection, whichever is later.

(4) Upon the request of the Attorney General, the Commission shall furnish or cause to be furnished such information as the Attorney General determines to be appropriate for the advice called for in paragraph (1) of this subsection.

(5) Promptly upon receipt of the Attorney General's advice, the Commission shall publish the advice in the *Federal Register*. Where the Attorney General advises that there may be adverse antitrust aspects and recommends that there be a hearing, the Attorney General or his designee may participate as a party in the proceedings thereafter held by the Commission on such licensing matter in connection with the subject matter of his advice. The Commission shall give due consideration to the advice received from the Attorney General and to such evidence as may be provided during the proceedings in connection with such subject matter, and shall make a finding as to whether the activities under the license would create or maintain a situation inconsistent with the antitrust laws as specified in subsection 105a.

(6) In the event the Commission's finding under paragraph (5) is in the affirmative, the Commission shall also consider, in determining whether the license should be issued or continued, such other factors, including the need for power in the affected area, as the Commission in its judgment deems necessary to protect the public interest. On the basis of its findings, the Commission shall have the authority to issue or continue a license as applied for, to refuse to issue a license, to rescind a license or amend it, and to issue a license with such conditions as it deems appropriate.

(7) The Commission, with the approval of the Attorney General, may except from any of the requirements of this subsection such classes or types of licenses as the Commission may determine would not significantly affect the applicant's activities under the antitrust laws as specified in subsection 105a.

(8) With respect to any application for a construction permit on file at the time of enactment into law of this subsection, which permit would be for issuance under Section 103, and with respect to any application for an operating license in connection with which a written request for an antitrust review is made as provided for in paragraph (3), the Commission, after consultation with the Attorney General, may upon determination that such action is necessary in the public interest to avoid unnecessary delay establish by rule or order periods for Commission notification and receipt of advice differing from those set forth above and may issue a construction permit or operating license in advance of consideration of and findings with respect to the matters covered in this subsection: *Provided*, That any construction permit or operating license so issued shall contain such conditions as the Commission deems appropriate to assure that any subsequent findings and orders of the Commission with respect to such matters will be given full force and effect.

RELEVANT PORTIONS OF THE FEDERAL POWER ACT, AS AMENDED

Electric Utility Regulation (16 USC §824, 825)

§824. Declaration of policy· application of subchapter; definitions

(a) It is declared that the business of transmitting and selling electric energy for ultimate distribution to the public is affected with a public interest, and that Federal regulation of matters relating to generation to the extent provided in this subchapter and subchapter III of this chapter and of that part of such business which consists of the transmission of electric energy in interstate commerce and the sale of such energy at wholesale in interstate commerce is necessary in the public interest, such Federal regulation, however, to extend only to those matters which are not subject to regulation by the States.

(b) The provisions of this subchapter shall apply to the transmission of electric energy in interstate commerce and to the sale of electric energy at wholesale in interstate commerce, but shall not apply to any other sale of electric energy or deprive a State or State commission of its lawful authority now exercised over the exportation of hydroelectric energy which is transmitted across a State line. The Commission shall have jurisdiction over all facilities for such transmission or sale of electric energy but shall not have jurisdiction, except as specifically provided in this subchapter and subchapter III of this chapter, over facilities used for the generation of electric energy or over facilities used in local distribution or only for the transmission of electric energy in interstate commerce, or over facilities for the transmission of electric energy consumed wholly by the transmitter.

(c) For the purpose of this subchapter, electric energy shall be held to be transmitted in interstate commerce if transmitted from a State and consumed at any point outside thereof; but only insofar as such transmission takes place within the United States.

(d) The term "sale of electric energy at wholesale" when used in this subchapter, means a sale of electric energy to any person for resale.

(e) The term "public utility" when used in this subchapter and subchapter III of this chapter means any person who owns or operates facilities subject to the jurisdiction of the Commission under this subchapter.

(f) No provision in this subchapter shall apply to, or be deemed to include, the United States, a State or any political subdivision of a State, or any agency authority or instrumentality of any one or more of the foregoing, or any corporation which is wholly owned, directly or indirectly by any one or more of the foregoing, or any officer, agent or employee of any of the foregoing acting as such in the course of his official duty unless such provision makes specific reference thereto. June 10, 1920, c. 285 §201 as added Aug. 26, 1935, c. 687 Title II, §213 49 Stat. 847

§824a. Interaction and coordination of facilities; emergencies; transmission to foreign countries—Regional districts; establishment; notice to State commissions

(a) For the purpose of assuring an abundant supply of electric energy throughout the United States with the greatest possible economy and with regard to the proper utilization and conservation of natural resources, the Commission is empowered and directed to divide the country into regional districts for the voluntary interconnection and coordination of facilities for the generation, transmission, and sale of electric energy and it may at any time thereafter, upon its own motion or upon application, make such modifications thereof as in its judgment will promote the public interest. Each such district shall embrace an area which, in the judgment of the Commission, can economically be served by such interconnected and coordinated electric facilities. It shall be the duty of the Commission to promote and encourage such interconnection and coordination within each such district and between such districts. Before establishing any such district and fixing or modifying the boundaries thereof the Commission shall give notice to the State Commission of each State situated wholly or in part within such district, and shall afford each such State commission reasonable opportunity to present its views and recommendations, and shall receive and consider such views and recommendations.

Sale or exchange of energy establishing physical connections

(b) Whenever the Commission, upon application of any State commission or of any person engaged in the transmission or sale of electric energy and after notice to each State commission and public utility affected and after opportunity for hearing, finds such action necessary or appropriate in the public interest it may by order direct a public utility (if the Commission finds that no undue burden will be placed upon such public utility thereby) to establish physical connection of its transmission facilities with the facilities of one or more other persons engaged in the transmission or sale of electric energy to sell energy to or exchange energy with such persons: *Provided*, That the Commission shall have no authority to compel the enlargement of generating facilities for such purposes, nor to compel such public utility to sell or exchange energy when to do so would impair its ability to render adequate service to its customers. The Commission may prescribe the terms and conditions of the arrangement to be made between the persons affected by any such order, including the apportionment of cost between them and the compensation or reimbursement reasonably due to any of them.

Temporary connection and exchange of facilities during emergency

(c) During the continuance of any war in which the United States is engaged, or whenever the Commission determines that an emergency exists by reason of a

sudden increase in the demand for electric energy or a shortage of electric energy or of facilities for the generation or transmission of electric energy or of fuel or water for generating facilities, or other causes, the Commission shall have authority either upon its own motion or upon complaint, with or without notice, hearing, or report, to require by order such temporary connections of facilities and such generation, delivery interchange, or transmission of electric energy as in its judgment will best meet the emergency and serve the public interest. If the parties affected by such order fail to agree upon the terms of any arrangement between them in carrying out such order, the Commission, after hearing held either before or after such order takes effect, may prescribe by supplemental order such terms as it finds to be just and reasonable, including the compensation or reimbursement which should be paid to or by any such party

Temporary connection during emergency by persons without jurisdiction of Commission

(d) During the continuance of any emergency requiring immediate action, any person engaged in the transmission or sale of electric energy and not otherwise subject to the jurisdiction of the Commission may make such temporary connections with any public utility subject to the jurisdiction of the Commission or may construct such temporary facilities for the transmission of electric energy in interstate commerce as may be necessary or appropriate to meet such emergency and shall not become subject to the jurisdiction of the Commission by reason of such temporary connection or temporary construction: *Provided*, That such temporary connection shall be discontinued or such temporary construction removed or otherwise disposed of upon the termination of such emergency. *Provided further* That upon approval of the Commission permanent connections for emergency use only may be made hereunder

Transmission of electric energy to foreign country

(e) After six months from August 26, 1935, no person shall transmit any electric energy from the United States to a foreign country without first having secured an order of the Commission authorizing it to do so. The Commission shall issue such order upon application unless, after opportunity for hearing, it finds that the proposed transmission would impair the sufficiency of electric supply within the United States or would impede or tend to impede the coordination in the public interest of facilities subject to the jurisdiction of the Commission. The Commission may by its order grant such application in whole or in part, with such modifications and upon such terms and conditions as the Commission may find necessary or appropriate, and may from time to time, after opportunity for hearing and for good cause shown, make such supplemental orders in the premises as it may find necessary or appropriate.

Transmission or sale at wholesale of electric energy' regulation

(f) The ownership or operation of facilities for the transmission or sale at wholesale of electric energy which is (a) generated within a State and transmitted from that State across an international boundary and not thereafter transmitted into any other State, or (b) generated in a foreign country and transmitted across an international boundary into a State and not thereafter transmitted into any other State, shall not make a person or public utility subject to regulation as such under other provisions of this subchapter. The State within which any such facilities are located may regulate any such transaction insofar as such State regulation does not conflict with the exercise of the Commission's powers under or relating to subsection (e) of this section.

June 10, 1920, c. 285, §202, as added Aug. 26, 1935 c. 687 Title II, §213, 49 Stat. 848, and amended Aug. 7 1953, c. 343 67 Stat. 461.

§824d. Rates and charges; schedules; suspension of new rates

(a) All rates and charges made, demanded, or received by any public utility for or in connection with the transmission or sale of electric energy subject to the jurisdiction of the Commission, and all rules and regulations affecting or pertaining to such rates or charges shall be just and reasonable, and any such rate or charge that is not just and reasonable is hereby declared to be unlawful.

(b) No public utility shall, with respect to any transmission or sale subject to the jurisdiction of the Commission, (1) make or grant any undue preference or advantage to any person or subject any person to any undue prejudice or disadvantage, or (2) maintain any unreasonable difference in rates, charges, service, facilities, or in any other respect, either as between localities or as between classes of service.

(c) Under such rules and regulations as the Commission may prescribe, every public utility shall file with the Commission, within such time and in such form as the Commission may designate, and shall keep open in convenient form and place for public inspection schedules showing all rates and charges for any transmission or sale subject to the jurisdiction of the Commission, and the classifications, practices, and regulations affecting such rates and charges, together with all contracts which in any manner affect or relate to such rates, charges, classifications, and services.

(d) Unless the Commission otherwise orders, no change shall be made by any public utility in any such rate, charge, classification, or service, or in any rule, regulation, or contract relating thereto, except after thirty days' notice to the Commission and to the public. Such notice shall be given by filing with the Commission and keeping open for public inspection new schedules stating plainly the change or changes to be made in the schedule or schedules then in force and the time when the change or changes will go into effect. The Commission, for good cause shown, may allow changes to take effect without

requiring the thirty days' notice herein provided for by an order specifying the changes so to be made and the time when they shall take effect and the manner in which they shall be filed and published.

(e) Whenever any such new schedule is filed the Commission shall have authority either upon complaint or upon its own initiative without complaint, at once, and, if it so orders, without answer or formal pleading by the public utility but upon reasonable notice, to enter upon a hearing concerning the lawfulness of such rate, charge, classification, or service; and, pending such hearing and the decision thereon, the Commission, upon filing with such schedules and delivering to the public utility affected thereby a statement in writing of its reasons for such suspension, may suspend the operation of such schedule and defer the use of such rate, charge, classification, or service, but not for a longer period than five months beyond the time when it could otherwise go into effect; and after full hearings, either completed before or after the rate, charge, classification, or service goes into effect, the Commission may make such orders with reference thereto as would be proper in a proceeding initiated after it had become effective. If the proceeding has not been concluded and an order made at the expiration of such five months, the proposed change of rate, charge, classification, or service shall go into effect at the end of such period, but in case of a proposed increased rate or charge, the Commission may by order require the interested public utility or public utilities to keep accurate account in detail of all amounts received by reason of such increase, specifying by whom and in whose behalf such amounts are paid, and upon completion of the hearing and decision may by further order require such public utility or public utilities to refund, with interest, to the persons in whose behalf such amounts were paid, such portion of such increased rates or charges as by its decision shall be found not justified. At any hearing involving a rate or charge sought to be increased, the burden of proof to show that the increased rate or charge is just and reasonable shall be upon the public utility and the Commission shall give to the hearing and decision of such questions preference over other questions pending before it and decide the same as speedily as possible.

June 10, 1920, c. 285, §205 as added Aug. 26, 1935 c. 687 Title II, §213, 49 Stat. 851.

§824e. Power of Commission to fix rates and charges; determination of cost of production or transmission

(a) Whenever the Commission, after a hearing had upon its own motion or upon complaint, shall find that any rate, charge, or classification, demanded, observed, charged, or collected by any public utility for any transmission or sale subject to the jurisdiction of the Commission, or that any rule, regulation, practice, or contract affecting such rate, charge, or classification is unjust, unreasonable, unduly discriminatory or preferential, the Commission shall determine the just and reasonable rate, charge, classification, rule, regulation,

practice, or contract to be thereafter observed and in force, and shall fix the same by order.

(b) The Commission upon its own motion, or upon the request of any State commission whenever it can do so without prejudice to the efficient and proper conduct of its affairs, may investigate and determine the cost of the production or transmission of electric energy by means of facilities under the jurisdiction of the Commission in cases where the Commission has no authority to establish a rate governing the sale of such energy

June 10, 1920, c. 285, §206, as added Aug. 26, 1935, c. 687 Title II, §213, 49 Stat. 852.

§824f. Ordering furnishing of adequate service

Whenever the Commission, upon complaint of a State commission, after notice to each State commission and public utility affected and after opportunity for hearing, shall find that any interstate service of any public utility is inadequate or insufficient, the Commission shall determine the proper, adequate, or sufficient service to be furnished, and shall fix the same by its order, rule, or regulation: *Provided*, That the Commission shall have no authority to compel the enlargement of generating facilities for such purposes, nor to compel the public utility to sell or exchange energy when to do so would impair its ability to render adequate service to its customers.

June 10, 1920, c. 285 §207 as added Aug. 26, 1935 c. 687 Title II, §213, 49 Stat. 853.

RELEVANT PORTIONS OF THE ANTITRUST STATUTES

The Sherman Antitrust Act (15 USC §1, 2) (1970)

Section 1. Every contract, combination in the form of trust or otherwise, or conspiracy in restraint of trade or commerce among the several States, or with foreign nations, is hereby declared to be illegal: Every person who shall make any contract or engage in any combination or conspiracy hereby declared to be illegal shall be deemed guilty of a felony and, on conviction thereof, shall be punished by fine not exceeding one million dollars if a corporation, or, if any other person, one hundred thousand dollars, or by imprisonment not exceeding three years, or by both said punishments, in the discretion of the court.

Section 2. Every person who shall monopolize or attempt to monopolize, or combine or conspire with any other person or persons, to monopolize any part of the trade or commerce among the several States, or with foreign nations, shall be deemed guilty of a felony and, on conviction thereof, shall be punished by fine not exceeding one million dollars if a corporation, or, if any other person,

one hundred thousand dollars, or by imprisonment not exceeding three years, or by both said punishments, in the discretion of the court.

Section 4. The several district courts of the United States are invested with jurisdiction to prevent and restrain violations of sections 1 to 7 of this title; and it shall be the duty of the several United States attorneys, in their respective districts, under the direction of the Attorney General, to institute proceedings in equity to prevent and restrain such violations. Such proceedings may be by way of petition setting forth the case and praying that such violation shall be enjoined or otherwise prohibited. When the parties complained of shall have been duly notified of such petition the court shall proceed, as soon as may be, to the hearing and determination of the case; and pending such petition and before final decree, the court may at any time make such temporary restraining order or prohibition as shall be deemed just in the premises.

The Clayton Act (15 USC § 18)

Section 7 That no corporation engaged in commerce shall acquire, directly or indirectly the whole or any part of the stock or other share capital and no corporation subject to the jurisdiction of the Federal Trade Commission shall acquire the whole or any part of the assets of another corporation engaged also in commerce, where in any line of commerce in any section of the country the effect of such acquisition may be substantially to lessen competition, or to tend to create a monopoly

No corporation shall acquire, directly or indirectly the whole or any part of the stock or other share capital and no corporation subject to the jurisdiction of the Federal Trade Commission shall acquire the whole or any part of the assets of one or more corporations engaged in commerce, where in any line of commerce in any section of the country the effect of such acquisition, of such stocks or assets, or of the use of such stock by the voting or granting of proxies or otherwise, may be substantially to lessen competition, or to tend to create a monopoly

Nothing contained in this section shall apply to transactions duly consummated pursuant to authority given by the Civil Aeronautics Board, Federal Communications Commission, Federal Power Commission, Interstate Commerce Commission, the Securities and Exchange Commission in the exercise of its jurisdiction under Section 10 of the Public Utility Holding Company Act of 1935, the United States Maritime Commission, or the Secretary of Agriculture under any statutory provision vesting such power in such Commission, Secretary or Board.

RELEVANT PORTION OF THE FEDERAL TRADE COMMISSION ACT (15 USC 45) (1970)

Section 5(a)(1) Unfair methods competition in commerce, and unfair or deceptive acts or practices in commerce, are hereby declared unlawful.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

LBP-75-40

ATOMIC SAFETY AND LICENSING BOARD

Douglas V. Rigler, Chairman
John H. Brebbia, Member
John M. Frysiak, Member

In the Matter of

THE TOLEDO EDISON COMPANY and
THE CLEVELAND ELECTRIC
ILLUMINATING COMPANY

Docket No. 50-346A

(Davis-Besse Nuclear Power Station,
Unit 1)

THE CLEVELAND ELECTRIC
ILLUMINATING COMPANY ET AL.

Docket Nos. 50-440A
50-441A

(Perry Nuclear Power Plant,
Units 1 and 2)

July 21 1975

Upon motion for certification of the Special Master's Report on claims of privilege to the Appeal Board, Licensing Board finds (1) that the parties' agreement to submit the privileged documents to a special master included an unambiguous, express and binding waiver of appellate review (2) that the city failed to raise in timely fashion the problem of latent ambiguity (3) that had review been contemplated, the Licensing Board would have the proper authority to conduct such review, and (4) that even if there were errors with respect to certain of the Master's determinations, there is little likelihood of any substantial effect upon the parties' preparation for the hearings.

Motion denied.

RULES OF PRACTICE: APPELLATE REVIEW

A party may not be deprived of its right of appeal without its consent. However it may voluntarily waive such right in return for a specific benefit.

LICENSING BOARD: SCOPE OF REVIEW

Administrative tribunals are empowered to examine documents claimed to be privileged in order to determine if they should be withheld either from discovery production or from introduction into evidence; use of a special master for this purpose is appropriate but not compulsory. Direct appellate review of a master's determination, rather than review by the tribunal itself, is also not mandated.

RULES OF PRACTICE: APPELLATE REVIEW

A party may waive possible appeals in order to obtain the specific benefit of prompt and final review of privileged documents.

RULING OF THE BOARD WITH RESPECT TO CITY OF CLEVELAND'S MOTION FOR CERTIFICATION OF SPECIAL MASTER'S DECISION ON CLAIMS OF PRIVILEGE

By Motion of July 8, 1975, the City of Cleveland (City) has moved the Board to certify to the Atomic Safety and Licensing Appeal Board the decision of the Special Master upholding certain claims of privilege asserted by Applicant Cleveland Electric Illuminating Company (CEI) in connection with discovery requests served upon it in these proceedings.

BACKGROUND

The issue of claims of privilege asserted by the parties to these proceedings in connection with discovery herein was considered prior to and ruled upon by the Board in its Order on Objections to Interrogatories and Document Requests dated October 11, 1974. In that Order at paragraph 149 the Board established certain procedures for the identification of documents for which privilege was asserted. On December 6, 1974, the parties discussed with the then Chairman of the Board, Mr. Farmakides, a proposal that documents asserted to be privileged be submitted to a Special Master for individual review. On December 10, 1974, the Board issued an Order Appointing Marshall E. Miller, Master which read, in part, as follows:

The above [referral] is accomplished with the express agreement of the parties to be bound by the determinations of the Master. This was discussed and agreed upon during a telephone conference call on December 6, 1974 with the Chairman of this Board.

Subsequently the parties briefed extensively the issue of privilege to the Special Master and Applicant CEI supplied more than 700 separate documents (many of which were multi-page documents) to the Special Master for review.*

On June 20, 1975, the Special Master issued a report (hereinafter referred to as the Report) upholding in part and denying in part CEI's claims of privilege. The Chairman of the Board initiated a telephone conference call with counsel for the parties for the purpose of determining their wishes with respect to delivery of documents subject to the Report. During that conference call, the parties expressed a desire to examine the Report of the Master and to confer again via telephone conference call with respect to disposition of documents. On June 24, 1975, another telephone conference call was held and the City the Department of Justice (Justice) and CEI requested review of certain rulings in the Report. Counsel for Applicants stated an intent to reply upon and be bound by the agreement set forth in the Board's Order of December 10, 1974 quoted above.

Counsel for the City took the position that the purpose and intent of the agreement among the parties reached in a telephone conference call of December 6, 1974 and recited in the Board's December 10 Order was not to preclude review of the decision of the Special Master but reflected only an intent to insulate the Board from exposure to the assertedly privileged documents.† The City Justice and CEI all stated, however, that they considered the Master to have made certain errors in categorization which they wished to challenge and the Chairman authorized a limited hearing before the Special Master for the purpose of reconsidering certain of his rulings. The parties were directed to furnish the Master with written lists of documents challenged in each category set forth in the Report.

On June 30, 1975, all concerned parties appeared before Special Master Coufal and presented arguments as to why certain of his rulings should be reversed or modified or sustained. The Special Master then adjourned the hearing for the purpose of examining each contested document in light of the parties' arguments relating thereto. As a result of this hearing, the Special Master did reverse or modify certain of his prior rulings, but adhered to his prior decision relating to the majority of challenged documents.

By Motion of July 8, 1975, the City moved the Board to certify the Special Master's Report, as supplemented, to the Atomic Safety and Licensing Appeal

*Due to the press of other duties, Mr. Miller was unable to proceed as Special Master and, with the consent of the parties, Frederic J. Coufal of the Atomic Safety and Licensing Board Panel replaced Mr. Miller as Special Master.

†As used herein, the term "privileged documents" refers to documents withheld on claims of work product as well as claims of attorney-client privilege. For purposes of this ruling, no distinction in the two categories is necessary

Board. In its Motion, the City contends that certain of the Master's decisions are erroneous; that "the integrity of the Board should be maintained by shielding it from the contents of documents that might later be held to be privileged" that review of the Special Master's decision by this Board necessarily would require review of specific documents; and that "there never was an agreement, and none was ever intended, to give up the right of review by an Appeals Board and ultimately by the courts." The City asserts there is a latent ambiguity in the Order of December 10 setting forth the agreement of the parties reached during the December 6, 1974 telephone conference call. On July 10, 1975, Applicants filed a reply opposing the City's Motion for Certification.

THE DECEMBER 6, 1974 AGREEMENT AND THE DECEMBER 10, 1974 ORDER

The December 10, 1974 Order of the Board does not appear ambiguous. It refers to the "express agreement of the parties to be bound by the determinations of the Master." Although the City contends that its attention was not directed to the claimed latent ambiguity until after the Master had ruled, we are not persuaded that the clear language of the December 10 Order did not require some request for clarification prior to the City's exceptions to the ruling of the Special Master.

No party other than the City has claimed that the agreement recited in the December 10 Order means anything other than what appears to be an express waiver of further review.* It is difficult to envision language expressing the concept of an agreement not to challenge the decisions of the Special Master in language more explicit than that set forth in the Order drafted by the then Chairman Farmakides.

The City protests that the right of appeal is fundamental, and that it may not be deprived of that right without its consent. We agree that unless a party is willing to waive that right, it may not be compelled to do so; but it is apparent to us that we are dealing with a question of waiver rather than compulsion. Neither are we persuaded by the argument that ambiguities are to be resolved by

*We should emphasize, however, that we accept without qualification the assertion by counsel for the City that they had an *unstated intent* not to forego all rights to review of the Special Master's ruling by entering into the December 6 agreement. The Board has confidence in the candor and good faith of counsel for the City as well as respect for their integrity. Notwithstanding our complete acceptance of City's counsels' assertion as to what was in their minds in December of 1974, this decision reflects our judgment that (1) only counsel for City read the agreement as ambiguous, and (2) the responsibility was theirs to raise such problem of possible ambiguity in timely fashion. Surely from date of issuance of the Order, the City was on notice that no review was contemplated by the terms of the Order.

strictly construing them against the author. In fact, our decision is founded upon strict construction of the December 10 Order. We read the December 6 agreement as an unequivocal waiver by all parties of possible appeals in order to obtain the specific benefit of prompt and final review of the privileged documents. Since these parties repeatedly have impressed upon the Board their desire for expeditious resolution of the issues in these proceedings, the December 6 agreement is consistent with this objective.

THE BOARD'S RESPONSIBILITY

Another reason for rejecting the rationale advanced by the City is that if review were contemplated, it should be undertaken by this Board. The procedure of utilizing a Special Master to insulate the Board from documents claimed to be privileged* is sensible but not compulsory. The procedure we adopted reflects a preference and certainly not an evidentiary mandate. Administrative tribunals are empowered to examine documents in order to determine if they should be withheld either from discovery production or from introduction into evidence. There is nothing so unique about a claim of privilege as to require that the ordinary procedures be abandoned. Thus, no error would have attached to review by the Board of the privileged documents. That being so, an unusual appellate procedure designed to bypass the Board would be unnecessary. This undercuts the City's claim that opportunity for appellate review to the exclusion of this Board was a logical though unspoken condition of the December 10 Order.

Another reason for rejecting the concept of appellate review is that the announced purpose of such review—insulation of the judicial tribunal from inadmissible documents—would apply with equal force to the appellate panel. If it is undesirable (though not improper) for the Board to become exposed to privileged documents, then likewise it would be undesirable for the Appeal Board to be exposed to them.

The lack of a necessary evidentiary basis for transferring the duty of the Board to review privileged documents should have been apparent to all parties in December 1974. This reinforces our conviction that there is no latent ambiguity in the Board Order of December 10, 1974 or that if the City perceived such an ambiguity it was its responsibility to bring it to the attention of the Board immediately.

We do not hold that the rulings of the Special Master necessarily would be upheld in the event this Board or some other tribunal were to review the

*No challenge has been made with respect to hundreds of documents determined to be privileged by the Special Master. Thus, review by an individual Master already has proven dutary with respect to the instant proceeding in that the Board has been insulated from umerous documents which apparently all parties concede should not be subject to oduction.

Report.* Without becoming involved in a duplication of the process by which the Master made his decision, there is no way of determining whether any error exists.† We think it clear, however, that the parties on December 6, 1974 recognized or should have recognized the possibility of error.

In return for a waiver of review, the parties have benefitted from an inspection of each individual document by an independent Master acceptable to all parties. They have the assurance that the Board and the Appeal Board will not have been exposed to any of the documents for which production was not ordered. They know at this stage of the proceeding which of the documents will be available for use during remaining depositions and the hearings now scheduled to commence on October 30, 1975. Moreover, they have had the benefit of substantial discovery which has resulted in the production of tens of thousands of document pages. They have had the benefit of a deposition program involving scores of potential witnesses. We conclude that even if there were errors with respect to certain of the Master's classifications, there is little likelihood of any substantial effect upon the parties' preparation for the hearings.

We regard the December 6 agreement as a binding waiver on behalf of all parties, and we hold that there is no latent ambiguity perceptible on the face of the Board's December 10, 1974 Order. We further find no logic in the proposition that the Board would not have been the proper authority to review the decision of the Special Master in the event any of the parties did contemplate an appeal from the Report. Finally we hold that the burden of timely raising a problem of latent ambiguity was chargeable to the City

For the foregoing reasons, the City's Motion of July 8, 1975 is DENIED.

ATOMIC SAFETY AND
LICENSING BOARD

John H. Brebbia, Member

John M. Frysiak, Member

Douglas V. Rigler, Chairman

Dated at Bethesda, Maryland
this 21st day of July 1975.

*Indeed, for purposes of deciding City's Motion, we may assume that error could be demonstrated.

†Conversely, absent such examination, it cannot be said that the Master's decision would be subject to modification upon review.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

LBP-75-41

ATOMIC SAFETY AND LICENSING BOARD

Daniel M. Head, Chairman
Marvin M. Mann, Member
Donald P. de Sylva, Member

In the Matter of
WASHINGTON PUBLIC POWER SUPPLY
SYSTEM
(WPPSS Nuclear Projects 1 and 4)

Docket Nos. 50-460
50-513
July 30, 1975

Upon application for construction permits for WPPSS Nuclear Projects 1 and 4, Licensing Board, in uncontested proceeding, issues a partial initial decision on environmental and site suitability aspects of the facilities, making factual determinations requisite for the issuance of LWAs and imposing certain conditions.

FWPCA. SECTION 401 CERTIFICATION

A positive 401 certification precludes a Board from making an independent determination of compliance with federal effluent limitations. A Board is not precluded from determining applicant's compliance with state water quality standards where the state in its 401 certification has failed to address that issue.

**PARTIAL INITIAL DECISION
(NEPA and Site Suitability Issues)**

APPEARANCES

Joseph B. Knotts, Jr., Esq., and Nicholas S. Reynolds, Esq.,
of Conner, Hadlock and Knotts, for the Applicant, Wash-
ington Public Power Supply System.

Edward G. Ketchen, Esq., and William D. Paton, Esq., for
the United States Nuclear Regulatory Commission.

I. BACKGROUND AND AUTHORITY

This Partial Initial Decision involves the application to the United States Nuclear Regulatory Commission (the NRC or Commission) by the Washington Public Power Supply System (WPPSS or Applicant) for construction permits for the Applicant's Nuclear Projects No. 1 and No. 4 (WNP-1 and WNP-4 or the facility). In particular, this decision contains (1) findings on environmental issues arising under the National Environmental Policy Act of 1969 (NEPA) 42 U.S.C. 4321 *et seq.*,¹ (2) findings on the suitability of the proposed site for nuclear reactors of the general size and type proposed from the standpoint of radiological health and safety considerations, and (3) findings on safety issues relating to the conduct of certain activities subject to the provisions of Appendix B of 10 CFR Part 50 with regard to which the Applicant seeks authorization.²

The proposed facility would consist of two pressurized water reactors, each with a core power level of 3600 thermal megawatts, with a net electrical output of 1218 megawatts. The facility is to be located on a site on the Hanford Reservation in Benton County Washington, approximately 2.5 miles west of the Columbia River and 8 miles north of the City of Richland.

An application for a construction permit for WNP-1 was filed by the Applicant on July 16, 1973, and was docketed by the Commission on October 18, 1973. On December 21 1973, the Commission published in the *Federal Register* (38 *Fed. Reg.* 35034) a "Notice of Hearing on Application for Construction Permit" in which this Atomic Safety and Licensing Board (the Board) was designated to conduct the hearing on the application.³

On February 26, 1974, a prehearing conference was held in Richland, Washington. At the prehearing conference the Applicant indicated that it was considering the possible relocation of WNP-1 from the original proposed site⁴ to the site under consideration in this proceeding. Subsequently the Applicant filed an amended application to relocate WNP-1 and to apply for a construction permit for WNP-4 as a duplicate to WNP-1. The change in the application was made by Amendment No. 1 (July 22, 1974) to the original application, by Amendments No. 7 (May 31 1974), No. 8 (July 1 1974), and No. 9 (August 9

The Commission's regulations in implementation of its NEPA responsibilities are contained in 10 CFR Part 51.

²The authority to issue this Partial Initial Decision is discussed in the Supporting Opinion, *infra*.

A petition for leave to intervene in the proceeding was filed pursuant to the notice by the National Marine Fisheries Service (NMFS), which is a component of the National Oceanic and Atmospheric Administration of the U. S. Department of Commerce. However, the petition was subsequently withdrawn after Applicant changed its site location and revised its cooling water system to use cooling towers rather than once-through cooling. (December 5, 1974 Prehearing Conference Transcript, p. 11)

⁴The original application involved a proposed site approximately 17 miles northwest of the present one for WNP-1 and WNP-4.

1974) to the Preliminary Safety Analysis Report, and by Amendment No. 1 (July 1 1974) to the Environmental Report. The amended application included, *inter alia*, a change in condenser cooling system for WNP-1 from once-through cooling to closed-cycle cooling, and provision for closed-cycle cooling for WNP-4.

On September 18, 1974, the Commission published in the *Federal Register* (39 *Fed. Reg.* 33588) a "Notice of Receipt of Amended Application for Construction Permits and Facility Licenses and Notice of Hearing on Amended Application for Construction Permits: Time for Submission of Views on Antitrust Matters" (Notice of Hearing). Another opportunity was afforded for the filing of petitions for leave to intervene by interested persons.

Pursuant to the Notice of Hearing, a petition to intervene was filed by Mr. Donald F. X. Finn, which petition was granted by Memorandum and Order of the Board issued March 20, 1975. However, Mr. Finn was held in default when he did not appear at the evidentiary hearing at Richland, Washington on May 13-15 1975 and his petition was dismissed at the end of that hearing (Tr. 572).

Also, pursuant to the Notice of Hearing, a petition to participate as a representative of an interested state under 10 CFR 2.715(c) was filed by the State of Washington Thermal Power Plant Site Evaluation Council (the Thermal Council). The Board granted this petition in its aforementioned Memorandum and Order of March 20, 1975

On March 12, 1975 the Applicant filed a motion seeking, *inter alia*, to convene a hearing on the issues covered by 10 CFR § 50.10(e)(2) and (3)⁵ and by 10 CFR § 51.52. This motion was granted by Memorandum and Order of the Board issued April 7 1975 and the evidentiary hearing on environmental and site suitability issues was held in Richland, Washington on May 13-15 1975. The parties participating in the hearing were the Applicant and the NRC Staff (the Staff). The Thermal Council appeared and made a statement for the record (Tr. 82-127 345-46).

The decisional record in this proceeding is set forth in Appendix A to this Partial Initial Decision. The documents received into evidence as exhibits will either be cited herein as such or will be referred to by abbreviations of their titles, such as PSAR, ER, FES, etc.

To fulfill its responsibilities in this uncontested proceeding, the Board will make Findings of Fact relating to environmental and site suitability matters and to safety matters involving the LWA activities which are subject to the provisions of Appendix B of 10 CFR Part 50. The Board will also make appropriate Conclusions of Law. In addition, the Board will include in the Partial Initial

⁵ By letter to the Commission dated January 31, 1975, the Applicant had requested authorization, pursuant to 10 CFR § 50.10(e), to engage in certain limited work activities which were described in the letter and attachments thereto (Applicant's Exhibit 10). The authorization which the Applicant seeks will be referred to as "LWA"

Decision a Supporting Opinion to elaborate as needed upon the rationale for certain of its rulings. Finally the Board will set out its Determinations on Ultimate Issues involved herein.

While this Partial Initial Decision on environmental and site suitability issues is a prerequisite to issuance of an LWA, 10 CFR 50.10(e)(2) and (3)(ii), no specific authorization of an LWA by this Board is required. The authority to issue any LWA rests with the Director of Nuclear Reactor Regulation, 10 CFR 50.10(e).

II. FINDINGS OF FACT

A. Environmental (NEPA) Considerations

(1) GENERAL

1 Applicant submitted on July 16, 1973 a License Application,⁶ an Environmental Report (ER) pursuant to Appendix D, 10 CFR Part 50,⁷ and a Preliminary Safety Analysis Report (PSAR) pursuant to 10 CFR Part 50. The ER and its supplements contain detailed information on and evaluations of the environmental impacts associated with construction and operation of the proposed facility

2. Based upon the information submitted by the Applicant in the Environmental Report and on its own independent review and analysis, the Staff prepared a Draft Environmental Statement (DES) which was issued on December 5 1974. Copies of the DES, with requests for comments, were sent to appropriate Federal, State, and local agencies. A Notice of Availability with requests for comments, was published in the *Federal Register* on December 5 1974 (39 *Fed. Reg.* 42410). Ten organizations and agencies commented on the DES, as did the Applicant⁸ (FES pp. ii, A-5). The Staff then prepared a Final Environmental Statement (FES) which was issued on March 5, 1975.⁹ A Notice of Availability of the FES was published in the *Federal Register* on March 5 1975 (40 *Fed. Reg.* 11039). The comments from the aforementioned organizations and agencies and the Applicant were considered in the FES, and a

Applicant's License Application with its three amendments was admitted into evidence as Applicant's Ex. 1 (Tr. 153). Applicant's PSAR with its seventeen amendments was admitted into evidence as Applicant's Ex. 2 (Tr. 153). Applicant's ER with its three amendments was admitted into evidence as Applicant's Ex. 3 (Tr. 153).

Appendix D was superceded on August 19, 1974 by 10 CFR Part 51, the Commission's current regulations implementing NEPA.

Applicant's Ex. 8 is its response to agency comments on the DES, which were not received in time for inclusion in the FES.

⁹The FES was admitted into evidence as Staff Ex. 1.

discussion of issues raised by these comments was included in the FES (FES §11). In addition, the Staff presented supplemental testimony at the evidentiary hearing updating Section 11 of the FES to include the Staff's response to late comments submitted by the U. S. Federal Energy Administration (Norris Testimony following Tr. 483).

3. The FES covers in detail the environmental impact of the construction and operation of the proposed facility. It contains a detailed description of the site and the facility with a discussion of the impact of site preparation and plant construction. In addition, the FES deals with the environmental effects of plant operation, discusses the environmental monitoring program, and assesses the environmental effects of accidents. The FES contains a detailed evaluation of the proposed action including consideration of the need for power, the adverse environmental effects which cannot be avoided, the relationship between local short-term uses of man's environment and maintenance and enhancement of long-term productivity and the irreversible and irretrievable commitments of resources. It further contains a review of alternate energy sources and sites, of plant design alternatives and finally provides a cost-benefit analysis. The FES contains a summary of the Staff's evaluations and concludes, after weighing the environmental, economic, technical, and other benefits of the proposed facility against environmental and other costs, and considering available alternatives, that the action called for under NEPA and 10 CFR Part 51 is the issuance of construction permits for the plant subject to certain conditions for protection of the environment. (FES, p. ii)

4. The Board finds that the FES, as supplemented by the testimony and evidence presented in this proceeding, is an adequate and comprehensive review and evaluation of the environmental impact resulting from construction and operation of WNP-1 and WNP-4. Also, the FES sets forth an adequate evaluation of the various alternatives to the proposed action. Further, the Board has independently considered the environmental impact of the proposed action, and the Board hereby agrees with, incorporates by reference, and adopts the Staff's evaluations in the FES, as updated and supplemented, except where the Staff's evaluations conflict with the findings in this Partial Initial Decision.

(2) IMPACTS OF CONSTRUCTION

5. The Applicant has identified, and the Staff has considered, the environmental impact associated with construction of the facilities (ER § §4 and 11 FES §4). The dedication of 972 acres of land on the Hanford Reservation for the site will have an insignificant environmental impact. The site is surrounded on three sides by land already dedicated to the nuclear activities of the Hanford Reservation, and no other productive land use has been planned for the proposed site. The site is bordered on the fourth side by the Columbia River. (ER §2; FES §2)

6. Construction activities will result in impacts normally incident to a large construction project of this nature, such as dust, noise, and displacement of wildlife. However, these impacts will be relatively minor and of short duration. The Applicant has committed to take appropriate actions to minimize these impacts. (ER §4, Applicant's Ex. 8; FES § §4.7 11.1)

7 Due to the proximity of the Bonneville Power Administration's (BPA) Ashe substation approximately 2300 feet from the site for WNP-4, no major offsite transmission line construction will occur. Rights-of-way will be 200 feet in width. Approximately 10 transmission towers will be constructed. No productive land loss will be involved in the construction of these lines to the Ashe substation and no clearing of vegetation on the shrub steppe in the site area is required to assure line security. The transmission lines to the Ashe substation are the only lines associated with the facilities which require construction. The 500 KV and 230 KV lines connecting the Ashe substation and WNP-2 with the BPA system would have been installed regardless of the construction of WNP-1 and WNP-4. In any event, these lines have been the subject of BPA environmental impact statements. (ER § §3.9 4.2; FES § §3.8, 4.2)

8. Since the site region is an unproductive shrub steppe in which little rainfall occurs, minimal erosion, if any due to construction runoff is expected to occur. (FES § §2.1, 4.4) In addition, since the site is approximately 2½ miles from the Columbia River, no construction runoff from the site to the river will occur. The Applicant will discharge runoff resulting from dewatering at the site to holding pits where the water will percolate into the highly porous soils found at the site. (ER §4.1 FES §4.2; Tr. 474-75) Excavation in the bank of the river for the service water intake structure will be conducted so that the effect on the river is minimized. These excavation activities will include the installation of a temporary cofferdam which will require approximately three to four months to construct. The only increase in turbidity associated with construction will be associated with the installation and removal of the cofferdam and the installation of the intake and associated piping. The Applicant will schedule the cofferdam installation at a time most environmentally acceptable for such activities. No appreciable disturbance of spawning or migrating salmon is expected to occur from these construction activities, nor will potable water withdrawn downriver be adversely affected. (ER §4.1.2; 4.3) The Board finds that with this action and the other proposed actions to be taken to minimize the impacts of construction in or near the river, the construction impacts on the aquatic ecosystems will be minimal and brief, and that no deleterious long-term effects will result.

9 Considering Findings of Fact 5 6, 7 and 8 *supra*, the Board concludes that the impact of construction of the facility is environmentally acceptable.

(3) IMPACT OF OPERATION

(a) Radioactive Effluents

10. The effects of low-level radiation discharged during routine operation of the facility have been evaluated. Gaseous and liquid discharges will be processed and monitored within the station to reduce the quantity of radionuclides released to the environment. WNP-1 and WNP-4 will have independent radioactive-waste treatment systems. The liquid radwaste systems will be divided into two principal systems, the Boron Recovery System (BRS) and the Liquid Waste System (LWS). The BRS will process high-grade water from the reactor coolant system which will normally be recycled for reuse in the facility after treatment. The LWS will process water from floor drains, laboratory drains, and containment-building sumps. Although complete recycle of liquid radwaste is a design objective, provisions will be made for discharge of LWS liquids, after treatment for radionuclide removal, when liquids are not suitable for reuse or when plant water inventories require discharge from the system. Exposure levels were estimated assuming such discharges. In estimating radiation doses from liquid effluents, consideration was given to pathways to humans, including drinking water, eating fish and waterfowl, water recreation, and consuming food products irrigated with river water

11 During normal operations of the facility small quantities of gaseous radionuclides will be released. The gaseous waste treatment and ventilation systems will consist of equipment and instrumentation necessary to reduce releases of radioactive gases and airborne particulates from equipment and building vents. The principal source of radioactive gaseous waste will be gases stripped from the primary coolant in the BRS.

The auxiliary building ventilation exhausts, fuel-handling area, and containment purge exhausts will be processed through HEPA filters and charcoal adsorbers. The containment atmosphere will be recirculated through HEPA filters and charcoal adsorbers prior to purging.

12. Based on the evidence in the record at this time, the Board finds that the risk to the public from low-level radiation doses resulting from operation of WNP-1 and WNP-4 would be very low (ER §§3.5.5 5.3.3; FES §§3.5.2, 5.4.2; Applicant's Ex. 12; Staff Ex. 5). At the most, the cost represented by the impact of low-level radiation effluents would be about \$120,000, which is no more than approximately 0.1% of the facility annual cost of about \$150 million. Therefore, the overall NEPA cost-benefit analysis associated with the facility is not significantly affected by this factor. (Staff Ex. 5)¹⁰

13. The environmental effects of accidents have been assessed by the Applicant (ER §7). The Staff has reviewed Applicant's assessment, has made

¹⁰This issue, including compliance with the new Appendix I to 10 CFR Part 50, is further discussed in the Supporting Opinion, *infra*.

independent calculations, and has concluded that the environmental risks are extremely small (FES §7). The Board finds that the environmental risks from accidents at the facility are extremely low

(b) Nonradioactive Effluents

14. The proposed waste heat dissipation system will utilize mechanical-draft wet cooling towers. The waste heat is transferred to the circulating water in the turbine condenser, and the circulating water is then pumped through the condenser and cooling tower system at the rate of 593,000 gpm/unit. The average make-up rate is 19,000 gpm/unit (42.3 cfs), and evaporation and drift loss is 15,200 gpm/unit (33.9 cfs). To assure efficient operation of the cooling system, it is necessary periodically to discharge water (blowdown) to the river to limit the buildup of dissolved solids which result from evaporation in the cooling towers. A normal blowdown rate of 8.5 cfs/unit (3800 gpm) is anticipated, and the discharge line is designed for a maximum blowdown of 16.7 cfs/unit. At the maximum blowdown rate of 33.4 cfs from both units, the total dissolved solids of the river after complete dilution of the blowdown will be increased by about 0.08% at average river flow of 120,000 cfs, and about 0.27% at minimum river flow of 36,000 cfs. (ER §5 4 FES §3.4)

15 To control algae and slime in the cooling system, chlorine will be added intermittently to the circulating water for 30 minutes at approximately 2.5 ppm. At the beginning of the chlorination period, the blowdown valve will be shut, and will remain closed until the total residual chlorine concentration in the circulating water drops to 0.1 ppm, at which time blowdown will be resumed. At minimum river flow the blowdown will increase the chloride content of the river less than 0.002 ppm at the edge of the mixing zone, which extends 50 feet upstream and 300 feet downstream, and is 100 feet wide (Tr. 409 518-19 Applicant's Ex. 16, p. 7). This represents an increase in the chloride content of the river of less than 0.5%. After complete dilution, the maximum added chlorine burden on the river will be about 0.1 parts per billion. The chlorine demand of the river water should further reduce, to some extent, the potential adverse effects of discharge of residual chlorine. (FES §3.6.1)

16. The tolerance of aquatic organisms to chlorine is species-specific, and is dependent upon chemical concentration and form, and duration of exposure. General research has indicated that intermittent discharges (2 hours per day) not exceeding a concentration of 0.04 ppm residual chlorine in the receiving water will not result in significant kills of aquatic organisms or adversely affect the aquatic ecology. Continuous levels of 0.002 ppm residual chlorine will not affect most aquatic organisms. (FES §5.5.2.3) Chlorine discharges from the facility should have no measurable impact on plankton and aquatic invertebrates entrained in the stream drift since maximum exposures to concentrations of 0.1 to 0.002 ppm will be for an interval of less than two minutes, and then only at low flow and maximum discharge when passage coincides with the centerline of

the plume. The plume placement assures free passage for fish movement and the maximum exposure to fish passively swept through the centerline of the plume would be an instantaneous exposure to 0.1 ppm residual chlorine which would be reduced to 0.02 ppm at 15 feet within 5 seconds. The Board finds that there is reasonable assurance that the concentration and exposure durations expected from intermittent chlorine discharges are less than those which will cause detrimental effects, and that no measurable effects due to chlorine exposure of fish should occur. (ER § 3.6, 5 4.1 FES § 3.6, 5.5.2.3; Tr. 523-31, 535-38)

17 The Applicant considered alternative methods for controlling algae and slime in the cooling systems such as the use of dichromate instead of chlorine, or the installation of a mechanical cleaning system. However, dichromate and other strong oxidizing agents are extremely detrimental to the environment. Further, while mechanical cleaning of condensers is possible, chlorination would still be required because no mechanical cleaning systems are available which can be used in the cooling towers. (Tr. 395-98) Based on current information, the Board finds that the proposed chlorine system is environmentally preferable to other biocides, and that no mechanical systems are adequate substitutes for chlorine.

18. Ecological effects of plant operations related to the cooling system may be observed in the following areas: (1) the intake; (2) the condenser and cooling towers; (3) the mixing zone of the blowdown, and (4) the mixed receiving water. The Board finds that the effects from these sources will be localized and minimal. (ER § 5.1 FES § 5.5)

19 The design of the intake structure is such that the influence on fish of water drawn into the intake pipe will extend to approximately one inch around the structure. The average approach velocity at a distance of $\frac{3}{4}$ inch from the structure will be approximately 0.4 fps, and will decrease rapidly at greater distances from the structure. Since the velocity of the river at the intake structures exceeds 3.0 fps and since the river flows at right angles to the intake screens, the tendency will be for fish to be washed clear of the torpedo-shaped structure. In addition, entrainment losses will not be significant. Each intake pipe consists of a perforated outer sleeve with $\frac{3}{8}$ inch diameter holes over 40% of its area, inside of which is an inner sleeve with $\frac{3}{4}$ inch diameter holes over 7% of its area. The outer sleeve prevents fish from entering the system and the inner sleeve distributes the inflow evenly along the surface of the outer sleeve. The intake pipes are specifically designed to reduce the impact of intake velocity on the biota of the river (ER §§ 3.4, 5.1 FES §§ 3.4.3, 5.5.2) The Board finds that loss of fish through impingement and entrainment will not be significant.

(c) Monitoring

20. There exists an abundance of historical information concerning the chemical and physical characteristics of the Columbia River in the areas of the site. An adequate offsite preoperational radiological monitoring program will be conducted to provide measurements for background radiation levels. (ER

§§6.1.5 FES §6.1.2, Staff Ex. 3; Tr. 388-94) The overall preoperational base-line monitoring program will also include studies involving hydrology meteorology and terrestrial ecology (ER §6.1 FES §6.1).

(d) Transportation of Fuel and Radioactive Waste

21 Transportation of fuel to and from the site, and of radioactive waste from the site, will be in accordance with Commission regulations, requirements of the Department of Transportation, and applicable state regulations (ER §5.3.4; FES §§5 4.3.2, 5 4.6). Under normal shipping conditions, there will be small unavoidable radiation exposure to the transportation personnel and to the general public along the route (FES §5 4.3.2). Under postulated accident conditions, the probability of significant exposure is also small (FES §7.2). The Board finds that the transportation of new fuel to the facility or spent fuel and radioactive wastes from the facility will have minimal environmental impact as represented in 10 CFR Part 51 Tables S-3 and S-4.

(e) Water Quality Considerations

22. The Applicant has obtained a certification from the State of Washington Thermal Power Plant Site Evaluation Council pursuant to Section 401(a)(1) of the Federal Water Pollution Control Act Amendments of 1972 (FWPCA), 33 U.S.C. 1251 *et seq.*, that the discharges resulting from the construction and operation of WNP-1 and WNP-4 will comply with the applicable provisions of Sections 301 302, 306, and 307 of the FWPCA (Applicant's Ex. 7). Water quality standards were adopted by the Department of Ecology of the State of Washington on July 19 1973, and were approved by EPA on March 18, 1974. Based on the entire record, the Board finds that there is reasonable assurance that the discharge from the facility will not violate the applicable Federally-approved water quality standards of the State of Washington.¹¹

(4) NEED FOR POWER

23. The situation with regard to "need for power" in this proceeding is unique because the Applicant is not a conventional utility engaged in the generation, distribution, and retail sales of electric power. The Applicant is a municipal corporation and a joint operating agency of the State of Washington which is legally empowered to acquire, construct, and operate facilities for the generation and transmission of electric power. The Applicant supplies bulk electric power to utility systems in the Pacific Northwest, and WNP-1 and WNP-4 are to be constructed and operated pursuant to the Hydro-Thermal Program developed jointly by utilities of the Pacific Northwest and the Bonneville Power Administration. The Pacific Northwest is an area where there is a high degree of coordination and cooperation between utilities involved in the

See the discussion on this matter in the Supporting Opinion, *infra*.

generation and transmission of electric power, and the dominant factor in terms of transmission of power is BPA.

24. The Pacific Northwest is unique in the United States in that its major source of power is hydroelectric (Gallup Testimony following Tr. 164). Thus, in this region the abundance of water is at present the controlling element with regard to the capability to generate electricity. The predominance of this substantial hydroelectric power supply allows the region to adopt relatively low reserve requirements (approximately 12%) and provides the region with substantial peaking capacity. However, the fact that there are finite limits on water availability means that the resource must be husbanded. In current circumstances, this prevents the region from relying wholly on that power supply for annual kilowatt-hour base load service. (Tr. 297-313) It is to meet the anticipated annual energy load (as opposed to peak demand) of the West Group Area that WNP-1 and WNP-4 will be constructed and operated (Tr. 170-171 498-513), and the Board has evaluated the need for the facility in the context of this anticipated load.

25 In the Pacific Northwest, five private utilities, 103 publicly-owned agencies, WPPSS, and BPA have formed the Joint Power Planning Council (Planning Council) to coordinate planning for existing and future thermal and hydroelectric resources for the region. The Planning Council has developed the Hydro-Thermal Program for power generation to meet the anticipated regional load growth. The Hydro-Thermal Program is a long-range plan formulated in the late 1960's when BPA and the utilities of the region recognized that the development of hydroelectric plants in the Pacific Northwest was approaching saturation in terms of energy production (but not in terms of peak capacity which may be increased by addition of turbines and generators). Because the regional consumption of electrical energy was approaching equality with available hydroelectric energy the need to plan additional baseload generation was evident. (FES §8.1.5) Planning for resources to meet regional loads is based upon studies prepared by the Pacific Northwest Utilities Conference Committee (PNUCC), which prepares an annual 11-year forecast of loads and resources for the region, known as the West Group Forecast (Forecast).¹² (Applicant's Ex. 4) PNUCC also expands the Forecast into a 20-year planning document titled "Long Range Projection of Power Loads and Resources for Thermal Planning-West Group Area." These documents form the basis for utility planning for future resources in the region. Since it is the function of the Applicant to serve the power requirements of public bodies in the Pacific Northwest, the demand characteristics of the region are viewed as the demand characteristics of the Applicant. (ER §1.1 FES §8.1)

² The 1975 West Group Forecast was admitted into evidence as Applicant's Ex. 4.

26. The basic technique used by many of the forecasters in the Pacific Northwest is the so-called "building block" technique which builds load estimates by components. In the development of these components, reliance is placed on historical information, trends, and judgments as to such matters as future population growth and use of energy by residential, commercial, and industrial sectors, as well as a number of judgmental experience factors associated with the individual utility service area. Population projections are the keystone of the load estimates of each facility. These projections are translated into estimates of the number of households (for use in estimating total residential requirements) and into estimates of employment opportunities (for use in estimating commercial and industrial requirements). (Gallup Testimony following Tr. 164)

27. Each utility in the West Group Area reviews its forecasts of loads made in the previous year to determine if its forecasts are valid based upon the actual experience in the previous year. Changed conditions are noted and a revised forecast of loads is made, if appropriate. Energy availability is then estimated, and adjustments are made as necessary to reflect current construction schedules and planning dates. These revised forecasts of loads and estimates of energy availability are transmitted to the PNUCC where they are compiled on a yearly basis. The totals then become the data used in the West Group Forecast. (ER §1.1 Gallup Testimony following Tr. 164)

28. A comparison between loads and resources is made in the Forecast to detect any deficiencies in planning of resources to meet load. When deficiencies are detected, the utilities revise their plans on a coordinated basis to meet the deficiencies. Conversely when surpluses are detected, the utilities revise their plans on a coordinated basis to defer surplus resources.

29. The Forecast of February 1, 1975 indicates a reduction in estimated loads from the levels predicted in the 1974 forecast, i.e., a reduced rate of increase in demand, but also indicates that, on a regional basis, there will be a need for the energy to be produced by the proposed facility (Gallup Testimony following Tr. 164).

30. The Board finds, upon consideration of the entire record, that there will be a need for the baseload energy which can be produced from WNP-1 and WNP-4 in the time-frame in which those plants are anticipated to operate.

(5) ALTERNATIVE SOURCES OF POWER

31. Possible alternative means considered for furnishing the projected energy from the facilities were the purchase of power, hydroelectric power, fossil-fueled plants, and geothermal energy (ER §§9.1, 9.2; FES §§9.1, 9.2). However, the proposed nuclear facility was considered to be the appropriate choice in terms of economics, environmental impact, and, in the case of geothermal energy, technical feasibility as well.

32. The FES contains a discussion of the major types of geothermal systems, the uncertainties of exploration for geothermal resources, and the economic and technical limitations on the development of geothermal resources. In considering the feasibility of geothermal energy as an alternative to WNP-1 and WNP-4, the crucial issue is the time within which potential geothermal resources may be discovered, assessed as proven reserves, and finally developed into producing fields with associated generating facilities. (FES §9.1.2) As of October 1974, there had been no wells drilled in Washington to test or evaluate any potential geothermal resource. Further, until environmental impact statements are issued by the Forest Service with regard to geothermal exploration on federal lands, no leases may be issued, and hence no such activities may commence. The Forest Service has indicated that at present it has no plans to issue impact statements involving the area in Washington generally recognized to be most promising as a geothermal resource. (Applicant's Ex. 6)

33. A detailed analysis of the potential availability of geothermal resources for electric energy production was performed by the Applicant to verify the conclusion in the ER and FES that geothermal resources could not provide the energy which would be available from the nuclear facility in the specified time (Applicant's Ex. 5). The analysis was concentrated on the central part of Washington since pertinent literature and ongoing leasing activity indicate that this area is the most likely to be developed. The geothermal resource most likely to be found in Washington is a liquid-dominated system of low salinity at temperatures between 100°C and 200°C. There are numerous technological constraints against utilization of liquid-dominated geothermal resources at such low temperatures. Presently there is only installed capacity of about 400-500 MWe which utilizes liquid-dominated systems, and these involve systems characterized generally by fluids having higher temperatures than those expected in Washington. Even if it optimistically assumed that leases could be obtained, that technological constraints could be resolved, and that exploration could commence by 1978, the exploration itself and the necessary evaluation related thereto would require an additional three years involving a capital cost of approximately \$11 million for this high-risk venture. This aspect would delay initiation of development of geothermal resources by public utilities to 1981 at the earliest. (Tillson Testimony following Tr. 210)

34. Considering the entire record on geothermal resources, the Board finds that it is not economically or technically realistic to consider geothermal energy as a viable alternative to this proposed nuclear facility

(6) COST-BENEFIT BALANCE

35 The Board finds that the environmental and economic costs resulting from the construction and operation of the facility are mainly

1. Use of about 972 acres of land on the Hanford Reservation;
2. The removal of water from the Columbia River amounting to about 0.21% of the minimum river flow;
3. During the construction period, increased traffic congestion on the major thoroughfares within the City of Richland, Washington, from use by approximately 1500 construction workers while commuting to the site;
4. Aggravation of an existing shortage of housing in the Tri-City area during the construction period from the added population of 1500 construction workers and their families;
5. A release of gaseous and liquid effluents containing small amounts of radioactive materials;
6. A small risk of accidental release of radioactive materials either on site or during transportation;
7. Discharges of heat and chemicals to the river and minor environmental effects in the immediate vicinity of the discharge structure;
8. Entrainment and impingement of a relatively small number of aquatic organisms;
9. Some unavoidable temporary adverse environmental impacts during construction;
10. The capital and operating costs of the plant; and
11. A small environmental cost related to the uranium fuel cycle which must be added to the overall environmental costs.

36. The Board finds that the benefits from the construction and operation of the proposed facility are principally:

1. The addition of approximately 17 billion kwh per year to meet the demand for electricity from customers in the West Group Area and to support the expected economic growth in the West Group Area;
2. Creation of numerous construction jobs;
3. Employment of about 180 persons during the 30-35 year operation of the proposed facility;
4. Increased income to the community from the construction force; and
5. Substantial sales tax benefits to the State of Washington during construction and substantial annual tax benefits to Benton County during operation.

37. Based upon the entire record, the Board finds that the environmental and economic benefits from the construction of WNP-1 and WNP-4, including the generation of electrical power to meet the anticipated growth in use of electricity within the West Group Area, will be greater than the environmental and economic costs that will necessarily be incurred by construction and operation of the facility. Therefore, the Board finds that the balance between the benefits and costs involved in the construction of the facility favors the granting of construction permits for WNP-1 and WNP-4.

38. Further, independently considering the final balance among conflicting factors contained in the record of this proceeding, the Board finds that the appropriate action to be taken is to authorize the granting of construction permits for WNP-1 and WNP-4, if such action is also warranted following completion of the health and safety portion of this proceeding.

B. Site Suitability

(1) GENERAL

39. The Applicant and the Staff have independently evaluated the suitability of the proposed site for the facility from the standpoint of radiological health and safety considerations. The evaluations included consideration of the reactor site criteria identified in 10 CFR Part 100. (PSAR §2; Staff Ex. 2)

40. WNP-1 and WNP-4 each incorporates a nuclear steam supply system consisting of a Babcock and Wilcox pressurized water reactor with a two-loop reactor coolant system. Each unit will be designed for a thermal output of approximately 3619 megawatts. (PSAR §1.2; Staff Ex. 2)

(2) POPULATION DISTRIBUTION AND USE CHARACTERISTICS

41. The proposed site is situated on approximately 972 acres on the Hanford Reservation in Benton County, Washington, approximately 8 miles north of the City of Richland. The exclusion area consists of two circles each having a radius of 1.2 miles and a center located on each proposed containment structure. The Applicant has contracted with the United States Energy Research and Development Administration (ERDA) for the lease of these 972 acres, which are located adjacent to the site for WNP-2 which is presently under construction (Applicant's Ex. 15). The Board finds that there is reasonable assurance that the Applicant will have the necessary authority to determine all activities within the designated exclusion area.

42. The radius of the low population zone (LPZ) has been established at 4 miles from the facility. According to the 1970 census, 38 persons resided within the LPZ. In addition, the present transient population consists of approximately 450 workers, and this population is projected to increase to a maximum of 900 workers as construction of WNP-2 and ERDA's Fast Flux Test Facility (FFTF) continues. Approximately 2000 workers pass through the LPZ twice daily travelling to and from employment on the Hanford Reservation. (PSAR §2; Staff Ex. 2)

43. The nearest population center, defined in 10 CFR Part 100 as a densely populated center containing more than 25,000 people, is the City of Richland, Washington, of which the nearest densely populated portion is located approximately 8 miles south of the site. The City of Richland had a 1970

population of approximately 26,290. As required by 10 CFR Part 100, the population center distance is at least one and one-third times the LPZ radius.

44. Given an exclusion radius of 1.2 miles, low population zone radius of 4 miles, and a population center distance of 8 miles, the Board finds that there is reasonable assurance that suitable engineered safety features can be provided to satisfy the requirements of 10 CFR Part 100, and that the population center distance meets the requirements of 10 CFR Part 100.

45. The only industrial facilities located within 5 miles of the site are those associated with WNP-2 (1 mile away), the FFTF (3 miles away), the Ashe Transmission substation (1 mile away), and two small solid radwaste burial grounds (the nearer is 1 mile away). In view of these distances and the types and quantities of radwastes stored at the aforementioned industrial facilities, no accident or accidental releases from those facilities would increase any potential hazard to the public health and safety resulting from the operation of WNP-1 and WNP-4. The nearest transportation mode, the mainline track of the Hanford Reservation railroad system, passes approximately 2500 feet from the site. Hanford Reservation Route 4 is located 7 miles southwest of the site. Lastly, the Columbia River is located 2.5 miles east of the site. Considering the distances from the site and the characteristics of the transportation modes, the Board finds that no significant hazard to the proposed facility exists from these transportation modes. (PSAR §2.2; Staff Ex. 2)

46. The airport nearest to the site, the Richland Airport, is approximately 11 miles south of the site. This airport can only accommodate aircraft up to 12,500 pounds gross weight. Aircraft exceeding that gross weight must use the Tri-Cities Airport approximately 15 miles southeast of the site. Significantly, the Hanford Reservation lies in an aircraft-restricted zone, and thus no private or commercial air traffic is generally permitted at altitudes below 10,000 feet. There are no military bases or high-speed, low-altitude military training routes within 10 miles of the site. The Board finds that the facility need not be designed with special provisions to protect it against aircraft crashes. (PSAR §2.2; Staff Ex. 2)

(3) GEOLOGY AND SEISMOLOGY

47. The ERDA Hanford Reservation, on which the proposed facility is to be located, is within the Pasco Basin. Topographic relief in the Pasco Basin ranges from maximum elevations exceeding 3,500 feet at the top of Rattlesnake Mountain to a minimum elevation of +340 feet in the Columbia River channel at Richland. The site of the proposed facility lies at an elevation of 446 feet on flat terrain that slopes gently to the northeast. The site is about 2 ½ miles west of the Columbia River. (Staff Ex. 2, p. 7)

48. The largest geological structure of significance to the site is the Rattlesnake-Wallula lineament, which is about 80 miles long and is located about 13 miles southwest of the site (Staff Ex. 2, p. 8). Because of its proximity to the

site, the Rattlesnake-Wallula lineament is the most significant seismically active structure for determination of the safe shutdown earthquake (SSE), and is considered by the Staff as having the potential for generating earthquakes of intensity VIII at a distance of slightly more than 10 miles from the site (Staff Ex. 2, pp. 8-10). Based on these considerations, the Board finds that a horizontal acceleration of 0.25g applied at the foundations of Category I structures, and used as the zero period limit of appropriate response spectra, to be appropriate for the SSE. The Board finds that a value of 0.125g is appropriate for the Operating Basis Earthquake.

49. Applicant will excavate to a depth of 60 feet for the Category I structures. The Board finds that Applicant's proposed specification for Category I, recompacted fill of 85% average relative density, no more than 10% of the fill below 85% relative density, and a minimum of 75% relative density will reasonably assure the stability of Category I structures subjected to the SSE. (Staff Ex. 2, p. 11)

50. The Board concludes that there are no real or potential problems related to geology, seismology, or foundation engineering, which would preclude site acceptability.

(4) METEOROLOGY

51. Atmospheric dispersion characteristics have been calculated based on data from the Hanford Meteorological Station located 15 miles northwest of the site, for a 16-year period from 1955 through 1970 (Staff Ex. 2, p. 12).

52. An evaluation of short-term accidental release was made using the meteorological data and the Staff's diffusion model. A comparison of the short-term (0-2 hours) atmospheric dispersion values estimated for the proposed site with similar values calculated by the Staff for over 40 other sites indicates that the dispersion conditions at the site are better than at 85% at the other sites. Site dispersion estimates will be confirmed using a full year of data collected from the tower in operation at the site. (Staff Ex. 2, pp. 12-13)

53. The proposed design for WNP-1 and WNP-4 meets the requirements of the Staff's tornado model (240 miles/hour maximum wind speed), which is adequate for this region of the United States (Staff Ex. 2, p. 12).

54. The Board finds that there are no meteorological characteristics which would preclude site acceptability.

(5) HYDROLOGY

55. Plant grade for the safety-related buildings of the proposed facility will be 446 feet above mean sea level datum (MSL) which is about 100 feet above the Columbia River floodplain elevation near the site (Staff Ex. 2, p. 13).

56. An evaluation was made of potential flooding of the site from the Columbia River due to a probable maximum flood (PMF) including dam failures.

The estimated peak stage at the site due to a partial failure of Grand Coulee Dam would be 424.5 feet MSL, including 1.0 feet of stage for wind wave action. Safety-related structures are protected to at least 448 feet above MSL, giving a margin of at least 20 feet between the maximum wave runup level and the flood protection level. (Staff Ex. 2, p. 14)

57. There are no groundwater users between the proposed facility and the Columbia River. Further, in case of a postulated accidental liquid radwaste spill, the groundwater will not be a potential pathway to man since the groundwater table has a significant easterly gradient toward the Columbia River, is below foundation levels, and there is no groundwater withdrawal between the site and the river. The concentrations at the river would be below 10 CFR Part 20 limits. (Staff Ex. 2, p. 14)

58. The Board finds that there are no hydrologic factors which would preclude acceptability of the site.

(6) LWA-1, LWA-2 ACTIVITIES

59. The Applicant by letter dated January 31, 1975 requested authorization to conduct site preparation and excavation work pursuant to 10 CFR 50.10(e)(1) (LWA-1 activities) and to conduct, under 10 CFR 50.10(e)(3), subsurface soil preparation in the excavations for certain safety-related structures which are subject to 10 CFR Part 50, Appendix B (LWA-2 activities). (Applicant's Ex. 10; Cox Testimony, following Tr. 462)

60. Specifically, with respect to Category I structures Applicant will (1) verify that the excavation has exposed the Ringold formation upon which the mudmat will be poured, (2) conduct density checks and backfill if necessary because of removal of insufficiently dense material in the dense gravel zone where Category I structures will be placed, and (3) proof roll prior to placement of the mudmats under the containment and general services buildings (Cox Testimony, following Tr. 462).

61. The Board has reviewed the unresolved safety issues between the Staff and the Applicant which have been identified to date by the Staff (Cox Testimony, following Tr. 462). The Board finds that there are no unresolved safety issues related to the proposed LWA-2 activities which would constitute good cause for withholding authorization for the LWA-2 activities proposed by the Applicant.

62. The Applicant has described and is implementing a quality assurance (QA) program in accordance with 10 CFR Part 50, Appendix B, that assures organizational freedom to identify and to provide solutions to quality problems. Each criterion of Appendix B to 10 CFR Part 50 has been specifically included in written procedures in the WPPSS QA program. The QA program includes a comprehensive audit system. (Cox Testimony, following Tr. 462)

63. The Board finds that the QA program as described by Applicant contains sufficient policies, procedures, and instructions to implement 10 CFR Part 50, Appendix B, to the extent necessary for the requested LWA-2 activities.

64. Based on the record developed to date, the Board concludes that there is reasonable assurance that the site for the facility is a suitable location for nuclear power reactors of the general size and type proposed from the standpoint of radiological health and safety considerations under the Atomic Energy Act of 1954, as amended, and the rules and regulations promulgated by the Commission.

III. CONCLUSIONS OF LAW

1. This is not a contested proceeding within the meaning of 10 CFR 2.4(n) as there is no controversy between the Staff and the Applicant concerning issuance of the construction permit or concerning the terms or conditions thereof, and as the only intervenor in this proceeding, Donald F. X. Finn, has defaulted and has been dismissed as a party to the proceeding.

2. The Board's decisional responsibilities are set out in detail in 10 CFR 2.104(b)(2) and (3), in 10 CFR 50.10(e), and in 10 CFR 51.52.

3. The certification from the State of Washington Thermal Power Plant Site Evaluation Council dated May 5, 1975, is a positive certification under the Federal Water Pollution Control Act Amendments to 1972 (FWPCA), 33 U.S.C. 1251 *et seq.* A positive certification is one which states that the discharges resulting from construction and operation of the facility will comply with the applicable provisions of Sections 301, 302, 306 and 307 of the FWPCA. The May 5, 1975 certification satisfies the requirements for certification set out in Section 401(a) of the FWPCA.

4. Under Section 5c(1) of the Commission's "Interim Policy Statement on Implementation of the FWPCA Amendments of 1972", 38 *Fed. Reg.* 2679 (January 29, 1973), the Board is precluded by a positive 401 certification from determining compliance with effluent limitations or other requirements established pursuant to Sections 301, 302, 306 and 307 of the FWPCA.

5. With regard to the discharges from the facility, the applicable Federally-approved water quality standards are contained in "Water Quality Standards for Waters in the State of Washington", Washington Administrative Code, Chapter 173-201. Since no prior determination of compliance with these Federally-approved water quality standards has been made by the State of Washington or by the Environmental Protection Agency, the Board must determine compliance with these water quality standards.

6. The Board concludes that there is reasonable assurance that the discharges from the facility will comply with the "Water Quality Standards for Waters in the State of Washington", Washington Administrative Code, Chapter 173-201.

7. The Board is issuing this Partial Initial Decision on environmental considerations, site suitability, and safety issues relating to the LWA-2 activities, pursuant to 10 CFR 50.10(e)(2) and (3), pursuant to 10 CFR §2.718(e), which gives the Board the power to control the conduct of the proceeding, pursuant to paragraph I(c) of Appendix A to 10 CFR Part 2, which permits the Board in appropriate cases to consider particular issues separately from and prior to other issues, and pursuant to 10 CFR 2.761a, which requires that the Board commence a hearing on issues covered by 10 CFR 50.10(e)(2)(ii) and Part 51 after issuance of the Final Environmental Statement.

8. The Board must retain jurisdiction over the NEPA issues in this proceeding to the extent that any of the findings herein may require modification because of information or data brought out prior to completion of the health and safety portion of this case.

9. The Board concludes that the FES, as modified on the record in this proceeding, meets the requirements of Sections 102(2)(C) and (D) of NEPA and 10 CFR Part 51.

10. The environmental review conducted by the Staff pursuant to NEPA has been adequate.

IV. SUPPORTING OPINION

In this portion of the Partial Initial Decision, the Board will provide a memorandum opinion to discuss and support certain of its Findings of Fact, Conclusions of Law, and other rulings made in this proceeding.

A. Proposed Findings

Any proposed findings of fact and conclusions of law submitted by the parties hereto which are not incorporated directly or inferentially into this Partial Initial Decision are herewith rejected as being unsupported in law or fact, or as being unnecessary to the rendering of this Partial Initial Decision.

B. Limited Appearances

During the course of the evidentiary hearing, the Board, pursuant to 10 CFR 2.715(a), received limited appearances from nine individuals or organizations, none of whom opposed the construction and operation of the proposed facilities, and none of whom raised questions which required responses by the parties.

C. Basis for the Partial Initial Decision

The Commission's Rules and Regulations provide, in 10 CFR 2.761a, 50.10(e), for a separate hearing and for an authorization, if appropriate, to an Applicant to conduct certain site preparation activities prior to issuance of a construction permit. These procedures result in the issuance, under appropriate circumstances, of a limited work authorization (LWA) by the Director of Nuclear Reactor Regulation.

Section 50.10(e)(2) provides that a LWA shall be issued only after the Board has made (1) findings relative to the environmental issues in 10 CFR §51.52(b) and (c), and (2) a determination that there is reasonable assurance that the proposed site is a suitable location for a nuclear power reactor of the general size and type proposed from the standpoint of radiological health and safety considerations under the Atomic Energy Act and the Commission's Rules and Regulations.

Section 50.10(e)(3) provides that authorization of structural foundation work and subsurface preparation for structures which are subject to Appendix B to 10 CFR Part 50 may be issued upon a finding by the Board that there are no unresolved safety issues relating to such activities which constitute good cause for withholding such authorization. The only activity for which the Applicant seeks authorization under Section 50.10(e)(3) consists of subsurface soil preparation at the bottom of the excavation for certain safety-related structures.

On March 12, 1975, the Applicant moved the Board pursuant to 10 CFR 2.761a to convene a hearing on certain LWA issues covered by 10 CFR 50.10(e)(2) and (3). The Board determined that this was an appropriate case to employ the LWA procedures and granted the Applicant's motion on April 7, 1975. The hearing requested by the motion was held on May 13-15, 1975, resulting in this Partial Initial Decision, which constitutes the Board's resolution of the NEPA (environmental) and site suitability issues in this proceeding. At a later date, following completion of the Staff's safety review, the Board will convene another hearing to complete the health and safety phase of this proceeding and will thereafter issue its final decision concerning the construction permits applied for by the Applicant.

D. Retention of Jurisdiction

The Board has retained jurisdiction over the NEPA and site suitability issues resolved in this Partial Initial Decision, in the event that any finding herein may require modification based on information or data brought out prior to completion of the health and safety portion of this case. The authority to retain jurisdiction has been recognized by the Atomic Safety and Licensing Appeal Board in *Mississippi Power and Light Company (Grand Gulf Nuclear Station, Units 1 and 2)*, ALAB-195, RAI-74-4, 455 (April 23, 1974).

In this regard, the Board, by Memorandum and Order dated July 28, 1975, granted the Applicant's "Motion for Approval of Scope and Schedule of Proposed Studies to be Submitted Following Partial Initial Decision." In granting that motion, the Board permitted the Applicant until September 30, 1975 to submit responses to the Board's questions regarding chlorine, chlorine compounds, other biocides and nonbiocide treatment systems. The information to be submitted is primarily a critical review of current literature and research, except with regard to the other nonbiocide antifouling systems.

The information requested by the Board could result in modification of the findings on chlorine in this Partial Initial Decision, or in an appropriate condition for protection of the environment, although either action will not necessarily be required. However, in view of the nature of the information requested, the Board does not consider it warranted to delay issuance of the Partial Initial Decision. It is very unlikely that any revision of this Decision that might be required by the later information on the antifouling issue would be significant enough to change the ultimate conclusion of the Board herein that the appropriate action is to authorize issuance of the construction permits for the facility. In any event, even if the later information is so significant to warrant a denial of the permits, the Applicant is proceeding at its own risk in performing work under an LWA. This is the risk the Applicant necessarily runs in acting under an LWA since it is always possible that the construction permit might ultimately be denied for reasons brought out at the health and safety portion of the hearing or for reasons related to later information on environmental issues, 10 CFR 50.10(e)(4).

E. Status of Proceeding

The Board at the conclusion of the evidentiary hearing requested briefs from the Applicant and Staff concerning whether the proceeding should be considered as contested or uncontested. A contested proceeding as defined in 10 CFR 2.4(n) is one in which a controversy exists between the Applicant and the Staff or one in which a petition to intervene has been granted or is pending before the Commission.

This issue arose as follows. The Board had granted intervention status to Mr. Donald F. X. Finn in its Memorandum and Order of March 20, 1975. However, Mr. Finn did not appear at the evidentiary hearing on May 13-15, 1975, at which time the one issue in controversy raised by Mr. Finn, that of geothermal power as an alternative to the facility, was to be heard. Accordingly, at the end of the first day of hearing on May 13, 1975 the Board found Mr. Finn in default pursuant to 10 CFR 2.707 for failing to appear (Tr. 254-57). At the end of the third day of hearing, the Board granted the Applicant's oral motion

and dismissed Mr. Finn's petition because of his failure to appear and present evidence on the issue he had raised (Tr. 572).¹³

Both the Applicant and the Staff in their briefs took the position that the proceeding should be considered as uncontested since there is no controversy between them and since Mr. Finn's petition has been dismissed.¹⁴ The Board concurs with the reasoning of the Applicant and the Staff that the proceeding should be considered as uncontested and, accordingly, has framed this Partial Initial Decision to treat the proceeding as uncontested.

F. Appendix I Considerations

Both the Applicant and the Staff calculated the radiation doses to be expected in offsite areas as the result of normal operation of the facility (ER §3.5.5, 5.3.3; FES §3.5.2; 5.4.2). These doses were well within the "as low as practicable" numerical guides set forth in proposed Appendix I to 10 CFR 50 and Regulatory Guide 1.42. However, the Commission on April 30, 1975 adopted a new Appendix I to 10 CFR Part 50, which became effective on June 4, 1975 and is applicable to this proceeding.

The Applicant, in anticipating the effectiveness of Appendix I, introduced into evidence during the hearing information to show that the numerical guides of Appendix I are met by the facility. The Applicant also proposed a cost-benefit analysis, required by Appendix I, to show that there are no items of reasonably demonstrated technology which should be added to the radwaste systems sequentially, and in order of diminishing cost-benefit return, and that further cost-effective reductions in population doses cannot be accomplished. (Applicant's Ex. 12)

Applicant also is committed not to modify or remove any radwaste equipment presently described in the ER and PSAR.

On July 18, 1975, the Staff presented a revised NEPA evaluation and cost-benefit analysis of radiological impacts from normal operation of the facility. This analysis takes the form of interim calculations which result in "upper-bound" estimates of doses to the general public. (Staff Ex. 5) The Staff's

¹³The Board did, however, itself inquire into geothermal power as an alternative to the facility and that issue was thoroughly covered on the merits at the hearing.

¹⁴The Board takes note that the Thermal Council of the State of Washington filed a petition to participate as an interested state under 10 CFR 2.715(c). However, under the circumstances of this case, the Board does not consider that such participation can be equated with a "petition to intervene" as that phrase is used in the context of 10 CFR 2.4(n).

interim assessment includes, among other things, thyroid man-rem dose and dose resulting from the release of Carbon-14, neither of which has been addressed in the past.

The Staff concludes that while its "upper-bound" estimate¹⁵ of impact is greater than that shown in FES, §5.4.2, it does not significantly affect the overall cost-benefit balance associated with the facility. Further, inasmuch as the cost represented by the Staff's dose estimates (at \$1000 per man-rem) is about \$120,000, this cost is no more than about 0.1% of the facility's annual cost of about \$150 million.

The question of compliance with Appendix I will be addressed during the health and safety hearing. Should additional equipment, if any, be required, it would not be significant in cost relative to the overall cost of the facility.

G. Compliance with Water Quality Standards

Also at the conclusion of the evidentiary hearing, the Board requested briefs from the parties with regard to whether the Board should consider the matter of compliance with the State of Washington's water quality standards¹⁶ in connection with resolution of the NEPA issues in this cause. These water quality standards were adopted by the Washington Department of Ecology on July 19, 1973, and were approved by the Environmental Protection Agency (EPA) on March 18, 1974 pursuant to Section 303 of the Federal Water Pollution Control Act (FWPCA), 33 U.S.C. 1251 *et seq.* (FES p. 5-12).

In particular, the State criteria for toxic substances, WAC 173-201-030 (2) (vii), provides that concentrations "shall be below those of public health significance, or which may cause acute or chronic toxic conditions to the aquatic biota, or which may adversely affect any water use." Further, the general considerations in the State criteria set out in WAC 173-201-040(11) indicates that deleterious concentrations of toxic materials shall be determined "in consideration of the *Report of the National Technical Advisory Committee on Water Quality Criteria*, 1968, and as revised, and/or other relevant information." The 1968 Report on Water Quality Criteria is commonly known as the EPA Green Book. It was revised in 1973 and the current version of the report is known as the EPA Blue Book. Since the criteria in the Blue Book call for concentrations of chlorine to be no greater than 0.003 ppm, and as the discharge from the facility will at times contain concentrations of 0.1 ppm chlorine, the

¹⁵The Board recognizes that, because Appendix I became effective only recently, the Staff's "interim" assessment has been made somewhat hurriedly and contains implicitly a number of conservative assumptions. While the bases for the calculated results are not stated, the final assessment and bases therefor will be explored during the health and safety hearing.

¹⁶These standards are contained in "Water Quality Standards for the State of Washington", Washington Administrative Code, Chapter 173-201.

question of a violation of the Blue Book criteria, and consequently of the State water quality criteria, arose as the concentrations in the State criteria are to be set "in consideration of" the Blue Book.

Both the Applicant and the Staff have taken the position that the Board is precluded from inquiring into compliance with water quality standards based on the certification by the State under Section 401 of the FWPCA that the discharge from the facility will comply with the effluent limitations established under Sections 301, 302, 306, and 307 of the FWPCA (a positive 401 certification). The Applicant rests its position upon Section 511(c) of the FWPCA and the Staff primarily upon the "Interim Policy Statement on Implementation of the FWPCA Amendments of 1972" (IPS), 38 *Fed. Reg.* 2679 (January 29, 1973).

The Board, however, must reject the position taken by the Applicant and the Staff for the following reasons. First, a determination of compliance with effluent limitations under Sections 301, 302, 306, and 307 is not tantamount to a determination of compliance with water quality standards promulgated pursuant to Section 303 of the FWPCA. A positive 401 certification, such as the one given by the State in this case, does preclude the Board from determining compliance with effluent limitations because of Section 511(c) of the FWPCA and Section 5c(1) of the IPS. However, unless the 401 certification also includes a determination of compliance with applicable Federally-approved water quality standards promulgated pursuant to Section 303 of the FWPCA, the Board must consider that issue to assure that it does not authorize construction or operation of a facility with a discharge that will result in violations of water quality standards approved under the FWPCA. Since the 401 certification relating to WNP-1 and WNP-4 does not address compliance with pertinent water quality standards, the Board concludes that it has the authority and responsibility to make such a determination. In the Board's view, this is fully consistent both with Section 511(c) of the FWPCA and with Section 5c(1) of the IPS. This result is, in fact, required by Section 5a of the IPS which provides for a determination of compliance with "other requirements" promulgated or imposed pursuant to the FWPCA, since "other requirements" by definition in Section 2 of the IPS includes water quality standards promulgated pursuant to Section 303 of the FWPCA. The Board, therefore, has evaluated whether the discharge will conform to the State's Federally-approved water quality standards. As set out above, the only substantive issue that arose regarding compliance related to the chlorine discharge, and even there a clear violation was not shown since the EPA Blue Book criteria were not made binding but were merely "to be taken into consideration" in setting concentrations.

Further, the State water quality standards provide for the setting of a mixing zone to be described in a discharge permit, WAC 173-201-040(3)(a) and (4). In the instant case a discharge permit (Applicant's Ex. 16) with a mixing zone that brings the chlorine discharge into compliance with the EPA Blue Book criteria

(Finding of Fact 22, *supra*), is currently before the Governor of the State of Washington and approval thereof is expected in the near future.¹⁷ Under the circumstances, the Board has concluded that employment of a mixing zone fulfills the provision of taking the EPA Blue Book criteria “into consideration” and that there is reasonable assurance that the discharge from the facility will comply with the Federally-approved water quality standards of the State of Washington.

In any event, as has been pointed out in Section D *supra*, the Board has the authority to modify this Partial Initial Decision if the discharge permit as finally approved by the State is substantially different from the discharge permit entered into evidence as Applicant’s Ex. 16, and if any such subsequent revision may require action by this Board to insure compliance with the State’s Federally-approved water quality standards.

H. ERDA Lease

The lease of the site has now been executed between the Applicant and ERDA and entered into evidence as Applicant’s Ex. 15. In light of this lease, the Board made a finding that there is reasonable assurance that the Applicant will be able to determine all activity within the designated exclusion area, (Finding of Fact 41, *supra*). However, the lease is currently undergoing review by the Staff, and the Staff is to advise the Board, prior to the evidentiary hearing on health and safety matters, whether the executed lease satisfactorily demonstrates that the Applicant has obtained control over the exclusion area as required by 10 CFR 100.3(a). The finding with regard to the exclusion area is, therefore, subject to revision after the Board has received and evaluated the Staff’s evidence concerning the ERDA lease and the exclusion area. If necessary, the Board will, in its final decision following the evidentiary hearing on health and safety matters, require that the Applicant take any action necessary to assure that it has the control of the exclusion area as required by 10 CFR 100.3(a).

V. CONDITIONS

The Board has concluded that the following conditions are necessary for protection of the environment and should be included, if appropriate, in any Limited Work Authorization issued by the Director of Nuclear Reactor Regulation.

1. The Applicant shall assure that an archeologist, acceptable to the State of Washington Historic Preservation Officer, is present during the initial stages of all excavation work in the vicinity of the river.

¹⁷ Applicant’s Consented Motion for Admission into Evidence of Executed ERDA Lease and Proposed NPDES Waste Discharge Permit, p. 4.

2. The Applicant shall take the necessary mitigating actions, including those summarized in Section 4.7 of the FES, during construction of the station and associated transmission lines, to avoid unnecessary adverse environmental impacts from construction activities.

3. Before engaging in a construction activity not evaluated by the Commission, the Applicant will prepare and record an environmental evaluation of such activity. When the evaluation indicates that such activity may result in a significant adverse environmental impact that was not evaluated, or that is significantly greater than that evaluated in the FES, the Applicant shall provide a written evaluation of such activity and obtain prior approval thereto from the Director of Nuclear Reactor Regulation.

4. The Applicant shall establish a control program which shall record written procedures and instructions to control all construction activities and shall provide for periodic management audit to determine the adequacy of implementation of environmental conditions. The Applicant shall maintain sufficient records to furnish evidence of compliance of all the environmental conditions herein.

VI. DETERMINATIONS ON ULTIMATE ISSUES

The Board has given consideration to all the evidence presented on the environmental and site suitability issues. Based upon a review of the entire record developed to date and on the Findings of Fact and Conclusions of Law and Supporting Opinion herein, the Board makes the following determinations on ultimate issues concerning the environmental and site suitability aspects of the proceeding:

1. The application and the record of the proceeding contain sufficient information on environmental matters to support the issuance of construction permits for the facility at the appropriate time by the Director of Nuclear Reactor Regulation.

2. The environmental review conducted by the Staff pursuant to NEPA has been adequate.

3. The requirements of Section 102(2)(C) and (D) of NEPA and 10 CFR Part 51 have been complied with in this proceeding.

4. Upon an independent consideration of the final balancing among conflicting factors contained in the record of the proceeding and after weighing the environmental, economic, technical, and other benefits against environmental costs and considering available alternatives, the appropriate action to be taken is the issuance of construction permits for the facility,¹⁸ with appropriate conditions as set forth herein for protection of the environment.

¹⁸The determination should not be construed as authorizing the issuance of construction permits at this time. The issuance of construction permits is contingent upon the outcome of the evidentiary hearing on health and safety issues.

5. Based upon the available information and review to date, there is reasonable assurance that the location of the facility is a suitable site for nuclear power reactors of the general size and type proposed from the standpoint of radiological health and safety considerations under the Atomic Energy Act of 1954, as amended, and rules and regulations promulgated by the Commission pursuant to the Atomic Energy Act of 1954.

6. There are no unresolved safety issues relating to the Applicant's proposed LWA-2 activities (Finding of Fact 59), which would constitute good cause for withholding issuance of a Limited Work Authorization by the Director of Nuclear Reactor Regulation.

VII. ORDER

It is ORDERED, in accordance with Sections 2.760, 2.762, 2.785, and 2.786 of the Commission's Rules of Practice, 10 CFR Part 2, that this Decision shall constitute the final decision of the Commission thirty (30) days after its issuance, subject to the review thereof under the above cited rules. Pursuant to 10 CFR 2.762, exceptions to this Partial Initial Decision must be filed within seven (7) days after service of this Decision and a brief in support of the exceptions must be filed within fifteen (15) days thereafter (twenty days in the case of the Staff). Within fifteen (15) days of the filing and service of the brief on the appellant (twenty days in the case of the Staff), any other party may file a brief in support of, or in opposition to, the exceptions.

BY ORDER OF THE ATOMIC SAFETY
AND LICENSING BOARD

Donald P. de Sylva, Member

Marvin M. Mann, Member

Daniel M. Head, Chairman

Dated at Bethesda, Maryland
this 30th day of July 1975.

(Appendix A, "Decisional Record," is omitted from this publication but is available at the Commission's Public Document Room, Washington, D. C.)

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

LBP-75-42

ATOMIC SAFETY AND LICENSING BOARD

Max D. Paglin, Chairman
Dr. Richard F. Cole, Member
Dr. A. Dixon Callihan, Member

In the Matter of
BOSTON EDISON COMPANY, et al.
(Pilgrim Nuclear Generating Station
Unit 2)

Docket No. 50-471
July 30, 1975

Upon additional objections by various parties to discovery requests and motions for protective orders in construction permit proceeding, Board issues order ruling on these matters, incorporating by reference the principles set forth in LBP-75-30.

**FURTHER MEMORANDUM OPINION AND ORDER
ON DISCOVERY REQUESTS, OBJECTIONS AND
MOTIONS FOR PROTECTIVE ORDERS**

On June 6, 1975, the Board issued its Memorandum and Order herein ruling on the then pending discovery requests, objections and motions for protective orders. In said Memorandum and Order, the Board discussed the general legal principles, procedural and substantive, governing the use of discovery in Commission proceedings, and the application thereof to the questions pending before the Board. Then, in an Attachment to the Memorandum and Order, the Board made specific rulings on the interrogatories and the pending objections thereto.

The Board now has before it a series of objections to a further round of interrogatories and document requests and motions for protective orders, which pleadings are listed below.¹

¹The matters presently pending before the Board for disposition involve the following pleadings: (1) Applicant's Interrogatories to Massachusetts Wildlife Federation, Intervenor (Set No. 2), dated May 30, 1975; Objections by Massachusetts Wildlife Federation to Applicant's Second Set of Interrogatories and Document Requests, dated June 16, 1975;

(Footnote continued on next page)

Since it appears that the same general principles are involved in the current round of disputes regarding the discovery process in this proceeding, the prior Memorandum and Order will be regarded as governing the disposition of the questions raised, and is referenced herein accordingly.

The Board will now, in similar fashion, address and dispose of the pending objections and accompanying motions, as it did in the Attachment to the June 6 Memorandum and Order.

(Footnote 1 continued)

(2) Applicant's Interrogatories to the Commonwealth of Massachusetts, Intervenor (Set No. 2), dated May 30, 1975; Motion to Enlarge Time for Answering Applicant's Interrogatories to the Commonwealth of Massachusetts, Intervenor (Set No. 2), dated June 18, 1975;* (3) Commonwealth of Massachusetts Notice of Deposition to Applicant, dated May 30, 1975; Applicant's Objections and Request for Protective Orders on "Commonwealth of Massachusetts Notice of Depositions" of May 30, 1975, dated June 16, 1975; Commonwealth of Massachusetts Response to Applicant's Objections, dated July 7, 1975; (4) Joint Interrogatories of Commonwealth of Massachusetts and Intervenor Daniel F. Ford (Set 5), dated May 30, 1975; Motion to Extend Time for Filing Objections and Reasons therefor to Joint Interrogatories of Commonwealth of Massachusetts and Intervenor Daniel F. Ford to Applicant (Set 5), dated June 13, 1975,* Applicant's Objections and Request for Protective Orders Relative to "Joint Interrogatories of Commonwealth of Massachusetts and Intervenor Daniel F. Ford to Applicant (Set 5)", dated June 23, 1975; (5) Joint Interrogatories of Commonwealth of Massachusetts and Intervenor Daniel F. Ford to Applicant (Set 6), dated May 30, 1975; Applicant's Objections and Request for Protective Orders Relative to "Joint Interrogatories of Commonwealth of Massachusetts and Intervenor Daniel F. Ford to Applicant (Set No. 6)", dated June 16, 1975; Applicant's Answers to "Joint Interrogatories of Commonwealth of Massachusetts and Intervenor Daniel F. Ford to Applicant (Set 6)", dated June 23, 1975; (6) Letter from Daniel F. Ford to Jerome S. Cohen re Interrogatories and Related Document Request, together with 105 attached interrogatories, dated May 30, 1975; NRC Staff's Objections and Requests for Protective Orders Relative to "Interrogatories and Related Document Requests Regarding Pilgrim 2 proceeding, Docket No. 50-471" filed by Intervenor Commonwealth of Massachusetts and Daniel F. Ford on May 30, 1975, dated June 16, 1975; NRC Staff's Answer to aforesaid interrogatories and document requests, dated June 20, 1975; (7) Massachusetts Wildlife Federation's First Set of Interrogatories and Document Requests to the NRC Staff, dated May 30, 1975; NRC Staff's Objections to MWF's First Set of Interrogatories, dated June 26, 1975; (8) Massachusetts Wildlife Federation's Second Set of Interrogatories and Document Requests to the NRC Staff, dated May 30, 1975; NRC Staff's Objections to MWF's Second Set of Interrogatories, dated June 26, 1975; (9) Intervenor Cleetons' Interrogatories to NRC Staff, dated May 30, 1975; NRC Staff's Objection to Discovery Request Filed by Intervenor Cleeton on May 30, 1975, dated June 16, 1975.

*These motions to extend time were granted informally by the Board, upon consent of the parties concerned.

I. RULINGS ON SPECIFIC OBJECTIONS TO INTERROGATORIES AND DOCUMENT REQUESTS

A. MASSACHUSETTS WILDLIFE FEDERATION (MWF)

1. Objections by Massachusetts Wildlife to Applicant's Second Set of Interrogatories and Document Requests, dated June 16, 1975.

a. Intervenor, MWF, registers the same objections to Applicant's Second Set of Interrogatories as it did in the first round, i.e., the information called for is claimed to be in the nature of expert testimony and opinion, and since MWF has not yet retained or specially employed experts for this proceeding, it asserts that it is protected by the Federal Rules of Civil Procedure 26(b) (4) against having to disclose the identity or information of such experts in the discovery process.

The Board, in its prior Memorandum and Order, recognized the validity of this argument and so ruled (see Memorandum and Order of June 6, 1975, at page 14 and Attachment A, Section A.1.b.). However, the Board also held, in accordance with the teaching of the cases discussed therein, that a *party* "has a responsibility to specify the facts, i.e., the data, information, and documents, if any, upon which he intends to rely and upon which he has relied in support of his intervention, so that the parties may be advised in advance with regard to the nature of Intervenor's case." (Memorandum and Order, *supra*; NRCI-75/6 at 586)

Indeed, in one of the leading cases construing Federal Rule 26(b) (4) on which MWF relies, the court held that the purpose of the rule ". . . is to make available to each party a reasonable time before trial of the facts, the opinions and reasons for the opinions of the experts whom his opponent will call at the trial so that a party may adequately prepare for cross-examination of his opponents' expert." (*Knighton v. Villian and Fassio* (Md. 1965) 39 FRD 11, 9 F.R. Serv2nd 33.316 Case 1; also see 4 *Moore's Federal Practice*, Vol. 4, at pp. 26-482-483).

Approaching the problem of "properly balancing the competing interests" of the Intervenor and the Applicant from another angle, i.e., the burden of an Intervenor with regard to its contentions, it has been held by the Appeal Board, in the case of *Mississippi Power and Light Company* (Grand Gulf Nuclear Station, Units 1 and 2), that a licensing board has the responsibility, before commencing the evidentiary hearing, to exclude from consideration at that hearing any contention which does not present a genuine issue appropriate for resolution in the proceeding. In other words, the hearing is not required to deal with a contention which can be summarily rejected on the merits, within the provisions of the summary disposition procedures outlined in 10 CFR 2.749 of the Rules of Practice (see *Grand Gulf* at RAI 73-6, 423 at 424-425 and Footnote 4).

It, therefore, appears to the Board that the Intervenor should be aware that, although its repeated "defense" against Applicant's interrogatories may still for a

time be shielded by Rule 26(b) (4), there must come a time in this case when the question has to be faced by the parties and the Board as to whether MWF's contentions do, in fact, raise genuine issues of fact to be tried, or whether the contention formally admitted at the intervention stage "... was merely sham and not bona fide ...,"² because there is now no demonstrated factual basis for it to go to evidentiary hearing.

As was pointed out during the oral argument at the May 5, 1975 Prehearing Conference, in an extensive colloquy between the Board and parties on sanctions for failure to respond to proper interrogatories, Commission procedures are available, upon proper justification shown, for summary disposition of issues in these circumstances (see 10 CFR 2.707, 2.749; also see Federal Rule 37).

b. Accordingly, the Board will for the purposes of the pending motion rule that MWF's declaration that it cannot respond because it has not yet retained experts will be accepted for the time being. However, the Board considers the Applicant's interrogatories (Set 2) to be otherwise quite proper and will not rule them out at this stage. They may be renewed at a further stage of the proceeding prior to the conclusion of discovery, if necessary, in the absence of other procedural measures.

c. Further, the Board directs the Intervenor, MWF, to advise the Board and the parties on or before September 4, 1975, the date of the final special prehearing conference as scheduled in the Board's Order of July 7 herein, as to whether or not it has retained experts and as to whether or not it is in a position to respond to Applicant's second set of interrogatories herein.

B. APPLICANT

1. Applicant's Objections and Request for Protective Orders, dated June 16, 1975 on Commonwealth of Massachusetts' Notice of Depositions of May 30, 1975.

a. The Notice of Deposition appears to be in order, and, with the exception noted below, proper in subject matter and form, and within the context of Intervenor's contentions. The Board notes, however, that counsel for the Commonwealth, in her letter of transmittal of the Notice, indicated that the Commonwealth did not intend to depose each of the parties named in the Notice, but desired to consult with counsel for the Applicant in order to identify with particularity the persons who would best serve the purpose of the depositions.

² See *Engl v. Aetna Life Insurance Co.* 139 F.2d 469 (CCA2d, 1943) where, at 472, the Court indicates that the Federal Summary Judgment Rule, which is similar to the Commission's Rule, "... shows that it is intended to permit 'a party to pierce the allegations of fact in the pleadings and to obtain relief by summary judgment where facts set forth in detail in affidavits, depositions and admissions on file show that there are no genuine issues of fact to be tried'." 3 Moore's Federal Practice 3175."

b. Applicant is, therefore, directed to make available for oral deposition those employees of Bechtel, Combustion Engineering and the Southwest Research Institute, who are designated from among the named individuals in the Notice, after appropriate consultation by counsel for both parties. With respect to Claude Purcel, Applicant's former Assistant Vice President—Nuclear, and Sidney R. Rabb, a member of Applicant's Board of Directors, Applicant's objections are sustained for the reasons set forth in its pleading of June 16, 1975, it being noted that Applicant will provide Intervenor with the minutes of the Board of Directors meetings relative to the matters under inquiry.

2. Applicant's Objections and Request for Protective Orders, dated June 23, 1975, Relative to Joint Interrogatories of Commonwealth and Ford, Set No. 5, dated May 30, 1975.

a. Intervenor seeks to incorporate by reference in these proceedings more than 600 interrogatories served upon Bechtel and Combustion Engineering by the plaintiff in the case of *Consumers Power Company v. Combustion Engineering, Inc., et al.* entered in the United States District Court for the Western District of Michigan, Southern Division, No. 74-323CA8, on August 28, 1974.

Applicant, in its pleading of objections, states that the complaint in that litigation seeks money damages and specific performance, alleging breaches of warranty relating to the design, construction and operation of Consumers' Palisades Plant; that objections to the subject interrogatories have been reserved by stipulation of the parties in the *Consumers* case who, through their respective counsel, are in the process of negotiating an agreement on the nature and the scope of discovery. Applicant states that it is informed that, by agreement, no answers to the interrogatories have been filed and that answers when made, to the extent made, will be preliminary in nature.

Applicant also contends that not only is it inappropriate for this Board to involve itself in the disposition of the merits of challenged interrogatories presently pending within the jurisdiction of the Federal District Court in the *Consumers* case, but that, as pointed out in its pleading (at pages 9-10), attempts to respond would involve Applicant in a search of millions of documents in Bechtel's and CE's files, a burden unrealistically oppressive in the context of the subject license proceeding.

The Board is of the opinion that, for the reasons stated in its pleading, Applicant's objections are well taken, and that the subject Interrogatories are unduly burdensome and of questionable decisional significance or materiality.³

³ See also, in this connection, the Licensing Board's Memorandum and Order of March 5, 1975, in *Consumers Power Company* (Midland Plant, Units 1 and 2) LBP 75-6, NRCI 75/3, 227 at 231.

Applicant's objections are sustained, and said interrogatories need not be answered.⁴

3. Applicant's Objections and Request for Protective Orders, dated June 16, 1975 to Joint Interrogatories of the Commonwealth and Ford, Set No. 6, dated May 30, 1975.

a. Applicant has filed answers to certain of the joint interrogatories under date of June 23, 1975, and said answers are considered to be reasonable in the circumstances of this case, and will be held to be adequate responses to the aforementioned joint interrogatories not heretofore objected to.

b. Applicant objects to Interrogatories 4, 5, and 7 through 13, which seek information from the Edison Electric Institute (EEI) and the Electric Power Research Institute (EPRI), on the grounds that said interrogatories seek discovery from a nonparty contrary to the provisions of 10 CFR 2.740b. However, Applicant indicates that it will respond to said interrogatories to the extent the information requested is in its possession or known to it through its employee member, within the scope of discovery as defined in the aforementioned Rule. Applicant's objections to said interrogatories are sustained for the reasons stated in its pleading, and its proposed response as described above, will be held to be adequate in the circumstances.

c. Applicant objects to Interrogatories 17 through 31 principally on the grounds that they inquire of the activities and opinions of individual members of the Applicant's Board of Directors that, under Massachusetts law, a Board of Directors of a corporation, as well as individual directors, do not submit themselves to the type of responsibility implied in the nature of the interrogatories posed by Intervenor, that the actions of individual directors, when not acting as a Board, are not binding on the corporation nor are they admissible as evidence against it, and, as such, said interrogatories are not relevant to the issues in this proceeding. Further, as to Interrogatories 23 and 24, Applicant contends that they seek information relative to the Price-Anderson Act issues, which issues have been rejected by the Board. Applicant offers, as it has in response to an earlier Interrogatory No. 9 in Set No. 2, to make available the minutes of the meetings of the Board of Directors since 1964 relating to the information requested for Intervenor's examination, inspection and copying. Applicant refers to the fact that the Board, in its Memorandum and Order of June 6, held that such response was reasonable in the circumstances of the case (Attachment, *supra*, NRCI-75/6, 579, at 591).

⁴The Board notes that although Intervenor state in their pleading that, under separate cover, copies of the subject Interrogatories would be served on the Board, none have as yet been received. Notwithstanding, it is clear from Applicant's pleading above that there would be no justification for allowing Interrogatories of this nature to be used in this proceeding in the manner sought by Intervenor.

The Board is of the opinion that Applicant's objections to the aforementioned interrogatories are well taken for the reasons stated, and that its proposed answers are considered to be reasonable in the circumstances of this case and will be held to be adequate responses to the aforementioned Interrogatories 17 through 31, insofar as they appear proper.

C. NRC STAFF

1. Staff's Objections dated June 26, 1975 to Massachusetts Wildlife Federation (MWF) Interrogatories dated May 30, 1975, Sets 1 and 2.

a. *Set No. 1:* Staff objects to Interrogatories Nos. 5 and 6 in MWF's Second Set of Interrogatories to the Applicant, filed April 22, 1975, which was incorporated by reference in MWF's instant interrogatories to the Staff. The aforesaid interrogatories sought the compilation and evaluation of all technological means by which radioactive liquid and gaseous effluents "might be reduced (as to present specifications)". The Staff's objections are sustained for the reason that they would require speculation as to processes which do not exist and would require the compilation and evaluation of data beyond the scope of evaluation required of the Staff by pertinent statutory and regulatory provisions. In addition, the form of the interrogatory is unduly vague. Accordingly, said interrogatories need not be answered.

b. *Set No. 2:* (1) The Staff objects to Interrogatory No. 2 which calls for the compilation and evaluation of all so-called "Further Reduction Methods". MWF does not define the parameters of said interrogatory, but the Board assumes that it refers to technological improvements in containment of radioactive substances. The objection by the Staff is sustained on the same grounds indicated above in the ruling on Interrogatories Nos. 5 and 6 in Set No. 1. Accordingly, said interrogatory need not be answered.

(2) The Staff objects to Interrogatory No. 5 which refers to "the operation of the facility in conformance with the rad-emissions value [as] a condition for a granting of a license." The grounds of the Staff's objections are that it is unduly vague, and that it does not indicate, in referring to "a license," whether it is directed to a construction permit or an operating license. The objection will be sustained for the reasons that the question of a condition on an operating license is not relevant to any contention admitted by the Board in this proceeding, nor is it relevant to any matter under consideration in this proceeding. Moreover, the interrogatory addresses a matter of law pertaining to a possible condition in a license, rather than seeking an exposition of facts or opinion. Accordingly, said interrogatory need not be answered.

(3) The Staff objects to Interrogatory No. 17 which calls for:

... any communications, agreements, or understandings, between the NRC,

the NRC Regulatory Staff, and its counsel, and the Federal Food and Drug Administration and/or the Federal Environmental Protection Agency relating to (a) radioactive contamination of foodstuffs, including, without limitation, shellfish; and (b) radioactive discharges into the navigable waters of the United States.

The grounds of the Staff's objections are that the compilation called for by this interrogatory would require a "... massive undertaking with no reasonable relevance to the instant proceeding and would, therefore, be unduly burdensome and oppressive." The Staff's objections to Interrogatory No. 17 are sustained, in part, for the reasons indicated in the Staff's pleading of June 26, 1975. However, the Staff is directed to respond with regard to any exchange of information between the NRC, on the one hand, and FDA and EPA, on the other hand, related specifically to the Pilgrim 2 project dealing with the items contained in said interrogatory.

2. Staff's Objections and Requests for Protective Orders, dated June 16, 1975, to Interrogatories and Related Document Requests filed by Intervenor Commonwealth of Massachusetts and Daniel F. Ford on May 30, 1975.

a. The above-named Intervenor Commonwealth and Ford filed interrogatories and document requests jointly on the Staff consisting of some 105 interrogatories. Under date of June 16, 1975, the Staff filed objections to certain of the interrogatories noted below and requests for protective orders relating thereto. On June 20, the Staff submitted answers to the foregoing interrogatories, consisting of responses to Interrogatories 1-7, 10-11, 14-19, 20, 22, 24-25, 29-43, 73-74, 83-84, and 97. As to the remaining interrogatories, the Staff filed objections as aforesaid, and the Board will deal with said objections below.

b. *Interrogatories Nos. 8, 9, 12 and 13.* These interrogatories request information as to whether the Commission or persons acting on their behalf have performed studies "to determine the causes of quality assurance deficiencies of Bechtel and Combustion Engineering in the construction of nuclear plants other than Pilgrim 1." The Staff points out in its objections, *inter alia*, that responses to these interrogatories would require the accumulation of a large body of documents, covering many of the nuclear power plants now in existence, that may not be relevant in time and circumstance, and that the interrogatories are oppressive and should be limited accordingly. The Board notes that the Staff, in its aforementioned answers to Interrogatories Nos. 1, 2, 3, 4, 5, 6, 7, 10 and 11, has already submitted information regarding the activities of the Commission concerning inspections of the activities of the Applicant, Bechtel and Combustion Engineering with regard to compliance with Commission regulations, and

has indicated with specificity where the documentation on such matters is available for Intervenor's inspection.

In the aforementioned Memorandum and Order of June 6, 1975, the Board, in disposing of the initial round of interrogatories and objections thereto stated, in pages 17-20, its views with regard to the efforts of Intervenor to obtain massive amounts of information with regard to the activities of Applicant's contractors on matters not reasonably related in direct bearing to the issues of this proceeding. The Board there indicated the limitations which would be imposed upon such interrogatories in order to make them reasonable in the circumstances. The Board is of the view that, in the light of the Staff's answers to the aforementioned interrogatories, the information sought by the Intervenor has been sufficiently responded to and will be regarded as an adequate response for the purposes of the issues admitted in this proceeding. Accordingly, the interrogatories objected to need not be answered.

c. With regard to the objection to Interrogatory 19-E (on page 3 of the Staff's pleading), the Board is of the view that there is some clarification required, since the main interrogatory, No. 18, has already been responded to by the Staff. The Board will, therefore, take no action on this interrogatory, since it feels that it is not necessary to dispose of the same in this Order.

d. The Board holds the same view with regard to the objection to Interrogatory 21 as is indicated above with regard to 19-E.

e. The Staff objects to Interrogatory 23, which is a request for specification of whether the Commission has, in any commercial nuclear plant project, ever accepted construction activities as being in conformance with applicable quality assurance requirements that were discovered, subsequently, not to be in compliance. The Staff responded affirmatively to the interrogatory, but objects to the request in Interrogatory 23 which asks for identification of the "deficiencies" and, with regard to each deficiency, "what caused AEC/NRC to accept deficient construction work . . . as conforming with applicable quality assurance requirements." The Staff's objection will be sustained for the reason stated, to wit, that the interrogatory is overly broad and burdensome and would require a comprehensive review of *all* inspections made during the existence of the Commission and specification thereof. The Board, as indicated in its earlier Memorandum Opinion and Order, (see reference *supra* in paragraph 2(b)) has held that such interrogatories are improper in the circumstances. The objection is sustained and the interrogatory need not be answered.

f. The Staff objects to Interrogatory 26 on the grounds that it calls for predictions as to future happenings with regard to quality assurance requirements in the future and will have no decisional significance in this proceeding. The Board agrees that the objection is well taken because the interrogatory is speculative and calls for conjecture which can have no impact on the decision in this proceeding, which is to be based on existing standards. Accordingly, the objection is sustained and the interrogatory need not be answered.

g. The Staff objects to Interrogatory 27 which calls for an expression as to aspects of nuclear plant construction and design "... which ought to be covered by quality assurance standards . . .," and which, *inter alia*, "... are presently covered by inadequate standards, in NRC's judgment" or "are not covered at all by present standards." The Board is of the view that the objection to this interrogatory is to be sustained on the grounds that the interrogatory is vague and not adequately defined or described, and likewise calls for speculation and conjecture. Accordingly, the interrogatory need not be answered.

h. The Staff objects to Interrogatory 28 on the same grounds and, it being of the same nature, the ruling is similar to that with regard to Interrogatory 27 above.

i. The objection to Interrogatory 44, dealing with assumptions as to the "basis" on which Pilgrim 1 is "being allowed to continue to operate," is sustained on the grounds stated by the Staff, in that it is beyond the scope of the issues in this proceeding.

j. The Staff has objected to Interrogatories Nos. 45 through 57 which call for a mass of detailed information with regard to the Commission's safety research programs for commercial pressurized water reactors. The Staff's objections are sustained for the reasons stated in the Staff's pleading as being overly broad and oppressive and unnecessary for the production of testimony in this proceeding reasonably related to the issues. The Staff, however, has stated in its pleading that it will provide, by way of answer to the interrogatories, documents sufficient to identify the research requirements for PWR's on which the Commission is now working. The Board is of the opinion that this offer is a reasonable response to the interrogatories in the circumstances and will be considered as an adequate answer thereto.

k. The Staff has filed objections to Interrogatories 58 through 62 which call for information regarding the "Rasmussen Report", WASH-1400, stating as grounds for its objection that the draft study referred to is not an appropriate basis for licensing decisions, as stated by the Commission in its Interim General Statement of Policy, 39 *F.R.* 30964, 30965, August 27, 1974. The Board will sustain the objection on the ground stated and the interrogatory, accordingly, need not be answered.

l. The Staff objects to Interrogatories 63 through 72 which deal with Intervenor's requests for certain specified information concerning the "... steps NRC has taken, pursuant to the Energy Reorganization Act of 1974 to establish NRC as a purely Regulatory Agency that does not engage in promotional activities relating to nuclear power." The objections will be sustained on the grounds that the interrogatories do not refer to any present issue in these proceedings, as well as on the grounds stated by the Staff in its pleading. It is also to be noted that the Board, in its Memorandum and Order of July 11, 1975 herein, ruling on a motion filed by the Intervenor on May 30 requesting that the Board direct the Staff to amend the Environmental Statement, disposed

basically of the questions raised by the Intervenors in these interrogatories. The Board noted in its Memorandum and Order (in footnote 1, page 5) that the motion sought in effect to attack collaterally the validity of the Regulations upon which the Final Environmental Statement was issued, and that it, therefore, failed to comply with Section 2.758 of the Commission's Rules. Further, the Board noted its view that the "overall generic nature of the thrust of the motion is inappropriate for handling in a specific licensing proceeding, since it appears to be an attack upon the validity of all actions of the Atomic Energy Commission of this nature, since the enactment of the Energy Reorganization Act." The subject interrogatories seek to raise the same type of generic question, and, accordingly, would also not be permissible in the instant licensing proceeding. (See, in this connection, the Notice of Proposed Rule-making in the matter of Environmental Effects of the Uranium Fuel Cycle, Docket No. RM 50-3, 37 *F.R.* 24191, 24192 (November 15, 1972) and Amendments to Appendix D 10, CFR Part 50, 39 *F.R.* 14188 (April 22, 1974), regarding the inappropriateness of raising generic issues in a specific licensing proceeding.)

m. The Staff objects to Interrogatories 75 through 77 which seek to raise questions as to "the beliefs" of the Commission as to whether new regulations need to be adopted in order to comply with the Atomic Energy Act and the Energy Reorganization Act of 1974. The Staff's objections are sustained for the reasons stated, and on the ground that they are irrelevant to any of the issues in this proceeding, being also of the aforementioned generic nature.

n. The Staff's objections to Interrogatories 78 through 81 are sustained. As indicated above, the subject of the requirements of a final environmental impact statement in the current proceeding was disposed of in the Board's Order of July 11, 1975.

o. The Staff objects to Interrogatories 85 through 88 which call for information regarding evacuation of the population "in the vicinity of Pilgrim 2." The interrogatories are not proper on the grounds that they are not related to any issue in this proceeding. Evacuation plans, *per se*, have not been placed in issue in the proceeding and detailed emergency plans are proper subjects for consideration only at the operating license stages (see *Public Service Company of New Hampshire, et al.* (Seabrook Station, Units 1 and 2) ALAB 271, NRCI 75/5, 478 at 485, n. 15). The objections are sustained on these grounds and for the reasons stated by the Staff in its pleading. Accordingly, the interrogatories need not be answered.

p. The Staff objects to Interrogatory 89 which seeks a whole range of information regarding "... each document in the possession of AEC or NRC, or known to AEC or NRC, or in the possession or within the knowledge of anyone acting in the interest or on behalf of AEC or NRC which pertains to ..." various subjects dealing with all facets of the licensing of nuclear power plants. As was indicated above, the Board's Memorandum and Order of June 6 held that such

overly broad interrogatories were not proper uses of the discovery process in a licensing proceeding of this type. Accordingly, for the reasons stated in the Memorandum and on the grounds stated in the Staff's pleading, the objection is sustained and said interrogatories need not be answered.

q. Interrogatories 90 through 94 address the "Rasmussen Report", WASH-1400, which, as has been held above (see action, *supra*, on Interrogatories 58-62) is not a proper basis for licensing action. Accordingly, the Staff's objections are sustained.

r. Interrogatory 95 refers to the "...probability of a core meltdown accident at Pilgrim 2 . . .," in terms of "... 1 in 17,000 reactor years." The Staff objects on the ground that the interrogatory is not relevant to any contention in this proceeding. The Board is of the view that the objection is well taken and it is sustained. The interrogatory need not be answered.

s. The Staff objects to Interrogatories 96 and 98 through 100 on the grounds, again, that they deal with the WASH-1400 report. The objections will be sustained on the same grounds as considered above.

t. The Staff objects to Interrogatories 101 through 103 which appear to postulate questions as to actions that would be taken "following a meltdown accident." The objections will be sustained since said interrogatories are not relevant to any of the issues in this proceeding.

u. The Staff objects to Interrogatory 104 on the grounds that it is vague and undefined in referring to a "destructive thermal explosion." The Board agrees and the objection is sustained.

v. The Staff objects to Interrogatory 105 which, again, is unrelated to any issue in the proceeding, requesting information as to actions the NRC has taken to "postpone the licensing of nuclear plants . . ., pending its finalization of solely regulatory criteria and standards in accordance with the statutory requirements of the Energy Reorganization Act of 1974 which established the NRC." The objections will be sustained on the grounds that the question not only is generic in nature and inappropriate for an individual licensing proceeding, but is also irrelevant to any issue in this proceeding.

3. Staff's Objection, dated June 16, 1975, to Discovery Request filed by Intervenor Cleeton on May 30, 1975.

a. The above-named Intervenor, by letter dated May 30, 1975, filed a third set of informal requests for information. On June 16, the Staff filed a pleading objecting to Item 6 of the request, discussed below. On June 20, the Staff submitted answers to said requests for information, with the exception noted above.

b. The Staff objects to Item 6 of Intervenor's discovery request which poses a multipart question dealing with "...the emergency evacuation plan for Pilgrim 1 . . .," on the ground that the question is not relevant to any issue admitted in this proceeding. The Board notes that, in its Memorandum and

Order of February 18, 1975 herein, it considered but excluded the contention advanced by the Intervenor on the same subject involved in the instant discovery request. The Board is of the view that the objection is well taken and, accordingly, the question need not be answered.

In conclusion, and for the reasons stated above, the objections to the interrogatories set forth above are sustained in the manner and for the reasons indicated and, accordingly, need not be responded to. The Board is constrained, at the conclusion of its detailed examination of these numerous interrogatories, again to caution the parties as to the proper use of the discovery process. It is not too much to state that the Board is of the opinion that the posing of questions such as those referred to above in the form of interrogatories, requiring as they do the expenditure of much unnecessary time and effort by the parties and the Board to reject the same, constitutes an abuse of the discovery process and is to be avoided in the future by the parties in this proceeding. The parties are directed, in their future conduct in this proceeding, to observe the principles set forth herein and in the Board's Memorandum and Order of June 6 governing the use of discovery in this proceeding.

To the extent the Board has directed the Applicant and the Staff to respond to the respective discovery requests discussed above, said responses, in the manner directed, shall be furnished within fifteen (15) days of the date of service of this Memorandum and Order. Further, in light of the extensive consideration thus far given to the discovery requests and to the objections and motions for protective orders filed in connection therewith, the rulings in the instant Memorandum and Order are to be considered as a Board Order pursuant to 10 CFR 2.740(c), providing for the issuance of protective orders and, where applicable, directives to respond to interrogatories in the manner and scope indicated herein.

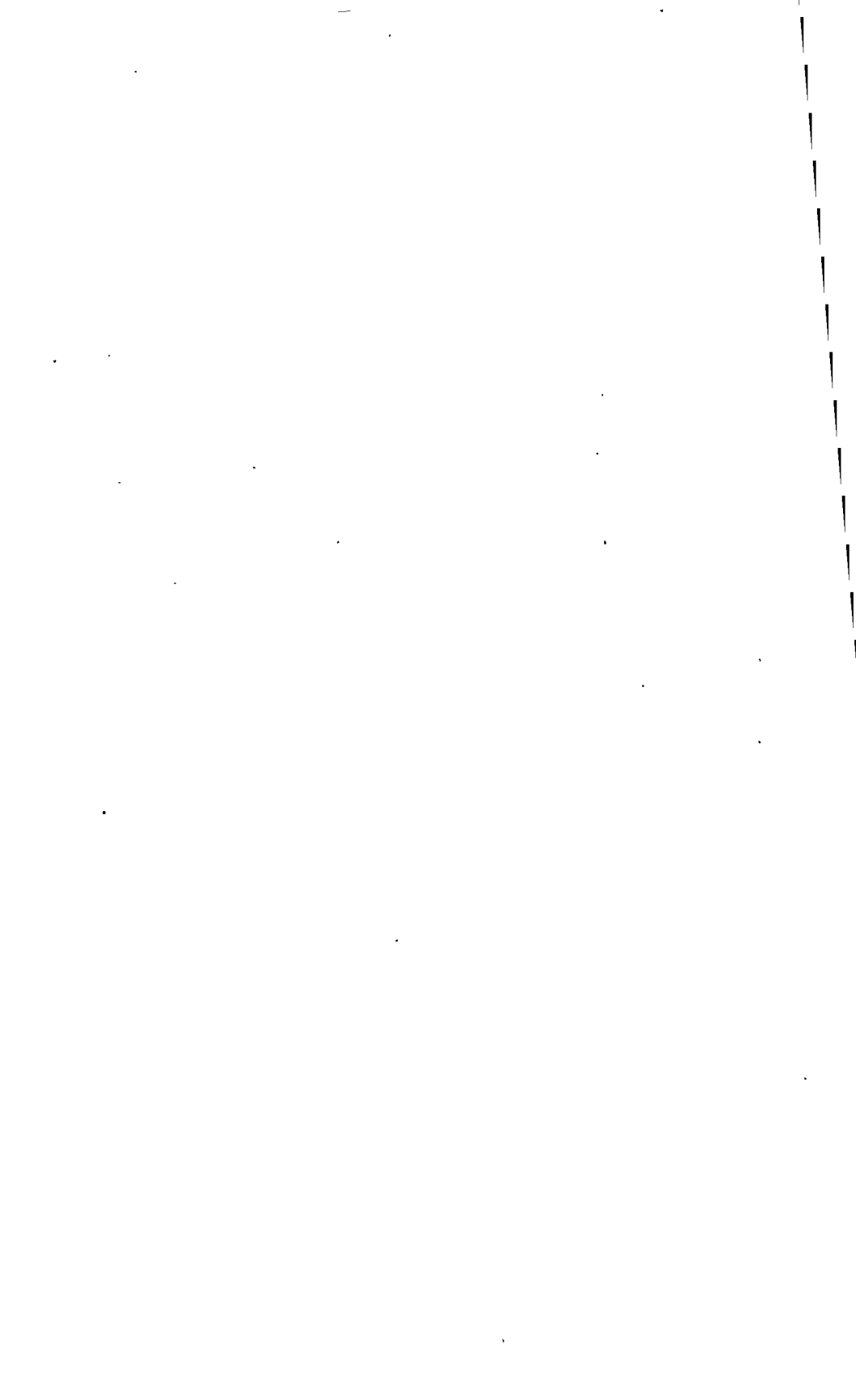
Dr. A. Dixon Callihan and Dr. Richard F. Cole, Members of the Board, join in this Memorandum and Order.

It is so ORDERED.

**FOR THE ATOMIC SAFETY AND
LICENSING BOARD**

Max D. Paglin, Esq., Chairman

Dated at Bethesda, Maryland
this 30th day of July 1975.



UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

CLI-75-8

COMMISSIONERS:

William A. Anders, Chairman
Edward A. Mason
Victor Gilinsky
Richard T. Kennedy

In the Matter of

**CONSOLIDATED EDISON COMPANY
OF NEW YORK, INC.**

(Indian Point, Unit No. 1)
(Indian Point, Unit No. 2)
(Indian Point, Unit No. 3)

Docket No. 50-3
Docket No. 50-247
Docket No. 50-286
August 4, 1975

Commission grants State's petition for a public hearing to determine whether the geologic and seismic analyses which have been carried out for Indian Point Units 1, 2 and 3 are in accord with the Commission's regulatory requirements, designates an Appeal Board to conduct such hearing, and also authorizes the Board to consider related issues independently raised by another petitioner.

**RULES OF PRACTICE: STANDARD FOR REVIEW OF SHOW-CAUSE
DETERMINATION**

In reviewing a determination made under 10 CFR §2.206 to issue or refuse to issue a show cause order, the Commission will make a limited inquiry into whether, on the basis of the information then available, there has been an abuse of discretion. See: *Midland*, CLI-73-38, RAI-73-12 at 1084 (December 20, 1973).

**RULES OF PRACTICE: STANDARD FOR REVIEW OF SHOW-CAUSE
DETERMINATION**

In determining whether there has been an abuse of discretion in the denial of a request for a show cause order, the Commission will consider: (1) whether the statement of reasons given permits rational understanding of the basis for the decision; (2) whether the decision exhibits a correct understanding of governing

law, regulations, and policy; (3) whether all necessary factors have been considered, and extraneous factors excluded, from the decision; (4) whether inquiry appropriate to the facts asserted has been made; and (5) whether the decision is demonstrably untenable on the basis of all information available to the decision-maker.

RULES OF PRACTICE: ORDER TO SHOW CAUSE

A show cause order must be issued where substantial health or safety issues concerning operation of a reactor have been raised, but need not be issued where only a mere dispute over factual issues exists.

RULES OF PRACTICE: AUTHORITY OF APPEAL BOARDS

Appeal boards are authorized to undertake factual inquiry. *Morningside Renewal Council, Inc. v. AEC*, 482 F.2d 234, 239 (2d Cir.), cert. denied, 417 U. S. 591(1974).

MEMORANDUM AND ORDER

The matter now before the Commission in these proceedings arose in May 1974 when the Citizen's Committee for the Protection of the Environment (CCPE) requested the Director of Regulation (the Director) to issue an order to show cause why nuclear power generation activities at the Indian Point site should not be halted in light of recently developed seismic data. 10 CFR 2.206. Desire for interim relief while the matter was under consideration was expressly disclaimed. Following discussions among staff, the licensee, CCPE and the New York Geological Survey, the Acting Director, Directorate of Licensing (pursuant to a delegation from the Director) denied the request, attaching to his decision a lengthy "Geological and Seismic Evaluation of the Indian Point Site." His decision was rendered November 29, 1974.

On January 21, 1975, CCPE filed a petition seeking Commission review of this decision. By order dated January 24, 1975, the Commission requested the views of the NRC staff, the licensee and other interested persons as to the appropriate procedures to be followed. The February 7 deadline for these responses was twice extended following timely requests by the New York State Atomic Energy Council (NYAEC), concurred in by all parties. NYAEC's response was filed April 21, 1975, and supplementary staff, licensee, and CCPE responses were filed shortly thereafter. In addition to opposing the relief sought by CCPE, NYAEC's April 21 response for the first time sought hearing on additional seismic issues.

Now before the Commission for decision are the following issues: (1) whether and by what standard the Director's decision of November 29 may be reviewed; (2) if review is appropriate, whether CCPE is entitled to hearing on any of the issues tendered in its petition for an order to show cause; (3) whether the NYAEC petition for hearing is appropriately filed, and whether a hearing on any of the issues tendered therein is required; and (4) if any hearing is to be conducted, before what tribunal it should be held.

1. The Commission's rules make no express provision for review of the Director's decisions to issue orders to show cause (10 CFR 2.206) or to refuse to do so, with statement of reasons, in the face of a request by a member of the public (10 CFR 2.206(b)). We have previously asserted in a more limited context an inherent authority to review such decisions to determine whether, on the basis of the information then available to him, the Director had abused his discretion. *Consumers Power Co.* (Midland Units 1 and 2), CLI-73-38, RAI-73-12 at 1084 December 20, 1973). The question is one of a number of procedural issues which the Commission intends to address shortly in general rulemaking proceedings. In the interim, we adhere to the stated standard.

Review of the Director's decision is particularly important in cases such as this one, where a petition has been denied—absent review, there will be no further proceedings within the Commission. Even here, however, it is important to maintain so far as possible the separation between "prosecutorial" and quasi-judicial functions within the Commission, which our regulations establish by vesting in the Director the discretion to institute show cause proceedings. And we note that Commission review of competing factual contentions at the threshold of a potential show cause proceeding poses difficulties for any subsequent Commission review of the outcome of resulting hearings. Premature commitment on factual issues is especially to be avoided.

So constrained, we believe the question whether the Director has abused his discretion in denying a request for a show cause order to embody the following elements: (1) whether the statement of reasons given permits rational understanding of the basis for his decision; (2) whether the Director has correctly understood governing law, regulations, and policy; (3) whether all necessary factors have been considered, and extraneous factors excluded, from the decision; (4) whether inquiry appropriate to the facts asserted has been made; and (5) whether the Director's decision is demonstrably untenable on the basis of all information available to him. Such review is similar to the review that would be accorded the Director's decision by a court, were immediate judicial review obtained, while preserving the Commission's necessary policy control. We believe it more appropriate that the Commission speak to these issues first, in light of its overriding responsibility for assuring public health and safety in the operation of nuclear power facilities.

2. So viewing the matter, we are unable to conclude that the Director abused his discretion in denying the show cause order sought by CCPE. His

letter-decision of November 29, 1974, read in light of the accompanying staff report, fully and rationally explains the basis for his decision.¹ The petition for review is essentially concerned with differences of fact, not legal or policy issues. The Director correctly understood that a show cause order would have been required had he reached the conclusion that substantial health or safety issues had been raised.² 10 C.F.R. §2.202. No essential factor has been excluded or extraneous factor considered. The papers reveal a thorough inquiry, with full consultation among the interested parties; in the course of the inquiry the licensee, the staff and the NYAEC entered into an agreement to establish a network of seismic monitoring stations to permit the acquisition of data over time that will assist in more precise resolution of the seismic issues. Contrary to CCPE, we regard this undertaking as having been accepted by the licensee as part of its obligation; it requires no further proceeding. Finally, while it is possible to identify areas of factual dispute remaining between CCPE and the staff, we cannot say that, on the basis of all the information before him, the Director's resolution of these matters was untenable.

One further matter warrants comment. CCPE contends that the November 29 staff report constitutes a de facto amendment of the existing Indian Point licenses, since it appears to have changed the rating for the earthquake by which the seismic adequacy of the Indian Point plants was to be measured. The staff report adequately shows a basis for belief, however, that when the relevant calculations are repeated using the corrected value, the result requires no change in the existing plant design. Since the licenses themselves do not mention or rely upon the particular earthquake rating assigned, it is impossible to characterize the change in rating as a license amendment requiring hearing; whatever might have been the case if the staff's conclusion had been

¹One possible exception is the assertion that the staff improperly excluded the Indian Point 1 facility from consideration on the ground that it was shut down and hence presented no seismic hazard; CCPE contends that the seismic issues must be faced so long as the reactor core remains loaded, whether or not the plant is in operation. It is not clear from the papers whether the Director considered this aspect of its contentions, which was precisely raised for the first time during these review proceedings. We also note the pendency before him of a licensee petition to resume limited operations at the Indian Point 1 reactor, in order to exhaust the present core before substantial backfitting measures are taken there. We believe the Director should have the opportunity to consider CCPE's contention in connection with the pending petition for interim resumption of operations, and we remand it for that purpose. Should he conclude that the question must be examined—an issue which we trust can be speedily resolved on the papers already submitted—it would be appropriate for him to move to join it with the issues set for hearing within in light of the common parties, facts, and issues at stake.

²Contrary to CCPE's contention, a mere dispute over factual issues does not suffice.

that greater protection against earthquake damage were required, the absence of any such conclusion here forecloses that argument.

3. To the extent it independently seeks a hearing on new issues, not comprised in the CCPE petition, NYAEC's April 21 response is misfiled. It ought to have been separately filed with the Director as a petition under 10 CFR 2.206.

Procedural forms, however, are not fetishes. Here, CCPE, the licensee and the staff all agree that the subjects raised warrant hearing in an adjudicatory proceeding. We feel warranted in assuming that, but for the pendency of this proceeding, in which it might have been assumed the hearing issue would be resolved, the Director would have issued an order under 10 CFR 2.202 convening the requested hearing. The issues are pressing enough for all parties, and important enough for the public safety, that they should not be further delayed. We are therefore prepared to order the requested hearing.

In this respect, the licensee raises an objection that warrants comment. While it does not deny the appropriateness of the proposed inquiry, it insists that the place for that inquiry is (or was) the operating license hearing for the Indian Point 3 plant, which was coming to a close just as the NYAEC paper was filed. It ought not, it argues, be forced simultaneously to argue its case in two separate forums.

We think there is considerable merit to this contention. As CCPE points out in another context, parties must be prevented from using 10 CFR 2.206 procedures as a vehicle for reconsideration of issues previously decided, or for avoiding an existing forum in which they more logically should be presented. In the present case, however, the issues raised potentially affect all the plants at the Indian Point site, not just Indian Point 3. They concern substantial safety issues, not to be lightly cast aside for procedural deficiency where (as here) staff agrees they require inquiry. Finally, we believe the substance of the licensee's objection can be met without compromising the need for inquiry.

4. The Indian Point 3 operating license is currently pending before an Atomic Safety and Licensing Appeal Board, which already has before it several seismic issues raised in the course of the operating license proceedings. The two technical members of that Board also served on the appeal board deciding the Indian Point 2 proceedings; the lawyer member has become intimately acquainted with seismic issues in another context. Appeal boards are authorized to undertake factual inquiry and have in the past presided at evidentiary hearings. *Morningside Renewal Council, Inc. v. AEC, et al.*, 482 F.2d 234, 239 (2d Cir.), cert. denied, 417 U.S. 591 (1974); *Vermont Yankee Nuclear Power Corp.* (Vermont Yankee Nuclear Power Station), ALAB-217, RAI-74-7-61 (July 11, 1974); *Northern Indiana Public Service Co.* (Bailly Generating Station, Nuclear-1), ALAB-241, RAI-74-11-841 (November 12, 1974); *Consolidated Edison Co. of New York, Inc.* (Indian Point Station, Unit No. 2), ALAB-243,

RAI-74-11-850 (November 20, 1974). We believe the greatest economy of effort for the parties will be achieved, without sacrificing the quality of inquiry, if the NYAEC issues are referred to that sitting panel.

The issues raised by NYAEC touch Indian Point 1 and Indian Point 2, as well as the pending operating license proceeding. We have already referred to the Director any issues arising from interim operation or maintenance in ready state of Indian Point 1. Otherwise, the issues raised go to site characteristics which are shared among the three reactors. Even if Plants 1 and 2 were not specifically referenced in the proceedings, the licensee would inevitably be instructed as to them by the appeal board's holdings regarding Plant 3. In the circumstances, joinder appears to be a mere formality.

Finally, in upholding the Director's discretionary decision not to convene a hearing on CCPE's petition, we are not deciding that the issues it sought to raise would be inappropriate for hearing in the forthcoming proceedings, in which CCPE should of course be permitted to participate. There is evident similarity between NYAEC's issues and CCPE's so far as they relate to the maximum ground acceleration value for the Indian Point site. We further note that NYAEC considers the capability of the Ramapo fault an open question, albeit a question not yet ripe for an adjudicatory hearing. Since a hearing is to be held on the issues raised by NYAEC, the Board designated to preside at the hearing should exercise its customary discretion in framing the issues for examination. 10 CFR 2.714. Any relevant matter, which is the subject of substantial factual dispute, would be appropriate to be heard. In holding that the Director did not demonstrably abuse his discretion in refusing the CCPE request, we do not decide that he was right to do so or that he correctly resolved any contested factual issues.

None of the parties has suggested that there is any need to order a cessation of plant operations at the Indian Point site pending resolution of the seismic issues raised by CCPE and NYAEC. Should any party wish to make a showing that continuing operations at the Indian Point site pending decision in the show cause proceeding constitutes a danger to public health and safety, the designated Appeal Board will of course have the same discretion to enter appropriate orders in this proceeding as it exercises in any appeal pending before it, with the exception that its orders in this proceeding may apply to any or all of the Indian Point units.

We recognize both the significance of the issues raised here, and the licensee's interest in a prompt determination of those issues. Although all of the parties here agree that a hearing on certain seismic issues affecting the Indian Point site is in order and that no interim measures are required at this time, the designated Appeal Board should convene the hearing with expedition. We have

specifically delegated full authority in this matter to the Appeal Board in the interest of a comprehensive and expeditious resolution of the issues.

.. It is so ORDERED.

By the Commission

SAMUEL J. CHILK

Secretary of the Commission

Dated at Washington, DC
this 4th day of August, 1975

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

CLI-75-9

COMMISSIONERS:

William A. Anders, Chairman
Victor Gilinsky
Richard T. Kennedy

In the Matter of
DUKE POWER COMPANY
(Catawba Nuclear Station,
Units 1 and 2)

Docket Nos. 50-413
50-414

August 6, 1975

APPEARANCES

Messrs. Troy B. Conner, Jr. and J. Michael McGarry, III, Washington, D. C. (Mr. William L. Porter, Charlotte, North Carolina, on certain pleadings), for the applicant, Duke Power Company.

Messrs. Joseph Gallo and Bernard M. Bordenick (Mr. Joseph F. Scinto on certain pleadings) for the Nuclear Regulatory Commission staff.

Upon Licensing Board's certification (LBP-75-35) of construction-permit applicant's request for a waiver of, or an exception to, the provisions of 10 CFR §50.46(a)(3) (establishing cut-off dates by which various facilities must comply with the ECCS Final Acceptance Criteria), and upon applicant's simultaneous request for an exemption from that provision, Commission finds that application of the specified cut-off date to the reactors in question (which would preclude grant of a construction permit until such compliance was shown) would not serve the purpose for which the regulation was adopted. Given the applicant's assurance that it will demonstrate compliance with the F.A.C. before seeking an operating license, Commission rules (1) that an exemption is warranted, (2) that construction permits for these facilities may issue, and (3) that the applicant must assume the risk of either demonstrating compliance with the F.A.C. prior to grant of an operating license or being subject to operating limitations on such license.

Exemption granted. Issuance of construction permits authorized.

ECCS FINAL ACCEPTANCE CRITERIA: RELATIONSHIP TO INTERIM ACCEPTANCE CRITERIA

The adoption of the Final Acceptance Criteria was not a complete rejection, but rather an improvement, of the Interim Acceptance Criteria, which were found to provide reasonable assurance of protection to public health and safety during the transitional period in which the Final Criteria are being put into force.

ECCS FINAL ACCEPTANCE CRITERIA: COMPLIANCE DEADLINE

The one year transitional period provided for application of the ECCS Final Acceptance Criteria to construction permit applications was intended to insure that applications which had proceeded well into the review process (e.g., which had been filed in or near calendar year 1972) would not suffer inordinate delays for revision of ECCS evaluation data when there was reason to believe that compliance with the final criteria would be accomplished by the time an operating license was sought.

ECCS FINAL ACCEPTANCE CRITERIA: STANDARD FOR EXEMPTIONS

A petitioner for an exemption from the provisions of 10 CFR §50.46(a)(3) must convince the Commission not only that equitable considerations warrant such action but also that there exists sufficient present assurance of favorable resolution of the outstanding ECCS issues to authorize granting construction permits.

CONSTRUCTION PERMIT HEARINGS: HEALTH AND SAFETY ISSUES

Sound regulation demands early identification and resolution of potential safety and environmental problems.

MEMORANDUM AND ORDER

On December 28, 1973, the Commission announced new acceptance criteria for emergency core cooling systems (ECCS) for light water-cooled nuclear power reactors (10 CFR § 50.46 and 10 CFR Appendix K). An implementation schedule for the application of the new criteria was also promulgated. The issuance of construction permits after December 28, 1973, but before December 28, 1974, was authorized "subject to any applicable conditions or restrictions imposed pursuant to other regulations in this chapter and the Interim Acceptance Criteria for Emergency Core Cooling Systems published on

June 29, 1971 (36 *F.R.* 12248) • as amended (December 18, 1971, 36 *F.R.* 24082)” with the proviso that later issuance of operating licenses for such facilities would be subject to their compliance with the new criteria (10 CFR § 50.46(a)(3)).

Applicant, Duke Power Company, filed an application for construction permits for Catawba Nuclear Station, Units 1 and 2, on June 24, 1972. After the disposition of various preliminary matters, evidentiary hearings were conducted before an Atomic Safety and Licensing Board (ASLB) during the months of January-April, 1974, and a Partial Initial Decision on Environmental Issues was issued by the ASLB on April 9, 1974.¹ The evidentiary record was closed as of April 30, and a Supplemental Partial Initial Decision on Site Suitability followed on May 14, 1974.² These decisions were necessary antecedents to the Limited Work Authorization issued by the Director of Regulation on May 16, 1974.³

On November 1, 1974, the ASLB ruled, on the basis of new information supplied to it, that there had been sufficient change in circumstances to warrant a reopening of the record on the issues concerning need for power and financial qualifications.⁴ Accordingly, a hearing on these issues commenced on February 18, 1975. The hearing ended on February 28, 1975, and was followed by the Licensing Board’s Initial Decision—disposing of all outstanding issues—on June 30, 1975.

During the pendency of the reopened “need for power” and “financial qualifications” issues, on December 19, 1974, the ASLB issued a Supplemental Partial Initial Decision on Compliance with Interim ECCS Criteria, in which it concluded that the proposed Catawba reactors had been designed so that their calculated cooling performance would conform to the criteria set forth in the Commission’s Interim Acceptance Criteria.⁵

Applicant petitioned the ASLB on December 27, 1974, requesting that pursuant to 10 CFR § 2.758, the provisions of 10 CFR § 50.46(a)(3) with regard to compliance with the ECCS Final Acceptance Criteria be waived or that an exception to that provision be made. On February 26, 1975, this petition was denied, the ASLB noting that the applicant had already submitted the data believed to show compliance with the Final Acceptance Criteria for ECCS and that the Commission’s staff review should be completed in the form of a supplement to the Safety Evaluation on March 21, 1975. This anticipated

¹ LBP-74-21, RAI-74-4, p. 657.

² LBP-74-34, RAI-74-5, p. 861.

³ 10 CFR § 50.10(e).

⁴ LBP-74-84, RAI-74-11, p. 890. The record does not controvert the suggestion of the parties that, but for this reopening, all outstanding issues would have been resolved and construction permits issued before December 28, 1974.

⁵ LBP-74-90, RAI-74-12, p. 1117.

schedule was not met and a final determination of the proposed Catawba reactors' conformity with the Final Acceptance Criteria may not occur until sometime in 1976.

It is against this background that we view the current request for an exemption from the provisions of 10 CFR § 50.46(a)(3) requiring compliance with the FAC before construction permits can issue. The request was simultaneously filed on May 13, 1975, with us (pursuant to 10 CFR § 50.12(a)) and, in renewed form, with the ASLB (pursuant to 10 CFR § 2.758). The ASLB, in a Memorandum and Order dated June 30, 1975, in turn, certified the question to us, having determined that, in its view:

Applicant has now made a *prima facie* showing of special circumstances indicating that . . . the application of 10 CFR 50.46(a)(3) to the proposed Catawba plant would not serve the purpose for which the regulation was adopted, and that a waiver of or exemption to such regulation would be warranted.

Only the Commission's regulatory staff (which opposes the exemption) and Duke responded in a timely manner to the Commission's request for comments on the exemption request. At Duke's suggestion we heard oral argument on July 22, 1975.⁶ We have carefully considered the entire record—written pleadings and oral argument—amassed on this complex issue in reaching our decision.

⁶Carolina Environmental Study Group (CESG), an intervenor throughout this proceeding, filed no pleadings in response to the exemption request and so was not a participant in the oral argument. A letter from the Federal Energy Administration favoring the exemption, filed after expiration of the comment period, was brought to the Commission's attention the day before argument. We agreed to keep the record open until July 30, 1975, in order that CESG might respond to FEA's arguments. By letter dated July 29, 1975, CESG objected to our "having heard oral argument in which the issue of 'need for power' was asserted." While it is evident that our decision today is not based on consideration of "need for power", we feel it appropriate to note that CESG's failure to respond to either the exemption request or the Commission's June 17, 1975 request for comments weakens the force of any objections to the scope of the instant proceedings.

CESG has further asked that, in the event its objection to the oral argument is overruled, "the Commission merely inquire of Duke Power Company what its energy sales have been for each six months since January 1, 1973". We decline to so expand these limited proceedings. As noted, we are not basing today's decision on considerations of need for power. This issue was extensively examined by the ASLB and resolved adversely to CESG. See Initial Decision, June 30, 1975, NRCI-75-6 656-666. CESG remains free to pursue its contentions before the ASLAB, n. 10, *infra*.

The parties disagree on whether the exemption request is merely a procedural matter (as Duke sees it) or a public health and safety issue going to the fundamental tenets of nuclear reactor licensing (as the staff sees it).

The proposed Catawba reactors are Westinghouse pressurized water reactors of the ice condenser design. Six other nuclear facilities now under construction⁷ have the same basic design and are thus faced with the same need for modifications to meet the Final Acceptance Criteria as Catawba. In each case the changes are expected to consist of the addition of an Upper Head Injection System (UHI) which, it is expected, will meet the requirements of the Final Acceptance Criteria without derating or other overly restrictive operating limitations.

Each of the six other facilities mentioned received construction permits before promulgation of the Final Acceptance Criteria and thus are not required to show compliance with those new criteria until an operating license is sought. The staff expects that a specific generic Westinghouse model for the evaluation of ECCS systems utilizing a UHI system will be completed by November of 1975. In the staff's view, an analysis of the Catawba reactors using that model, and the necessary hearing procedures could be completed and an Initial Decision and Construction Permits issued—with no exemption—by March of 1976. Duke believes that this schedule is overly optimistic and that no construction permits could issue in normal course before the summer of 1976.

Reduced to its essentials, Duke's position is that if the record had not been reopened on matters unrelated to health and safety, it would have received construction permits during the transitional period associated with adoption of the final acceptance criteria *as several other applicants did*,⁸ and that it would not have to demonstrate compliance with the final acceptance criteria until it sought an operating license. Since it is committed to meeting the final acceptance criteria before operation, Duke argues, simple fairness requires that it be put on equal footing with others whose applications were filed at about the same time but whose cases were not held open on unrelated issues past the end of the transitional period.

A few background observations serve to place our decision in context. First, current licensing practice recognizes that some limited construction (at the risk of the applicant) prior to final resolution of every construction permit issue is entirely appropriate if the administrative process is not to unduly delay construction of needed facilities. It is for this reason that limited work authorizations (LWAs) are permitted under § 50.10(e) of our rules. Such an

⁷ Sequoyah Units 1 and 2; McGuire Units 1 and 2; Watts Bar Units 1 and 2. A seventh reactor of the ice condenser design—the D. C. Cook station—is presently operating at reduced power levels.

⁸ The regulatory staff acknowledged this to be the case. See oral argument transcript p. 60. See also note 7, *supra*, and accompanying text.

LWA is already outstanding in this case, and substantial work has been performed in reliance on it. Duke has expressed concern, however, that all the construction it desires to accomplish before final approval of the Catawba ECCS design may not be possible under the LWA regulations. Accordingly, in order to maintain an orderly construction schedule—with an attendant certainty of manpower and procurement schedules—Duke believes the requested exemption at the construction permit stage is necessary. As noted above, however, Duke emphasizes its commitment to meeting the Final Acceptance Criteria before it would expect an operating license.

Second, we note that the supplanting of the Interim Acceptance Criteria by the Final Acceptance Criteria was not a wholehearted rejection of the former, but rather an improvement thereon, supported by an evidentiary record. Accordingly, in the announcement of the Final Acceptance Criteria, the Commission reaffirmed its belief in the efficacy of the Interim Acceptance Criteria, and found that they would provide reasonable assurance of protection to the public health and safety during the transitional period.

We are persuaded, upon the whole record, that the exemption is in the public interest and should be granted.

Our holding is based on factual and procedural considerations which are unique to this case, and unlikely to recur. The one year transitional period was intended to ensure that applications which had proceeded well into the review process would not suffer inordinate delays for revision of ECCS evaluation data when there was every reason to believe that compliance with the Final Acceptance Criteria would be accomplished by the time an operating license was sought. This necessary burden of ultimate compliance with the final criteria thus went hand-in-hand with the benefits of the transition provision. Given the range of average application processing times, it is apparent that the intended beneficiaries of the transition provision were those whose applications were filed in (or very near) the calendar year 1972.

The Catawba applications (filed June 24, 1972 and docketed October 27, 1972) are the oldest active construction permit proceedings on the Commission's docket.⁹ Six later-docketed applications have resulted in the issuance of construction permits for a total of 13 units—all having been issued before December 28, 1974. The parties are agreed that, but for the reopening of the record on issues unrelated to ECCS (or even to public health and safety) construction permits would have been issued for the Catawba units prior to December 28, 1974. It is thus apparent to us that Duke Power proceeded reasonably in seeking a construction permit based on a showing of Interim Acceptance Criteria compliance. In retrospect, it seems clear that the procedural net designed to implement the Final Acceptance Criteria was too tightly woven

⁹There is one older proceeding, currently being held in abeyance by agreement of the Licensing Board and all parties.

by our predecessors. Application of the December 28, 1974 cut-off date in this case would not serve the purposes for which that cut-off date was originally established.

While it is clear that the procedural history of this matter tips the equitable balance in Duke's favor, we would nonetheless be hesitant to grant the exemption on such a basis alone. In addition, therefore, we have placed substantial reliance on the repeated assurances of Duke that it will demonstrate compliance with the Final Acceptance Criteria before seeking an operating license. The record—including the May 12, 1975 affidavit of S. K. Blackley, Jr., the June 27, 1975 affidavit of W. S. Lee, and the representations of both parties at oral argument—convinces us that these assurances are made in good faith and with substantial factual underpinning. There has been no suggestion of doubt on the part of the staff that the UHI system will ultimately be found acceptable. We cannot and do not prejudge that question. We do, however, believe that there is sufficient present assurance of favorable resolution of the outstanding ECCS issues to authorize construction permits, at the applicant's express risk of demonstrating such resolution or having to live with undesired operating limitations.

In so holding, we wish to emphasize our belief that sound regulation demands early identification and resolution of potential safety problems. In the early days of the Atomic Energy Commission (AEC), there were few guidelines for construction—the regulators were primarily concerned with operation and control of the reactor. In time, experience with commercial reactors indicated the necessity for a substantial increase in the level of AEC regulatory involvement in the design and construction stages. The AEC moved strongly in this direction in the early 1970's and forced considerable improvements in the quality and completeness of Preliminary Safety Analysis Reports submitted by applicants. Early resolution of safety and environmental problems is also the general objective of the recently proposed NRC siting and standardization legislation. This decision, made on the extraordinary facts of this case, should not be viewed as a change in this trend.

For the reasons set forth in this opinion, we hereby grant Duke Power Company's request for an exemption from the requirement of compliance with the Final Acceptance Criteria for Emergency Core Cooling Systems at the construction permit stage, holding that application of 10 CFR 50.46(a)(3) in

this case would not serve the purpose for which that regulation was adopted, and the construction permits may issue.¹⁰

It is so ORDERED.¹¹

By the Commission

SAMUEL J. CHILK
Secretary to the Commission

Dated at Washington, D. C.
this 6th day of August, 1975.

¹⁰This order accords to the initial decision of the ASLB no greater weight than it is entitled to under our rules of practice and is without prejudice to any review of that decision by the Atomic Safety and Licensing Appeal Board.

¹¹Commissioners Rowden and Mason did not participate in the decision of this case.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

CLI-75-10

COMMISSIONERS:

William A. Anders, Chairman
Edward A. Mason
Victor Gilinsky
Richard T. Kennedy

In the Matter of
CONSUMERS POWER COMPANY
(Big Rock Point Nuclear Plant)

Docket No. 50-155
August 11, 1975

Upon applicant's petition for a declaratory order on the effectiveness of a previously issued amendment to its operating license (authorizing a threefold increase in its loading of mixed oxide fuel) and concurrent changes in the technical specifications (in a proceeding where the Commission had previously temporarily suspended all activities before Licensing Board (CLI-75-3)), Commission rules that (1) NEPA review of the possible environmental impact resulting from increasing the amount of plutonium in this reactor is warranted in the circumstances and must be undertaken prior to allowing the amendment to become effective. (2) pending completion of the generic environmental impact statement on mixed oxide fuel (GESMO), NEPA requirements regarding the license amendment in question can be met fully by the preparation of a discrete environmental impact statement, limited to the effects of increasing the amount of plutonium in this reactor, and (3) the specification change is effective since it raises no significant hazards considerations and does not require a NEPA review (although it remains a possible issue before the Licensing Board).

MEMORANDUM AND ORDER

We earlier ordered this proceeding temporarily suspended and invited comments from the parties on the question whether the requirements of the National Environmental Policy Act (NEPA) for the Big Rock facility's use of up to 150 kilograms of plutonium in mixed oxide fuel, as set forth in License Amendment No.4, could be met fully through preparation of a discrete environmental impact statement for the facility, in lieu of awaiting completion of the generic environmental impact statement on mixed oxide fuel (GESMO).

NRCI-75/3, 161. The Licensee subsequently filed with the Commission a petition for a declaratory order, requesting that we state whether Amendment No. 4 is currently effective and whether it may be used in a planned September 1975 reloading. We offered the parties an opportunity to comment on the Licensee's petition. All of the parties have submitted comments on both issues.

We have, therefore, two matters before us. For the reasons stated below, we find that: (1) NEPA's requirements apply to the use of mixed oxide fuel at Big Rock as authorized by Amendment No. 4, which requirements can be met fully by a discrete environmental impact statement in lieu of awaiting completion of GESMO; and (2) Amendment No. 4 may not be used until NEPA's requirements have been met and a decision reached in the pending hearing.¹

These issues have not been decided heretofore either by us or by the Atomic Energy Commission. Amendment No. 4 was originally issued by the AEC staff in December 1972 pursuant to delegated authority. When the AEC issued a notice of opportunity for hearing concerning the amendment in April 1973 (39 *Fed. Reg.* 9104-9105) at a time when the Licensee had no immediate plans to use plutonium in excess of the former limit, it was contemplated that all relevant issues, including NEPA issues, would be determined *de novo*.

The Big Rock facility is one of the smallest (70 MWe) of the currently operating reactors. The facility has been using mixed oxide fuel in amounts of less than 50 kilograms since 1969, under Amendment No. 3 to its license. No challenge has been made to Amendment No. 3, and use of plutonium-enriched fuel under it has continued without incident. No new construction is associated with increased use of mixed oxide fuel in this instance. Nevertheless, questions have been raised concerning the effect on reactor performance and safety of trebling the effective plutonium core load. Moreover, events following the original issuance of this amendment have cast the matter in a somewhat different light. Shortly after the issuance of Amendment No. 4, the AEC undertook GESMO for the purpose of assessing the environmental impact of wide-scale use of mixed oxide fuel. We recently announced our provisional view that a NEPA cost-benefit analysis of alternative safeguards programs should be completed before the Commission reaches a decision on wide-scale use of mixed oxide

¹ Neither matter arises in the context in which we normally exercise our adjudicatory functions, typically including a developed record on relevant issues, with initial and final decisions by a Licensing Board and an Appeal Board. In this proceeding, we appointed a Licensing Board which identified the relevant issues and announced a discovery and hearing schedule. We reluctantly impinged on that process when we suspended this proceeding and invited comments on the NEPA issue. Our action has been triggered by the unique circumstances of this case and not by disagreement with any action taken by the Licensing Board.

fuels, and we proposed guidelines for individual licensing actions related to the wide-scale use of mixed oxide fuels (40 Fed. Reg. 20142, May 8, 1975).

In view of these circumstances, we believe that sound exercise of discretion favors NEPA review.

In so holding, we wish to be explicit that we are not foreclosing any of the options available to the Commission in the pending GESMO proceedings. In particular, we do not hold that a core-loading of mixed oxide fuel, in itself, constitutes a "major federal action" requiring NEPA review. Our decision in this case rests upon our judgment that the potential effects of the increased core loading proposed for this reactor raise questions which, when viewed against the background of present, unresolved concerns about the use of mixed oxide fuels, favor NEPA review.

We anticipate that many of the conclusions reached in the course of the GESMO proceedings will be directly applicable to any future uses of mixed oxide fuel. Thus, we do not decide whether NEPA assessments will be appropriate for similar actions once the Commission has decided how to bring the pending generic injury to a conclusion.

The NEPA review we require in this case need not await completion of the safeguards studies and GESMO, or cover the same ground being covered there, where the concern is with the *wide-scale* use of mixed oxide fuel. Use of Amendment No. 4 in this case would not in any sense give rise to wide-scale use of mixed oxide fuel. The increased use of mixed oxide fuel at Big Rock would not require the construction or licensing of any other facilities to support it pending completion of GESMO, and thus would result in no unnecessary "grandfathering". Nor would the use of Amendment No. 4 foreclose future safeguards options or future operational alternatives at the Big Rock facility, since it can readily be converted to use either uranium or mixed oxide fuel. Compare *Scientists' Institute for Public Information, Inc. v. AEC*, 481 F.2d 1079 (C.A.D.C. 1973). We find, therefore, that NEPA's requirements for the Big Rock facility's use of mixed oxide fuel as set forth in Amendment No. 4 can be met fully through a discrete environmental review.

The scope of the NEPA review in this case should, of course, be tailored to the possible environmental impact resulting from increasing the amount of plutonium in this one reactor. As noted above, Amendment No. 4 will not foreclose future safeguards options or future operational alternatives, either at Big Rock or elsewhere, Discussion of possible adverse environmental effects and alternatives to the proposed action can be limited accordingly. The statement need not, for example, discuss alternatives to plutonium recycle and other generic matters properly treated in GESMO.

If the Licensee chooses to prepare an environmental report, the NRC Staff will then prepare draft and final environmental impact statements, and the

Licensing Board may resume the hearing on the issues identified in its prehearing order dated August 7, 1974 (LBP-74-6, RAI-74-8-317, 320-322).²

Two final matters should be noted. First, although we concluded here that Amendment No. 4 may not be used until NEPA's requirements have been met and the associated hearing concluded, we would not consider the taking of the steps required to perfect the amendment in this case as giving rise to an "additional license" as that term is used in our provisional statement on GESMO (40 *Fed. Reg.* at 20143). We so conclude because of the unique circumstances of this case: mixed oxide fuel has been used at the Big Rock facility since 1969; an increase in authorized amounts will not cause unnecessary grandfathering; nor, as noted above, will it foreclose future operational alternatives or safeguards options.

Second, the Licensee also seeks a declaratory order concerning the effectiveness of a technical specifications change originally issued simultaneously with the amendment. The specifications change permitted use of fuel rod bundles in arrays of 11 x 11 instead of the previously utilized array of 9 x 9. The greater number of fuel rods per bundle increases the surface area for cooling purposes, with the result that the core temperature is substantially reduced and safe operation enhanced. The record before us does not show the extent to which Amendment No. 4 and the specifications change may be interdependent. But nothing in the present record suggests that the specifications change in question should have been subjected to NEPA review or that the change raises any significant hazards considerations. As reflected in the submissions of the parties, increased use of plutonium is the real focus of concern. For present purposes, then, the specifications change is effective, although it remains a possible issue before the Licensing Board in this proceeding.

It is so ORDERED.

By the Commission

SAMUEL J. CHILK
Secretary of the Commission

Dated at Washington, D. C.
this 11th day of August, 1975.

²NEPA itself does not require an agency hearing. The hearing requirement in this case is based upon the AEC's determination to consider the entire matter *de novo* and upon the Licensing Board's subsequent interlocutory determination that a hearing should have been held prior to issuance of the license. *Consumers Power Company* (Big Rock Point Nuclear Plant), RAI-74-3-297, 298. While that interlocutory order is technically not before us at this time, it will contribute to the orderly progress of this proceeding to note our agreement that a hearing is required.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

CLI-75-11

COMMISSIONERS:

Marcus A. Rowden
Victor Gilinsky
Richard T. Kennedy

In the Matter of

Docket No. 50-010

**COMMONWEALTH EDISON
COMPANY**

August 21, 1975

**(Dresden Nuclear Power
Station, Unit 1)**

Upon Applicant's request for an exemption from certain requirements of the ECCS Final Acceptance Criteria (FAC), the Commission finds that reactor can meet the performance requirements of the FAC but not the requisite method of meeting those requirements (*e.g.*, the requisite diversity and redundancy of power supply); and that, as in the case of previous variances from the Interim Acceptance Criteria which had been granted, heightened in-service inspection frequency, and other measures designed to increase the reliability of the present ECCS, as well as the extremely low probability of a loss-of-coolant accident occurring simultaneously with a loss of all offsite power, show good cause for the grant of the requested exemption.

Exemption granted, subject to specified conditions.

TECHNICAL ISSUES DISCUSSED: ECCS

MEMORANDUM AND ORDER

By letter dated June 18, 1975, Commonwealth Edison, operator of the Dresden Nuclear Power Station, Unit 1, requested "an exemption from 10 CFR 50.46 and any underlying requirement with respect to the design and diversity of emergency systems or the diversity of emergency power sources" until modifications to the reactor's Emergency Core Cooling System (ECCS) are completed. Notice of receipt of the exemption request was published on July 2, 1975 (40 *F.R.* 27986), and comments solicited from the public and the Commission's Director of Nuclear Reactor Regulation (Director). The only

comments received were those of the Director, dated July 21, 1975, who supports the request, having concluded that there is reasonable assurance that granting an exemption will not adversely affect the health and safety of the public and will be in the public interest.

By order of August 1, 1975, we extended the date by which operation of the Dresden facility must be in conformity with the ECCS acceptance criteria of 10 CFR 50.46 from August 2, 1975, to August 22, 1975. This extension was ordered so that we might carefully review Commonwealth Edison's exemption request and the supportive comments of the staff before making a final disposition of this request. Having completed that review, we find that it would be in the public interest to grant the requested exemption on the terms and conditions discussed below.

Commonwealth Edison's efforts to upgrade the ECCS capability of the Dresden reactor—first licensed for operation in 1960—have received close scrutiny by the staff of this Commission and that of its predecessor, the Atomic Energy Commission. See, Determination, dated June 28, 1974, extending July 1, 1974, date for compliance with Interim Acceptance Criteria (IAC) to August 5, 1974 (39 *F.R.* 24942); Determination, dated August 5, 1974, granting variance from IAC until September 1, 1976, and extending date for Final Acceptance Criteria (FAC) evaluation submittal until April 4, 1975 (39 *F.R.* 29611); Determination, dated April 3, 1975, further extending date for FAC evaluation submittal until August 2, 1975 (40 *F.R.* 16371). Each of these determinations granting variances or extensions of time with respect to actions associated with the upgrading of the Dresden I ECCS was predicated upon findings that reasonable efforts were being made to accomplish ECCS modifications at the earliest practicable date, and that continued operation of the reactor would not adversely affect the health and safety of the public.

These findings were premised upon two principal factors. First, since the reactor could meet the performance requirements of the IAC under most postulated accident conditions (though required redundancy of emergency cooling systems and power sources was missing), reliance was placed on the extremely low probability of a loss-of-coolant accident (LOCA) occurring simultaneously with a loss of all offsite power sources. Second, increased assurance with respect to the adequacy of protection was based upon (a) measures to detect primary coolant leaks or potential leaks before cracks could propagate appreciably, (b) trebled in-service inspection frequency, (c) technical specification modifications regarding the manner of operation and testing of the feedwater pumps to provide increased reliability, and (d) special reporting requirements with respect to continued efforts to upgrade the reactor's ECCS.

As required by the AEC's Director of Regulation, Commonwealth Edison submitted on November 1, 1974, a preliminary evaluation of the reactor's ability to comply with the FAC, not necessarily including all of the detail and

documentation called for by Appendix K, but nevertheless based on conservative assumptions and providing a conservative assessment of ECCS performance. A copy of that preliminary evaluation accompanied the instant exemption request.¹ That evaluation demonstrated that through the use of systems not designed as ECCS systems (e.g., the primary feedwater system), and by making the assumption that offsite power would be available in the event of a LOCA, Dresden 1 is able to meet the performance requirements (relating to peak cladding temperature, maximum cladding oxidation, maximum hydrogen generation, coolable geometry, and long-term cooling) of the ECCS criteria. Dresden 1 was equally capable of meeting the IAC. The requested exemption goes to the method of meeting the performance criteria (i.e., through diverse and redundant systems) rather than to the performance criteria themselves.

ECCS modifications currently under way include the addition of a high pressure coolant injection system (HPCI) to eliminate present reliance on the existing primary feedwater pumps and emergency condenser,² and the provision of diesel generators and associated equipment to improve the availability and reliability of onsite power for emergency core cooling systems. According to the affidavit of Dennis P. Galle accompanying the exemption request, the earliest realistic completion date for these modifications is the fourth quarter of 1977.³

The justification put forth for the requested exemption is the same as that relied upon for the grant of previous IAC variances. As noted, such variances rested not only upon the extremely low probability of a loss-of-coolant accident occurring simultaneously with a loss of all offsite power, but also upon heightened in-service inspection frequency, and other measures designed to increase the reliability of the present ECCS. We are persuaded that good cause has been shown for the grant of the requested exemption upon the following conditions:

(1) As requested, exemption is granted from the requirements of and underlying 10 CFR 50.46 with respect to the design and diversity of emergency systems or the diversity of emergency power sources, but not from the specific performance requirements of the FAC.

(2) Commonwealth Edison shall comply with such conditions now in

¹ The fully detailed evaluation required by Appendix K was submitted on July 31, 1975, and is currently being reviewed by the staff. Except for matters of redundancy and diversity covered by the exemption granted in this order, the Director of Nuclear Reactor Regulation may impose further restrictions on reactor operation in accordance with 10 CFR 50.46(a)(2)(v) as may be required to bring operation of the Dresden reactor into conformity with the performance requirements of the FAC.

² While these systems are essentially capable of handling the same problem during a postulated LOCA as the proposed HPCI, they are not specially designed to meet today's core cooling, single failure criteria, seismic, and quality assurance standards.

³ We note that for at least six months of the period for which an exemption has been requested, the reactor will not be operating because of a scheduled decontamination outage.

effect or which may hereafter be imposed by the Director of Nuclear Reactor Regulation relating to inspection, testing, or operating of the Dresden ECCS.

(3) Commonwealth Edison shall exert its best efforts to complete the proposed ECCS modifications at the earliest possible date.

(4) The exemption shall expire on December 31, 1977.

It is so ORDERED.

By the Commission

SAMUEL J. CHILK
Secretary of the Commission

Dated at Washington, D.C.
this 21st day of August, 1975.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ALAB-284

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Alan S. Rosenthal, Chairman
Dr. John H. Buck, Member
Dr. W. Reed Johnson, Member

In the Matter of
NORTHERN STATES POWER COMPANY
(Prairie Island Nuclear Generating
Plant, Units 1 and 2)

Docket Nos. 50-282
50-306

Messrs. Gerald Charnoff and Jay E. Silberg, Washington,
D. C., for the applicant, Northern States Power Company.

Ms. Sandra S. Gardebring, Roseville, Minnesota, for the
intervenor, Minnesota Pollution Control Agency.

Mr. Joseph Gallo, for the NRC Staff.

Upon consideration of memoranda filed in response to ALAB-285, Appeal Board concludes that some facets of the issue involved (steam generator tube integrity) have yet to be satisfactorily explored, that a further evidentiary hearing is necessary, and that the Appeal Board should conduct such hearing.

Supplemental initial decision (LBP-75-27) vacated; hearing ordered.

MEMORANDUM AND ORDER
August 11, 1975

In ALAB-275, NRCI-75/6 523 (June 2, 1975), *we sua sponte* brought to the attention of the parties our concern regarding certain aspects of the May 1, 1975 supplemental initial decision rendered by the Licensing Board in this operating license proceeding.¹ That decision dealt exclusively with the steam generator

¹ No exceptions to the supplemental initial decision (NRCI-75/5 501) had been filed by any of the parties.

tube integrity issue which, in ALAB-230, RAI-74-9 458 (September 25, 1974), we had remanded to that Board for the taking of additional evidence.

ALAB-275 called upon the parties to furnish us with their views respecting our analysis of the supplemental initial decision. The applicant, the NRC staff and the intervenor, Minnesota Pollution Control Agency (MPCA) have done so.² The applicant and the staff contend that the record is complete and that it fully supports the conclusions reached by the Licensing Board. They further urge that any gaps in the record which we nevertheless might find to exist can be filled by the submission of affidavits. MPCA, on the other hand, shares at least some of the concerns expressed in ALAB-275 and advocates an additional evidentiary hearing.

We have carefully considered the reasons assigned by the respective parties in support of their positions, and also have reevaluated both the supplemental initial decision and the record. Our conclusion is that, on the record now before us, the supplemental initial decision cannot be endorsed and that, before the important safety questions at hand may be laid to rest, a further evidentiary hearing must be held. In these circumstances, it seems appropriate that we conduct that hearing ourselves. We thus shall do so, on a time schedule established in Part II of this opinion.

I. THE UNRESOLVED CONCERNS OF THIS BOARD

A. Condensate Demineralization

ALAB-275 questioned, first, the validity of the Licensing Board's ultimate finding (NRCI-75/5 at 511) that "[t]here has been satisfactory operating experience both with and without demineralization"—*i.e.*, no matter whether the AVT (no demineralization) or the ZST (demineralization) water treatment method were employed.³ This finding was in line with an earlier finding that "[t]he reactor experience with AVT steam generator chemistry without condensate demineralization gives confidence that the Prairie Island steam generators can be operated without any significant corrosion." *Id.* at 504. The applicant and the staff tell us that the results of the operation of the Maine

² Another intervenor, Steve J. Gadler, did not file a memorandum in response to ALAB-275. In view of that fact, and the additional consideration that he did not take an appeal from the supplemental initial decision, we deem Mr. Gadler to be no longer an active participant in this proceeding.

³ See footnote 5 in ALAB-275, NRCI-75/6 at 525. Both the AVT and ZST methods are to be distinguished from the sodium phosphate treatment method also discussed in ALAB-275. *Id.* at 524.

Yankee, Shippingport, Fort Calhoun and Obrigheim (West Germany) facilities⁴—all referred to by the Licensing Board—justified these findings. Our review of the record leaves us unconvinced that this is so.

1. It is quite true that Maine Yankee has operated for several years employing the AVT method and has encountered no steam generator tube leakage problems. But that facility uses sea water for condenser cooling purposes. On cross-examination at the remand hearing, the principal staff witness testified that most of the dissolved solids in sea water are “not essentially dangerous from the point of view of causing stress corrosion to Inconel tubing” and “further, the high concentration of chlorides in sea water makes detection of a condenser leak rather simple.” Supp. Tr. 172.⁵ If this is so, the Maine Yankee experience is not totally applicable to a facility, such as Prairie Island, which does not use sea water.

2. The Shippingport facility abandoned the phosphate treatment method in August 1971. From that time until it was shut down for modification in February 1974 (a period of 30 months) it used the AVT method.⁶ Fort Calhoun commenced operation in September 1973 and has employed the AVT method throughout. As of the rendition of the supplemental initial decision, no steam generator leakage had been detected at either facility.⁷

Insofar as the record discloses, however, no tube inspections (by eddy current surveillance or otherwise have been performed at Shippingport or Fort Calhoun. In this circumstance, the most that can be confidently said is that there has not been sufficient tube corrosion to cause leakage. But this does not necessarily mean that significant corrosion has not taken place. To the contrary, as will be developed shortly (p. 201, *infra*), experience teaches that a tube wall may erode to the point of rupture without prior detectable leakage.

3. Insofar as the Obrigheim facility is concerned, the Licensing Board found that, during its seven years of operation without condensate demineralization, stress corrosion cracking had proceeded at an annual rate of 5%. NRCI-75/5 at 504. To be sure, this falls within the 5%–7% annual corrosion rate which a staff witness characterized as “typical” for reactors employing the AVT method.⁸

⁴ These facilities, in common with the others considered below in connection with the condensate demineralization question, do not have steam generators of the Prairie Island (Westinghouse) design.

⁵ As noted in ALAB-275, NRCI-75/6 at 529, condenser leakage is the major source of impurities in the secondary system.

⁶ Weeks, Supplemental Testimony, following Supp. Tr. 139, at pp. 9-11.

⁷ *Id.* at pp. 4, 10.

⁸ Weeks, *supra*, at p. 14.

But it is far from clear to us that such a rate is *de minimus* and that therefore it makes no difference from a safety standpoint whether demineralization is employed or not. Rather, the Obrigheim experience (coupled with the staff testimony regarding what is “typical”) would seem to point in precisely the opposite direction.

Among other things, an annual corrosion rate as high as 5%–7% forces undue reliance to be placed upon the ability of surveillance techniques to assure that seriously degraded tubes are found and repaired. Additionally, such a rate could have the effect of markedly increasing the radiation exposure of plant personnel by requiring more frequent tube inspections and repairs.⁹

4. The supplemental initial decision makes no reference to the unfavorable AVT experience at the Swiss reactor Beznau-1, although that experience had been offered at the original hearing in this case to demonstrate the superiority of the phosphate treatment method over the AVT method (Tr. 1842, 1864). Perhaps the Licensing Board was influenced by the suggestion of a staff witness at the remand hearing that the Beznau-1 extensive tube corrosion was tied to “massive condenser leaks” occurring at the facility¹⁰—a suggestion emphasized by the applicant and the staff in their memoranda to us. It appears, however, from the graphic presentation at page 11 of the report of the April 1973 Westinghouse Steam Generator Symposium¹¹ that tube leakage and repair had taken place some time *prior to* the development of “massive condenser leaks.” Thus, we are not as ready as are the applicant and the staff simply to brush the Beznau-1 experience aside as being the product of an aberrational situation not likely to be repeated at Prairie Island.

B. Detectable Leakage Before Tube Failure

One of the questions considered below on the remand was whether, prior to the actual rupture of a steam generator tube, minor detectable leakage from that tube will occur—thus providing an early warning of tube degradation which might lead to a rupture. On this score, the Licensing Board found:

The wastage type of corrosion has not been observed with AVT. The type of defect which could potentially occur would be cracking due to *intergranular stress corrosion*. *The proposed 1.0 gpm limit on steam generator leakage from the primary coolant system to the secondary coolant system will maintain an adequate margin of safety against failure due to loads imposed by design basis accidents.* Leakage in excess of 1 gpm would require plant shutdown, eddy current inspection and plugging of the leaking tubes. A leak

⁹ See Westinghouse Steam Generator Symposium (April 1973), following Tr. 1878, at p. 27.

¹⁰ Weeks, *supra*, at p. 21.

¹¹ See fn. 9, *supra*.

rate of 1 gpm corresponds to a through-wall crack of less than 0.6 inch in length. Steam generator tubes of the type used at Prairie Island having a through-wall crack 0.6 inch long have been shown to resist failure both under normal operating conditions and at pressures above those resulting from postulated steam-line break and loss-of-coolant accidents. *The proposed 1.0 gpm leak rate limit provides an adequate margin to maintain the primary to secondary boundary under design basis accident conditions.*

NRCI-75/5 at 506; emphasis supplied.

It may well be that this finding was justified by the testimony of the staff witnesses cited by the Licensing Board in support of it. *Ibid.* But a recent report in connection with the Point Beach 1 tube failure incident last February, an incident specifically discussed in ALAB-275 (NRCI-75/6 at 526), casts substantial doubt upon whether the finding can now be allowed to stand without further inquiry. That report was transmitted in letter form to the NRC staff by the Wisconsin Electric Power Company (the Point Beach 1 licensee) on June 26, 1975—and thereafter furnished by the staff to this Board and the other parties to the proceeding. It indicates (taken in conjunction with earlier reports)^{1 2} that (1) the tube rupture occurred suddenly without prior detected leakage; (2) that, after the incident, numerous other tubes were found to have experienced corrosion which penetrated in excess of 80% of their wall thickness (here, again, no leakage had been earlier discerned); and (3) although the precise nature of the defects in the ruptured and other corroded tubes is not known, they well may have been intergranular in character. It is significant that, although attempting generally to dismiss the Point Beach 1 tube rupture incident as having no bearing upon the issue of the integrity of the Prairie Island tubes, the applicant and the staff do not offer any reason why the absence of detectable pre-rupture leakage at Point Beach 1 is of no importance in this case.

C. Sufficiency of Eddy Current Surveillance

In ALAB-275, we questioned whether Regulatory Guide 1.83 set forth a sufficiently precise description of what is required for effective eddy current testing. By way of response, the staff reminds us that we are not called upon here to embark upon a generic consideration of the adequacy of that Guide but, rather, simply to determine whether the Prairie Island Technical Specifications relating to eddy current testing are satisfactory. In this connection, both the staff and the applicant maintain that it would be inappropriate for these Technical Specifications to go into considerable detail respecting eddy current testing procedures.

^{1 2}NRC I & E Inspection Report No. 050-266/75-03 (dated April 11, 1975); Licensee Event Report No. 50.266/75-4 (dated March 8, 1975).

Assuming the correctness of this view, the fact remains that central to the Licensing Board's ultimate resolution of the steam generator tube integrity issue was its conclusion that the eddy current technique is efficacious. And at least a shadow has been cast upon that conclusion by the Point Beach 1 tube rupture incident.

The steam generator tubes of that reactor, essentially identical to those of Prairie Island, underwent eddy current testing nine months prior to the incident. Presumably, all tubes then determined to have experienced corrosive wall thinning of 30% or more were plugged. Yet, the further eddy current testing conducted in the wake of the rupture reflected that 148 unplugged tubes had defects extending to more than 50% of their wall thickness¹³—and that in the case of many of these tubes the penetration was in “the 80–89% bracket.” See ALAB-275, NRCI-75/6 at 532. Given this development, it would seem that one of two conclusions must be drawn. Either the eddy current tests in April and May 1974 did not provide accurate results or a corrosion mechanism was at work during the period between May 1974 and February 1975 which attacked certain tubes at a rate of approximately 5% of wall thickness *per month*. But the latter alternative seems unlikely in view of the staff's observations below that, as a plant in the process of switching from phosphate to AVT chemistry control, on a “worst case” basis Prairie Island 1 would not have encountered a corrosion rate in excess of 2.7% per month.¹⁴ As observed in ALAB-275, NRCI-75/6 at 531, Point Beach 1—in common with Prairie Island 1—converted from the phosphate treatment method to the AVT method last fall.

ALAB-275 also made reference (fn 14) to the fact of record that, although an eddy current inspection of the Beznau-2 steam generator tubes had disclosed only “minor” flaws, a subsequent visual inspection following removal uncovered noticeable thinning. Since it appears that the facility was not in operation between the two inspections, this set of circumstances as well may reflect adversely upon the reliability of eddy current testing.

D. Monitoring of Secondary Water Chemistry

ALAB-275 had suggested the possible need to supplement conductivity monitoring of the secondary water with periodic chemical monitoring of the generator blowdown. The applicant and the staff insist that provision has already been made for such chemical monitoring. We are referred by the applicant to page 9.4-4 of Amendment 27 to the FSAR (December 22, 1972). It appears, however, that, as there described, the applicant's program does not include monitoring for those elements contained in the condenser cooling water (subject

¹³ Attachment 1 to Licensee Event Report No. 50-266/75-4A, dated June 26, 1975.

¹⁴ Pawliki Affidavit, October 11, 1974, p. 2; Kintner Affidavit, October 11, 1974, p. 4. These affidavits were supplied to the Licensing Board on the date of their execution.

to leakage into the secondary system) which may produce deposits on the steam generator tubes and thereby cause corrosion.

In a footnote in its memorandum, the applicant tells us that "[i]n-plant procedures also call for the routine non-automatic sampling of such parameters in steam generator blowdown as free hydroxide, sodium, chlorine, pH, silica, ammonia, dissolved oxygen, gross beta gamma, tritium, iodine-131, suspended solids and cation conductivity." If these procedures were pursued with specific reference to the corrosive elements in the condenser cooling water, they likely would be satisfactory. But there is no existing requirement that they be invoked. Neither the FSAR nor the Prairie Island Technical Specifications deal with them at all.

Although a staff witness expressed the view that secondary water chemistry is not an appropriate subject for "regulatory control" through Technical Specifications (Supp. Tr. 280, 282-84), it seems to us that essential monitoring procedures should be formalized. If not necessarily in agreement on whether the AVT or ZST method was preferable, virtually all of the witnesses acknowledged that high purity water is the first echelon of defense against corrosion.

E. Tube Plugging Criteria

With regard to the criteria for determining when a tube has become degraded to the point that its wall thickness is no longer acceptable and it therefore must be plugged, the Licensing Board found:

The minimum acceptable tube wall thickness was established as 0.025 inch using the principles outlined in Regulatory Guide 1.83. In establishing the minimum acceptable tube wall thickness, the NRC Staff assumed that, in addition to the margins necessary to assure that tube integrity would be maintained if a loss-of-coolant accident or a steam-line break is postulated, margins should also exist to assure that three requirements would be fulfilled; namely: (1) tubes with unacceptable defects would not be stressed during the full range of normal reactor operation beyond the elastic range of the tube material, (2) the factor of safety against failure by bursting under normal operating conditions is not less than three at any tube location where defects have been detected, and (3) crack-type defects that could lead to tube rupture either during normal operation or under postulated accident conditions would not be acceptable (Knight, pp. 7-8, following Tr. 135).

. . .

The proposed revisions to the Technical Specifications for the facility will adequately protect the integrity of the steam generator tubes against forces associated with postulated loss-of-coolant accidents, steam-line breaks, and accidents of lesser severity.

NRCI-75/5 at 510, 511.

ALAB-275 raised several questions respecting the record underpinnings for these findings. The responses received from the applicant and the staff have not eliminated those questions.

1. As noted in ALAB-275, NRCI-75/6 at 530, the testimony of staff witness Knight (relied upon by the Board below) was largely based upon a Westinghouse report (WCAP-7832) which was not introduced into evidence. That report contained the results of dynamic analyses for Westinghouse Model D steam generator tubes under the influence of combined Loss of Coolant Accident (LOCA) and Safe Shutdown Earthquake (SSE) forces. What concerned us was whether the witness had adequately explored, in the course of reaching his conclusions on minimum acceptable tube wall thickness, (1) the applicability of the analysis made by Westinghouse on the Model D tubes to the larger tubes found in a 51 Series generator (which is the type utilized by the Prairie Island facility); and (2) the dynamic forces associated with a steam-line break.

On the first point, we are referred to Mr. Knight's statement that "*Westinghouse maintains that the 51 Series tubes . . . are sufficiently similar [to the Model D tubes] to allow meaningful conclusions to be drawn*".¹⁵ Standing alone, that statement scarcely constitutes proof that such is the case. Nor do we find sufficient support for the proposition in WCAP-7832. While that document does refer to both types of generators, and does use previously calculated dynamic behavior of 51 Series generators as input, the results of stress calculations are presented only for the smaller, Model D tubes. If stress calculations have been made for the 51 Series tubes, that fact has not been brought to our attention.

Turning to the question of dynamic forces attendant to a steam-line break, the applicant notes, *inter alia*, that such forces were considered in the discussion of the steam-line break contained in the FSAR. But that very discussion was the genesis of our fluid-force concerns in this case. See ALAB-275, NRCI-75/6 at 530. For it discloses the following with regard to tubes which were assumed, for purposes of the analysis, to be virtually non-degraded by corrosion (*i.e.*, a reduction in wall thickness of but 0.0013 inch):

Consideration has been given to the superimposed effects of secondary side pressure loss and the DBE loading. The fluid dynamic forces on the internal components affecting the primary-secondary boundary (tubes) has been considered as well. For this condition, the criterion is that no rupture of primary to secondary boundary (tubes and tube sheet) occurs.

¹⁵ Knight, Supplemental Testimony, following Supp. Tr. 133, at p. 4 (emphasis supplied).

For the case of the tube sheet, the DBE loading will contribute an equivalent static pressure loading over the tube sheet of less than 10 psi (for vertical shock). Such an increase is small when compared to the pressure differentials (up to 2485 psig) for which the tube sheet is designed. Under horizontal shock loading of the DBE the stresses are less than those for 1.0g gravity loading experienced in a horizontal position, which the design can readily accept.

The fluid dynamic forces on the internals under secondary steam break accident conditions indicate, in the most severe case, *that the tubes are adequate to constrain the motion of the baffle plates with some plastic deformation, but boundary integrity is maintained.* (Emphasis supplied).

FSAR, p. 4.3-6 (Amendment 11, September 20, 1971).

The FSAR being a part of the record, it is difficult to perceive any basis upon which we could justifiably ignore this indication that non-degraded tubes under the influence of fluid forces resulting from a steam-line break will undergo "plastic deformation" (*i.e.*, be subjected to stresses beyond the yield point). In this connection, contrary to the claims of both the applicant and the staff, we find nothing in Mr. Knight's testimony on which a different conclusion might be reached; *viz.*, that the fluid forces associated with a steam-line break are insignificant.¹⁶

II. THE FURTHER EVIDENTIARY HEARING

For the reasons above outlined, and those set forth in ALAB-275, we have determined that the record once again must be reopened on the steam generator tube integrity issue. We have further determined, albeit with some regret, that another evidentiary hearing is unavoidable.

It is quite true, as the staff notes, that we have in the past allowed a gap in the record of a licensing proceeding to be filled by the submission of affidavits.

¹⁶The applicant and the staff both insisted in their memoranda to us that Mr. Knight reached conclusions on the dynamic effects of a steam-line break and that these conclusions were founded upon an October 31, 1974 Supplement to WCAP-7832. In point of fact, Mr. Knight cited this document only as a source for the results of collapse and burst pressure tests. Knight, Supplemental Testimony, following Supp. Tr. 133, at p. 4. Moreover, we do not take his testimony as advancing any conclusions on this specific matter. It appears that the applicant and the staff may have confused "pressure" with "dynamic" forces. As we understand it, the forces resulting from simple pressure differentials are deemed "static". "Dynamic" forces are those associated with rapidly varying and possibly periodic phenomena such as fluid-flow induced vibrations, seismic motion, shock waves and the like. For the LOCA-SSE combination analyzed in WCAP-7832 such forces provide by far the major portion of the loading. [See Figure 3.1-11.].

Texas Utilities Generating Co. (Comanche Peak Steam Electric Station, Units 1 and 2), ALAB-260, NRCI-75/2 51 (February 26, 1975). But the two cases are scarcely comparable. *Comanche Peak* involved the narrow and relatively simple question of the agricultural potential of certain land which the applicant proposed to devote to a large cooling reservoir. What we allowed to be furnished in affidavit form was nothing more than the staff's independent evaluation of the nature and quality of that land. NRCI-75/2 at 56. In sharp distinction, this case involves ultimately a difficult, highly technical safety issue having many facets to it. It is inconceivable that that issue might be properly considered and decided without the availability of the witnesses for not only cross-examination by other parties but also interrogation by the members of this Board.

Accordingly, we will commence an evidentiary hearing at 10 a.m. on *Monday, October 20, 1975* in Minneapolis, Minnesota.¹⁷ The participants in that hearing will be the applicant, the NRC staff and (if it so desires) the MPCA. The direct testimony of the witnesses who will appear on behalf of each party is to be served and filed in written form no later than *Friday, October 3, 1975*.¹⁸

The evidentiary hearing will encompass, of course, all of the areas of concern identified in ALAB-275 and Part I of this opinion. We will expect, therefore, the applicant and/or the staff to adduce evidence germane to each such area. Although it would be inadvisable to limit to any extent the reach of that evidence, in light of what has been said to this point at least the following questions should be addressed.

1. With respect to secondary-side water treatment techniques:

a. In the interest of (1) assuring the highest practicable degree of safety of the plant throughout its lifetime; (2) minimizing radiation exposure to the public and to plant personnel; and (3) maximizing the potential for reliable operation of the plant to the end of its projected lifetime, why should not condensate demineralization be required in conjunction with the all-volatile water treatment method?

b. What data have been obtained from the controlled experimental programs in the area of secondary water treatment which were mentioned during the remand hearing (Frank, Testimony, following Supp. Tr. 220, at pp. 14 and 15)? Is there any recent operating history in connection with PWRs that provides further relevant data on AVT or ZST?

Although quoted in the applicant's memorandum, the WCAP-7832 Supplement is not in the record and has not been made available to us or MPCA.

¹⁷ The parties will be subsequently advised of the precise location of the hearing.

¹⁸ In light of the fact that the issues to be heard are sufficiently well-defined and that no further discovery is contemplated, we perceive no necessity for a prehearing conference. It is likely, however, that we will initiate a telephone conference with counsel on or about October 15 for the purpose of discussing and finalizing such procedural matters as the order in which the several sub-issues will be heard.

c. In the course of the investigation of the Point Beach 1 tube rupture incident, what types of corrosion were found? With respect to the specific tube which ruptured, what was the type of corrosion discovered and why was there a sudden failure of that tube?

d. Given the prime importance of maintaining water purity as a means of minimizing tube corrosion, what is the basis, if any, for not requiring a Technical Specification on monitoring of secondary water quality?

2. With respect to the methods by which the condition of the generator tubes can be ascertained—*i.e.*, whether clean, corroded or eroded:

a. In view of the Beznau-2 and Point Beach 1 experiences, what degrees of confidence can one have in present-day eddy current surveillance techniques?

b. In the staff's inspection report on the Point Beach 1 incident (*i.e.*, Inspection Report No. 050-266/75-03 dated April 11, 1975) the following statement appears on page 6:

Photographs of ECT displays indicate some evidence of possible intergranular attack at the sludge/water interface and classical phosphate wastage at the bottom of the sludge layer close to the tube sheet.

Was the equipment at Point Beach 1 consistently able to differentiate between intergranular and wastage corrosion?¹⁹ If so, is the equipment at Prairie Island also able to make this differentiation? If the Point Beach equipment was capable of making the differentiation, should not a like capability be made a specific requirement in the Prairie Island Technical Specifications?

c. Precisely what pressure and leakage tests are, or could be, performed during outage periods, by which weakened tubes might be identified?

d. Are there surveillance methods other than eddy current testing which might be employed to detect the existence of potentially corrosive conditions within a steam generator, *e.g.*, steam generator blowdown sampling and analysis correlated with power maneuvering to detect possible dissolution of deposits?

3. With regard to the establishment of criteria for determining whether a particular degraded tube should be plugged:

a. Have analyses been performed to determine the minimum wall thickness required in 51 Series steam generator tubes subject to static and dynamic forces following a LOCA or secondary system break combined with a nominal SSE?

¹⁹In this connection, the NRC staff's principal witness on eddy current techniques expressed serious doubt that eddy current testing is able to differentiate between cracks and wastage due to erosion (Supp. Tr. 245).

b. If such analyses have been performed, (1) did they consider the fact that intergranular attack due to flow stagnation and mechanical stresses under accident conditions may both be concentrated near tube support members; (2) did they consider the fatigue effect of cyclic loading forces; (3) would their results be altered significantly were embrittlement to accompany some forms of corrosion; and (4) did they consider the ovality of tubes, and the extent to which tubes in service may depart from the maximum ovality specifications adhered to during fabrication?

4. With regard to plant personnel radiation dosages:

a. What typical values of radiation exposure can be expected for persons engaged in eddy current testing, steam generator tube plugging, and analyses of secondary water samples?

b. With what frequency might the foregoing procedures have to be undertaken in a facility which employed the AVT method? Which employed the ZST method?

The supplemental initial decision of May 1, 1975 is *vacated* and the steam generator tube integrity issue is set down for a further evidentiary hearing in accordance with this opinion.²⁰ The outstanding operating licenses for Units 1 and 2 of the Prairie Island facility are being left in effect pending further order of this Board.

It is so ORDERED.

FOR THE ATOMIC SAFETY AND
LICENSING APPEAL BOARD

Margaret E. DuFlo
Secretary to the Appeal Board

²⁰ Needless to say, it is for the parties and not this Board to determine precisely who will be called upon to testify at that hearing. It seems obvious, however, from the nature of the questions which are to be explored that the witnesses produced by the applicant and the staff should include at minimum persons (1) thoroughly grounded in eddy current surveillance techniques; and (2) intimately familiar with the investigation of the Point Beach I type rupture incident and the disclosures resulting from that investigation.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ALAB-285

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Alan S. Rosenthal, Chairman
Dr. John H. Buck, Member
Dr. W. Reed Johnson, Member

In the Matter of
GEORGIA POWER COMPANY
(Alvin W. Vogtle Nuclear
Plant, Units 1 and 2)

Docket Nos. 50-424
50-425

Mr. George F. Trowbridge, Washington, D. C., for the
applicant, Georgia Power Company.

Mr. Henry J. McGurren for the NRC Staff.

Upon applicant's request for a remand of the proceeding to allow the Licensing Board to conduct a supplemental hearing on its applications for amendments to the existing construction permits for Units 1 and 2 (seeking change of ownership and extension of completion dates), Appeal Board (1) remands the proceeding for such purpose, and (2) orders oral argument on the question whether the hearing may embrace issues not directly related to the proposed amendments.

MEMORANDUM AND ORDER

August 12, 1975

In June 1974, the Georgia Power Company obtained, upon Licensing Board authorization, permits to construct four units of the Vogtle facility. In September, 1974, at which time our *sua sponte* review of the Licensing Board's action was in progress, the applicant announced it had cancelled Units 3 and 4 and had suspended construction of Units 1 and 2. To abide the event of the

applicant's decision whether to go forward with the latter units, we put the case on the shelf.

When nine additional months had elapsed without any further word from the applicant, we issued ALAB-276, NRCI-75/6 533 (June 11, 1975). That order raised the question whether the outstanding construction permits for Vogtle Units 1 and 2 should be allowed to remain in effect pending the applicant's determination as to the fate of those units.

1. Responding to that question, the applicant has now advised us that it contemplates the sale of a total 82.4% undivided ownership interest in each of the two units. The intended purchasers are the Oglethorpe Electric Membership Corporation (50.1%), the Municipal Electric Authority of Georgia (30%) and the City of Dalton, Georgia (2.3%). The applicant would retain the remaining 17.6% ownership interest in each unit and also "would retain responsibility for design, construction and operation of the units, including responsibility for compliance with NRC licenses and regulatory requirements".

According to the applicant, the resumption of construction of Units 1 and 2 is dependent upon the consummation of the sale—which, in turn, is "contingent upon the execution of contracts satisfactory to all parties, upon completion of financing arrangements by the purchasing entities and upon necessary regulatory approvals, to be followed by a formal closing of the sale". On the assumption that the formal closing of sale will take place in January, 1976, onsite construction activities are currently scheduled to resume on April 1, 1976. The applicant represents that "[n]o significant site work will occur (except for any further erosion control or other measures necessary to protect environmental values) prior to that time".

In light of the foregoing developments, the applicant has filed an application for an amendment to the Units 1 and 2 construction permits to reflect the new proposed ownership arrangements. It has also applied for two-year extensions of the earliest and latest construction completion dates which are now fixed in those permits. We are asked by the applicant to remand the proceeding to the Licensing Board to allow that Board to conduct a supplemental hearing on these two permit amendment applications once the staff has completed its own review of them.

In the applicant's view, that hearing should be confined to the issues specifically raised by the proposed permit amendments. In other words, according to the applicant, the hearing should not address any changed circumstances since the issuance of the construction permits for Units 1 and 2 in June 1974 which are not directly related to the proposed amendments. This is so whether or not the unrelated changed circumstances might either (1) bear materially upon the warrant for those units; or (2) require the imposition of additional conditions or the modification of existing conditions upon those permits. The applicant's reasoning is that:

At this point Applicant is the holder of valid construction permits for Vogtle Units 1 and 2 and is seeking from NRC amendments to those permits changing the ownership of these units and extending their completion dates. Similar amendments requested by other licensees have been processed under the Commission's regulations based solely on the financial qualifications and eligibility of the new owners and good cause for the extension of completion dates. While we think it appropriate in this proceeding, where the Initial Decision of the Licensing Board has not yet become final, to remand the proceeding to the Licensing Board to consider the amendment requests, we see no reason to expand the scope of the Board's inquiry beyond the matters normally considered in connection with such amendments.

The staff sees the matter quite differently. It agrees that the Licensing Board should conduct a supplemental hearing on the proposed amendments to the construction permits for Units 1 and 2. But, in its view, the hearing should be "broader in scope than merely the consideration of" those amendments. Rather, we are told, it should be open to the Board to delve into *any* "changed circumstance" which may have arisen since the construction permits issued. This is because this proceeding is

one which is still in progress and in which there has been no final Commission action. With the case in that posture, . . . any change which is relevant and material to the adjudication should be brought to the attention of the Appeal Board and Licensing Board.

2. We are prepared now to rule that, as both parties agree, there should be a supplemental hearing conducted by the Licensing Board on at least the proposed construction permit amendments. Needless to say, in accordance with the teachings of *Brooks v. AEC*, 476 F 2d. 924 (D. C. Cir. 1973), appropriate public notice of the supplemental hearing will have to be provided to enable any person whose interest may be affected by the sought construction permit amendments to seek leave to intervene.

We desire to hear oral argument, however, before resolving the disagreement between the parties on the question as to whether the supplemental hearing might appropriately encompass issues beyond those raised by the proposed amendments. Accordingly, that question is hereby calendared for such argument at 10:00 a.m. on Thursday, September 4, 1975 in the Appeal Panel Hearing Room, 5th floor, East West Towers, 4350 East-West Highway, Bethesda, Maryland 20014. The applicant and the staff will be heard in that order; each party is allotted one hour for its presentation.¹

¹The argument will *not* include the question previously raised by this Board concerning the Licensing Board's conclusion in its June 27, 1974 initial decision that it was not necessary for the Vogtle particulate radioactivity monitoring system to be designed to withstand a safe shutdown earthquake. LBP-74-48, 7 AEC 1166, 1175. This question very likely will become moot in light of the applicant's decision, recently communicated to us, to install a system which was so designed.

The proceeding is therefore *remanded* to the Licensing Board for the purpose of conducting a supplemental hearing on at least those issues which are directly raised by the pending applications of the applicant for amendments to its construction permits for Units 1 and 2.² Whether the hearing may encompass additional issues unrelated to the proposed amendments will be determined by subsequent order of this Board, which will be issued at as early a date as is practicable following September 4, 1975. In the interim, the effectiveness of the construction permits is not being disturbed; *provided*, however, that no significant site work (except as may be required for erosion control or to protect the environment) shall be undertaken without 10 days advance notice to this Board.

It is so ORDERED.

FOR THE ATOMIC SAFETY AND
LICENSING APPEAL BOARD

Margaret E. DuFlo
Secretary to the Appeal Board

²The applicant suggests that the Licensing Board should be free to decide the issues relating to the proposed change in ownership without awaiting "the completion of all of the formal actions necessary to put the financing plans into effect". We agree with the staff that the Licensing Board may proceed on that basis only if a sufficient record is developed to enable a fully informed decision on all such issues.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ALAB-286

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Alan S. Rosenthal, Chairman
Dr. John H. Buck, Member
Michael C. Farrar, Member

In the Matter of

Docket No. 50-376

PUERTO RICO WATER RESOURCES
AUTHORITY

(North Coast Nuclear Plant
Unit 1)

Mr. Robert H. Culp, Washington, D. C., for the applicant,
Puerto Rico Water Resources Authority

Mr. Gonzalo Fernos, Santurce, Puerto Rico, intervenor
pro se

Upon appeal from interlocutory order of Licensing Board granting interven-
tion petition but, *inter alia*, rejecting specific contentions of intervenors, Appeal
Board rules that because intervenors' petition was not denied outright, their
interlocutory appeal is foreclosed by the Rules of Practice.

Appeal dismissed.

RULES OF PRACTICE: APPELLATE REVIEW

An interlocutory order of a licensing board which, *inter alia*, grants
intervention but rejects certain contentions advanced by the intervenors is not
appealable. See 10 CFR §2.730(f) and 10 CFR §2.714a.

DECISION

August 26, 1975

The Licensing Board has granted the amended petition of Gonzalo Fernos and Citizens for the Conservation of Natural Resources, Inc. (CCNR) for leave to intervene in this construction permit proceeding involving Unit 1 of the North Coast Nuclear Plant. In an order entered on August 6, 1975, that Board ruled upon several motions filed by these intervenors, as well as upon the acceptability of the contentions advanced in the amended intervention petition. Dissatisfied with certain of the Board's determinations, Mr. Fernos and CCNR have noted an appeal to us.

10 CFR 2.730(f) contains a general prohibition against interlocutory appeals from licensing board rulings made during the course of a proceeding. The single exception to this prohibition is found in 10 CFR 2.714a. Insofar as a petitioner for intervention is concerned, that Section allows an appeal from an order concerning his petition if—but only if—the order denied the petition outright.¹ Although Mr. Fernos and CCNR attempt to invoke Section 2.714a here, it is plainly inapplicable since their intervention petition was granted at least in part.

In the circumstances, the appeal must be dismissed as foreclosed by the Rules of Practice of this Commission. *Boston Edison Co.* (Pilgrim Nuclear Generating Station, Unit 2), ALAB-269, NRCI-75/4R 411, 413 (April 28, 1975) and cases there cited. We therefore do not reach the question of the correctness of the August 6 order; the Licensing Board remains free, however, to consider and act upon the motions now pending before it for reconsideration of portions of that order.

Appeal *dismissed*.²

It is so ORDERED.

FOR THE ATOMIC SAFETY AND
LICENSING APPEAL BOARD

Romayne M. Skrutski
Secretary to the Appeal Board

¹ Under Section 2.714a, the grant of an intervention petition in whole or in part may be appealed only by a party asserting that the petition should have been denied in its entirety.

² Concurrently with the notation of their appeal, Mr. Fernos and CCNR requested an extension of the time within which to file their supporting brief. It clearly appearing from the papers already filed by them with us that an impermissible interlocutory appeal was involved, we saw no warrant for putting Mr. Fernos and CCNR to the time and expense required to brief the merits of their disagreement with the August 6 order.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

LBP-75-43

ATOMIC SAFETY AND LICENSING BOARD

Thomas W. Reilly, Chairman
Frederick J. Shon, Member
Dr. Robert L. Holton, Member

In the Matter of

Docket Nos. 50-450
50-451

DELMARVA POWER & LIGHT COMPANY and
PHILADELPHIA ELECTRIC COMPANY

August 1, 1975

(Summit Power Station,
Units 1 and 2)

Upon application for construction permits for Summit Power Station, Units 1 and 2, Licensing Board, in uncontested proceeding (but in which three interested states participated) issues a partial initial decision on environmental and site suitability aspects of the facility, making factual determinations requisite for the issuance of LWAs and requiring that certain environmental conditions be imposed.

NEPA: SCOPE OF INFORMATION REQUIRED FOR LICENSING

The environmental impacts of the fuel cycle supporting a proposed facility must be considered in the licensing of high temperature gas reactors as well as light water-cooled reactors and these impacts are not identical to those for light water reactors. See: *Douglas Point*, ALAB-218, RAI-74-7 79 (July 15, 1974).

NEPA: RULE OF REASON

A rule of reason governs an agency's assessment of environmental costs of a proposed project. In analyzing such costs, an agency need not use the most conservative assumptions.

FWPCA: SECTION 401 CERTIFICATION

It is within a state's authority under Section 401 of the FWPCA to impose conditions in its water quality certification relating to plant intake as well as discharge. All appropriate state-imposed conditions must be included as

conditions in any federal permit or license. See: *FitzPatrick*, ALAB-173, RAI-74-1 45 (Jan. 29, 1974).

APPEARANCES

Donald P. Irwin, Esq., and F. Case Whittemore, Esq., of Hunt, Williams, Gay & Gibson, Richmond, Va., E. Dickerson Griffenberg, Esq., of Potter, Anderson and Corroon, Wilmington, Del., For the Applicant, Delmarva Power & Light Co., et al.

Michael Parkowski, Esq., Deputy Attorney General, Dover, Del., For the State of Delaware.

Mark L. First, Esq., Deputy Attorney General, Trenton, New Jersey, For the State of New Jersey.

Barbara Gellman, Esq., Spec. Asst. to the Atty. Gen., Edward F. Lawson, Esq., and Dr. Paul D. Massicot, For the State of Maryland.

Stephen H. Lewis, Esq., Thomas M. Bruen, Esq., and Frederic S. Gray, Esq., Office of the Executive Legal Director, U. S. Nuclear Regulatory Commission, Washington, D. C., For the NRC Regulatory Staff.

PARTIAL INITIAL DECISION (PARTIAL CONSTRUCTION PERMIT PROCEEDING—ENVIRONMENTAL MATTERS AND SITE SUITABILITY ONLY)

I. INTRODUCTION

On August 31, 1973, the U. S. Atomic Energy Commission¹ published a Notice of Hearing on Application for Construction Permits (38 *F. R.* 23547) with respect to the application filed by Delmarva Power & Light Co. and Philadelphia Electric Company ("Applicant") for construction permits to build two high temperature gas-cooled nuclear reactors (HTGRs), to be known as the

¹ In accordance with the Energy Reorganization Act of 1974, 88 Stat. 1233, the Atomic Energy Commission has been abolished and its regulatory responsibilities have been assumed by the U. S. Nuclear Regulatory Commission.

Summit Power Station, Units 1 and 2, at its site² in New Castle County, Delaware. The notice set forth the requirements pursuant to the Atomic Energy Act of 1954, as amended, and the National Environmental Policy Act of 1969 to be met prior to the issuance of construction permits. The notice also provided that any person whose interests might be affected by the proceeding could file a petition for leave to intervene, in accordance with the requirements of 10 CFR §2.714, not later than October 1, 1973, and also further notified interested persons that they could file requests for limited appearances pursuant to the provisions of 10 CFR §2.715.

Though the notice set forth all the issues which must be considered and decided by this Board to determine whether construction permits should be issued to the Applicant, this Partial Initial Decision addresses *only* the environmental issues specified by 10 CFR Part 51 and the site suitability issues specified by 10 CFR §50.10(e)(2). An initial decision on the radiological health and safety issues, and this Board's ultimate decision on issuance of the construction permits, will not be issued until after the conclusion of further public hearings on the radiological health and safety aspects of this application.

Pursuant to the Commission's Notice, requests to participate in the hearing as an "interested State" under 10 CFR §2.715(c) were filed by the States of Delaware, Maryland, and New Jersey. The petitions were unopposed. By order dated March 8, 1974, this Board granted the requests of the States of Maryland and New Jersey. The Board conducted a Prehearing Conference in the courtroom of the U. S. District Court in Wilmington, Del., on April 25, 1974, at which counsel for the State of Delaware also appeared. Delaware's request to participate was granted in the Board's Prehearing Conference Order dated May 15, 1974. The Prehearing Conference Order also ruled that the proceeding was uncontested within the meaning of 10 CFR §2.4(n) and that all of the requests to make limited appearances at the evidentiary hearing had been granted.

Although this is not technically a "contested" proceeding, all three participating States have aggressively raised issues of interest to them and filed testimony thereon. Delaware's testimony centered upon the regional impact of radiological effluents from the various nuclear power plants either operating, under construction, or planned, which are located within 50 miles of the proposed Summit Power Station. (Del. Ex. 1). New Jersey filed testimony on state emergency plans. (N.J. Exs. 1-4). Maryland filed testimony on the

²The proposed plant is to be located about 1.2 miles south of the Chesapeake & Delaware (C&D) Canal in New Castle County, Delaware about 5 miles northeast of Middletown, Delaware and 15 miles southwest of Wilmington, Delaware. Each unit is designed for operation at a power level of 2,000 megawatts thermal (MWt) and a net electrical output of 766 megawatts electrical (MWe).

potential for the entrainment of striped bass by the proposed facility. (Md. Ex. 1). We will treat the issues raised by the States in this initial decision.

In addition to the issues raised by the participating States, the Board independently posed questions to the parties. (Prehearing Conference Order, dated May 15, 1974, p. 9; Board's letter of July 19, 1974, to the parties). In response to our questions, the Nuclear Regulatory Commission Staff ("Staff") and the Applicant filed testimony. The extensive (bound) testimony of the State of Maryland on striped bass entrainment (Md. Ex. 1) is also responsive to one of our questions and has been considered in formulating this initial decision.

The Board's July 19, 1974, letter to the parties requested additional information in certain areas, specifically, the impact of the plant on striped bass, the effect of cooling tower blowdown on the C&D Canal, the meaning of the term "as-low-as-practicable" with regard to radioactive effluents from the plant, the exposures and hazards of shipping HTGR fuel as compared to LWR fuel, the details of shipping spent fuel from the Summit station, alternative accidents which could cause in-leakage of moisture to the primary coolant, the discount rate used in the benefit-cost analysis and the environmental effects of the HTGR fuel cycle.

In our July 19, 1974, questions to the parties we also requested briefs on whether we had to consider in this proceeding the environmental impacts of the HTGR fuel cycle supporting the Summit facility. We believed that the decision of the Atomic Safety and Licensing Appeal Board in the *Douglas Point* proceeding (*Potomac Electric Power Co.*, ALAB-218, RAI-74-7 79, July 15, 1974) contained persuasive reasoning for the consideration of such impacts in the licensing of HTGRs as well as light water-cooled reactors considered there. The briefs of the Nuclear Regulatory Commission Staff ("Staff") and the Applicant confirmed our belief and we, accordingly, directed the Staff to prepare testimony on the environmental effects of the fuel cycle supporting the Summit facility. (Tr. 69-70).

On August 1, 1974, pursuant to the Board's notice of hearing dated July 1, 1974 (39 *F. R.* 24944), the evidentiary hearing was convened in Wilmington, Delaware for one day to receive the oral statements of limited appearance speakers. The Board made a visit to the proposed plant site (by air) in the late afternoon of August 1, 1974. The hearing was reconvened on August 20, 1974, for the purpose of receiving the evidence and cross-examination of the parties and interested States. The evidentiary hearing was recessed on August 22 to allow the parties additional time to prepare supplemental testimony on certain issues.

On April 22, 1975, pursuant to the Board's Notice of Resumption of Hearing dated March 24, 1975 (40 *F. R.* 14123), the evidentiary hearing was reconvened in Wilmington, Delaware and concluded May 2, 1975. Two additional limited appearance statements were received during the April 29 session.

The record in this case consists of the transcripts³ covering the hearings for presentation of testimony and limited appearances on August 1 and August 20–22, 1974, and April 22–25 and 29–30, and May 2, 1975, and certain exhibits. On June 10, 1975, the Applicant, Staff and the interested States filed a Stipulation and Joint Motion for Assignment of Exhibit Numbers to Documents Introduced During Environmental Hearings. On June 16, 1975, by its Order Granting Motion, the Board accepted the Stipulation and its listed designations. The list of documents attached to that Stipulation and Joint Motion appears as Appendix A [Appendix A is omitted from this publication but is available at NRC's Public Document Room, Washington, D. C.] to this Partial Initial Decision. The documents received into the record will either be cited herein by exhibit number, as designated in Appendix A, or by abbreviations of their titles, such as PSAR, ER, or FES.

Pursuant to the provisions of 10 CFR §51.52(c) of the Commission's regulations and the notice of hearing in this proceeding,⁴ this Board must make the following determinations with respect to environmental matters:

(1) determine whether the requirements of section 102(2)(A), (C), and (D) of NEPA and [10 CFR Part 1] have been complied with in this proceeding;

(2) independently consider the final balance among conflicting factors contained in the record of the proceeding for the permit with a view to determining the appropriate action to be taken;

(3) determine after weighing the environmental, economic, technical, and other benefits against environmental and other costs, and considering available alternatives whether the construction permit . . . should be issued, denied, or appropriately conditioned to protect environmental values;

(4) determine, [since this is] an uncontested proceeding, whether the NEPA review conducted by the Commission's . . . staff has been adequate.

Additionally, pursuant to 10 CFR §50.10(e)(2)(ii), the Board must find with respect to site suitability that:

. . . based upon the available information and review to date, there is reasonable assurance that the proposed site is a suitable location for a nuclear power reactor of the general size and type proposed from the

³There are eleven transcript volumes, with pages running from 1 to 2020. However, the April 25, 1974, prehearing conference, having been conducted sans benefit of court reporter, is not reflected in any transcript. Rather, the proceedings were memorialized in the Board's May 15, 1974, Prehearing Conference Order, which, in turn, was the result of the commendable, cooperative assistance of all counsel in recalling specifics and submitting written summaries to the Board after the conference took place.

⁴The notice of hearing referred to the requirements of Appendix D to 10 CFR Part 50. Appendix D was subsequently superseded by the publication of a new Part 51 to 10 CFR. (39 *F. R.* 26279, July 18, 1974).

standpoint of radiological health and safety considerations under the [Atomic Energy] Act and rules and regulations promulgated by the Commission pursuant thereto.

This partial initial decision is not controlling upon and is without prejudice to the health and safety findings which must be made under the Atomic Energy Act of 1954, as amended, before construction permits can be issued.

II. FINDINGS OF FACT ON ENVIRONMENTAL MATTERS

Environmental Report and Final Environmental (Impact) Statement

1. Pursuant to Appendix D, 10 CFR Part 50 (now 10 CFR Part 51), the Applicant submitted an Environmental Report on April 30, 1973, its supplement on July 30, 1973, and seven amendments thereto. This Environmental Report, together with its supplement and amendments, hereinafter collectively referred to as "ER", were admitted into evidence as Applicant's Exhibit 1. The ER contains detailed information and evaluations of the environmental impacts associated with the construction and operation of the facility.

2. Based on the information submitted by the Applicant in the ER and on its own independent review and analysis, the Staff prepared a Draft Environmental Statement (DES) which was issued March 1974. Copies of the DES, with requests for comments, were sent to appropriate Federal, State and local agencies. A Notice of Availability of the DES, with requests for comments, was published in the *Federal Register* on March 26, 1974 (39 *F. R.* 11217). The Staff then prepared a Final Environmental Statement (FES) (Staff Ex. 1), which was issued in July 1974. A Notice of Availability of the FES was published in the *Federal Register* on July 16, 1974 (39 *F. R.* 26059). Comments received from agencies, organizations, private persons and the Applicant were considered in the FES, and a meaningful discussion of these comments was included therein (FES, App. H).

3. The FES covers in detail the environmental impacts of the construction and operation of the Summit Power Station. It contains a detailed description of the site and the plant, with a discussion of the impact of the site preparation and plant and transmission line construction. In addition, the FES deals with the environmental and other effects of plant operation, discusses environmental monitoring programs and assesses the environmental effects of accidents. The FES contains a detailed evaluation of the proposed action including consideration of the need for power, the adverse environmental effects which cannot be avoided, the relationship between local short-term uses of man's environment and maintenance and enhancement of long-term productivity, and irreversible and irretrievable commitments of resources. The FES gives due consideration to the Summit facility's compliance with environmental quality standards and

requirements imposed by responsible federal, state, regional and local agencies. It further contains a review of alternative energy sources and sites and plant designs available for reducing or avoiding adverse environmental and other effects, and, finally, provides a cost-benefit analysis. The FES contains a summary of its evaluations and concludes, after weighing the environmental, economic, technical and other benefits of the Summit Power Station, Units 1 and 2, against environmental and other costs and considering available alternatives, that the action called for under NEPA and Appendix D to 10 CFR Part 50 (now 10 CFR Part 51) is the issuance of construction permits for the plant subject to certain conditions for protection of the environment.

4. The Board finds that the FES (Staff Ex. 1), as supplemented by the testimony and evidence presented by the Staff in this proceeding, referenced in Appendix 1 hereto, is an adequate and comprehensive review and evaluation of the environmental impact resulting from plant construction and operation. Further, the Board finds that the FES, as so supplemented, sets forth an adequate evaluation of all alternatives to the proposed action as to which evaluation reasonably may be required.

5. The Board has made additional findings as set forth below, respecting those specific environmental impacts and alternatives to the proposed plant considered in the ER, and in the FES, as supplemented, which warrant further consideration in this decision.

Impact of Construction

6. The unavoidable environmental impacts to the site during construction have been considered. The total plant site will consist of approximately 1,800 acres of land. Of this total, approximately 272 acres will be utilized for both permanent plant facilities and temporary construction facilities. Of the 272 acres, approximately 176 acres of farmland and 1 acre of forest will be removed from those uses for at least the lifetime of the plant and instead will be used for plant areas. The remainder of the acres used during construction will be returned to other uses after plant completion. (ER §4.1.2.1; FES §4.1.1). The Applicant and Staff concluded that the small loss of acreage due to plant construction was insignificant on a regional basis (ER §4.3.5; FES §11.3.16).

7. Except for the development of production wells, the only water use impacts during construction will be of a temporary nature and will result from dredging and excavation of an estimated 6,500 cubic yards of bottom material from the C&D Canal for construction of the intake and discharge facilities and from site dewatering necessary to produce essentially dry excavations for the installation of foundations and underground facilities. (ER §§4.1.3, 4.1.3.1, Appl. Ex. 46, Fig. 4; FES §4.2.1). Since flow velocity is appreciable in the C&D Canal and this volume of dredging is insignificant compared to that which the U. S. Corps of Engineers carries out almost continuously, no ordinary use of the

canal will be affected except for fishing and boating in the immediate construction area (ER §4.1.3.3; FES §4.2.1). The effects of dewatering should extend no more than 1000 feet from the main building area excavation (ER §4.1.3.1; Hydrological Q.9-1) and are expected to have negligible impact (FES §4.1.1). If adverse effects are found, the Applicant will take mitigating action (FES §4.2.1).

8. The existing site, even though used primarily for agricultural purposes, is essentially free from any major soil erosion problem. Some minor wind and water soil erosion has been taking place annually during the time between harvest and reseeding. During the construction phase, erosion will be controlled by construction of a temporary interception trench and impounding basin to catch dirt-laden rainwater runoff. Dust will be controlled during dry periods by water spraying. Roadway surfaces will be water sprayed and/or oiled as appropriate. (ER §4.1.2.8; FES §4.3.1).

9. Construction of the plant is not expected to have any long-term adverse consequences on the terrestrial biota in the area, except that some potential bog turtle (*Clemmys muhlenbergi*) habitat may be destroyed. No specimens of this rare, but not endangered, species have been found on the site. (ER §4.1.2.7, Supp. 4.3, Table 3; FES §4.3.1, App. D, Table D-1). No other sensitive resource will be lost. Only 33 wooded acres will be cleared. Terrestrial biota in this wooded area will be displaced to other adjoining areas where they may or may not survive, or if nonmotile, will perish. Except for the 177 acres which will be occupied by facilities or landscaped areas for the lifetime of the plant, when the construction program is complete, it is expected that the wildlife population will naturally return to a size equal to or greater than the preconstruction size because in effect the entire 1,800 acre site will become a protected area in that it will be posted to prohibit hunting.

10. There will be some temporary impact on the aquatic environment in the C&D Canal caused by sedimentation from the dredging and installation of the cooling water intake and discharge facilities. Because of high flow velocity and already existing maintenance dredging, this impact will be negligible and relatively short-lived. (ER §4.1.3.3, 4.1.2.8, Q.4.3-(1); FES §4.2.1, 4.3.2). Cleaning solutions used to flush and clean various pieces of equipment and piping will be neutralized in the chemical waste treatment system and sent to the impoundment basin where they will not be discharged until applicable State of Delaware water quality criteria have been met (ER §4.1.3.2; FES §4.3.2).

11. Approximately 320 acres of land are necessary for the new transmission line rights-of-way, of which 220 acres must be acquired by the Applicant. The remaining acreage is either on the site or on the present Penn Central Railroad right-of-way. The new transmission line routes which have been selected will extend 17.5 miles with all but approximately 1 mile of this total being land presently under cultivation. The vegetation on the 1 mile portion is similar to the vegetation on the site. Although farming activities on the rights-of-way will

be curtailed during construction, they may be resumed thereafter except on the land occupied by tower bases. (See ER §§4.2-4.2.5; FES §§4.1.2, 4.2.2, 4.3.1 and 4.5.1).

12. The impact of the work force and increased traffic during construction was considered. (ER §§8.2, 8.3, 8.6.4; FES §§4.4; 10.4.1).

13. The Applicant has made a number of commitments to limit the adverse environmental effects of construction of the facilities. A summary of these commitments is set forth in FES §4.5.1.

14. The Board has considered the unavoidable impacts of construction, including the impacts on land use and water use, on the terrain, the terrestrial ecosystem and the aquatic environment, and on the community, and finds that the Applicant plans appropriate measures and controls to minimize such impacts.

Impact of Operations

15. A maximum of 48.0 cfs will be withdrawn from the C&D Canal. Of this, 14.6 cfs will be returned to the canal as blowdown from the two cooling towers and the remainder will be evaporated during cooling tower operation. The maximum net usage of canal water, 33.4 cfs, is small compared to the average tidal flow (35,000 cfs) and average net nontidal flow (over 2000 cfs) and will have a negligible effect. (ER §5.1.1; FES §§5.2, 11.2.1, 11.2.4.4). The station will also use 0.3 cfs of groundwater for plant internal uses. The Staff concluded this withdrawal will not affect local domestic supplies, and the Board so finds. (FES §§5.2, 11.2.1).

16. Fog occurs naturally in the area of the Summit Power Station more than 1,200 hours per year. Of this total, 118 hours (distributed among 41 days) are of heavy fog (visibility less than 0.25 miles), 395 hours are of light fog (visibility from 0.25 to 2 miles) and 714 hours are of very light fog (visibility greater than 2 miles). (ER §5.1.8.2; FES §5.3.1). The Applicant estimates that the cooling tower plume contacting the ground will cause a maximum of 2.3 additional hours of heavy fog and 2.0 hours of icing in the localized area within 5 kilometers of the cooling towers and lesser amounts at greater distances. (ER §5.1.8.2, Figs. 5.1-2, 5.1-3, §Q.5.1-(12)). The Staff estimated the maximum additional fog to average 4 hr/yr at 0.5 mile from the towers (FES §11.2.3.1). Thus, the fan-assisted natural draft towers will cause virtually no additional ground level fogging or road icing (ER §§5.1.1, Q.5.1-(11); FES §§11.2.2, 11.2.3.2, 11.2.4.2). The Staff does not expect observable effects from the interaction of the cooling tower plumes with industrial plumes (FES §11.5.3). Dissolved salt swept up in the plume from the cooling towers will be deposited in the surrounding area. The Applicant calculated that the maximum deposition rate, at 1.2 miles from the towers, would be 3.36 lb./acre-year. This deposition rate is small compared to the background salt deposition rate, which is expected to be

approximately 14.4 lb./acre-year, and compared to the 100 lb./acre-year rate below which it is reported no damage to plant life or structures will occur. Thus, it is expected that the salt deposition from the fan-assisted natural draft towers will cause no significant effect on vegetation or corrosion of structures. (ER §5.1.1, 5.4.4; FES §11.3.16, 5.5.2).

17. Over 98.5% of the plant's waste heat will be dissipated to the atmosphere by the cooling towers. The remainder of the waste heat, less than 1.5%, will be released to the C&D Canal with the cooling tower blowdown. (FES §5.3.1). The blowdown water will pass through a 30-inch diameter conduit with the outlet end in the form of a nozzle so the blowdown water will enter the canal as a submerged jet (ER §3.4.3; FES §3.4.3). Exclusive of the mixing zone, the blowdown water will not increase the temperature of the canal water more than 1.5°F in the summer and 3.5°F in the winter (ER §5.1.3, Table 5.1-3, Figs. 5B-3 to 6; FES §5.3.4). The Applicant calculated that, during the worst summer conditions, the 1.0°F isotherm of the thermal plume will enclose 0.066 acres on the surface and, during the worst winter conditions, the area within the 3.0°F isotherm will be 0.033 acres on the surface (ER §5.1.3, Table 5.1-5). The Staff analyzed the effects of a rising plume, a neutral plume and a sinking plume and concluded that the Applicant's analysis, which is limited to a rising plume, is probably conservative (FES §5.3.2). These mixing zone areas are small with respect to the width of the canal and the surface area of the canal at the station discharge (ER §5.1.3, Table 5.1-5). The increase in canal water temperature in the far field will usually be imperceptible because of the high flows and good flushing action normally present in the canal (FES §5.3.4). The blowdown discharge will constitute less than 0.05% of the average tidal flow and will affect only a small fraction of the life in the C&D Canal. (ER §5.1.5, Q.5.1-(3); FES §11.2.4.3). The Staff concluded that, under extreme atmospheric conditions, passive organisms involved in the near-field mixing zone may suffer temperature induced mortality, but the overall average loss is expected to be less than one-tenth that due to entrainment and could well be considerably less (FES §5.5.2.1 at 5-25 to 5-28, 11.3.7). The Staff has concluded the blowdown discharge will meet the thermal criteria of the Delaware water quality standards and will not produce a measurable change in the Maryland canal waters, which begin 5 miles west of the discharge pipe (FES §5.3.3, 5.3.4).

18. Evaporative losses in the cooling towers, which would increase the concentration of the dissolved solids in the canal water used as circulating water, were analyzed by the Staff and Applicant and they are expected to have no significant effects on canal biota. (See ER §3.6.1, 3.6.2, 5.4.1; FES §5.3.4, 5.5.2.1 at 5-28, 11.2.4.3; Appl. Ex. 49, p. 4.) Any chlorine effect will be limited to planktonic organisms which drift into the discharge plume, and larger organisms which may be attracted to the heated plume in certain seasons of the year. To reduce any effects from this chlorination, the total residual chlorine to be discharged into the environment is limited to 0.1 ppm. Since the real time

measurement of total residual chlorine at levels as low as 0.1 ppm is technically so difficult, the Board believes that the following *condition* must be imposed. To ensure this maximum level of total residual chlorine of 0.1 ppm is not exceeded, the Applicant shall not discharge blowdown from the cooling tower basin during chlorination and for 1½ hours after the termination of each chlorination period. Applicant already had planned to operate in this fashion, see Appl. Ex. 49, p. 4.⁵ Since this level will be decreased by dilution with waters of the C&D Canal, such discharge should have no detectable effect on the biota in the canal.

19. Sulfuric acid and a scale dispersant may be added to the circulating water to maintain water quality. Evaporation from the cooling towers will concentrate these chemicals along with the other chemical ions in the canal water (ER §§3.6.1, 5.4.2; FES §3.6). The Applicant concludes and the Board concurs that, since the discharge plume will occupy approximately 5% of the canal cross section, the sulfuric acid and scale dispersant discharged will cause a small effect on nonmotile organisms which pass through the plume but will have an overall minimal impact (ER §5.4.3). Copper corroded from the condenser tubes will appear in the blowdown discharge (FES §11.3.3; Tr. 598–599). Due to the low salinity in the canal water during the spawning and nursery season for striped bass and most other fish, the copper concentration will be lowest during this critical period. The effects of the copper discharged will be sub-lethal and limited to those organisms that enter the near-field mixing zone, which contains higher concentrations of copper relative to the ambient water (FES §5.5.2.1 at 5-29).

20. The Applicant and Staff have assessed the potential effect of impingement of aquatic organisms on the ¾-inch mesh traveling screens on the Summit intake structure (Appl. Ex. 6, pp. 2, 20, Figs. 2–5; ER §3.4.2; FES, p. 5-24). Although no quantitative prediction of its extent can be made, the sustained swimming speeds of most species commonly found in the canal, including striped bass, are above 0.5 fps (FES, p. 5-24). In addition, fish escape channels will be placed ahead of the screens, and there will not be any forebay which might entrap fish. Because of these factors, both the Applicant and the Staff concluded that impingement would not be a significant problem at the Summit station (ER §5.1.6; FES, p. 5-24), and the Board concurs in this conclusion.

21. Passive and substantially passive organisms small enough to pass through the ¾ inch mesh on the screens will be subject to entrainment; organisms entrained are likely to suffer virtually 100% mortality as a result of combined mechanical, thermal and chemical shock. Such organisms include bacteria, algae, zooplankton, planktonic stages of benthic organisms, and fish eggs and larvae

⁵On biocidal treatment of circulating water, see ER §§3.6.1, 5.4.2; FES §5.5.2.1, at 5-29. On chlorine, see Supplemental Testimony of NRC Staff on Chlorine Discharge, at 2-7, 10-11 and 13-4; Tr. 541, 1486; Appl. Ex. 49, at 5-7; FES §5.3.2 at 5-8, 5.5.2.1 at 5-29, 11.3.2, 11.3.7.

and perhaps young juveniles. Given that all types of entrainable organisms except fish are relatively evenly distributed throughout the canal, the Staff calculated that, given repeated passes in front of the Summit intake, less than 2% of such organisms would be entrained; the Applicant also estimated that a small percentage of such organisms would be entrained (FES, p. 5-20; ER §5.1.7).

22. Of the fish species potentially subject to entrainment, the striped bass is the only important one that uses the canal to any extent as both a spawning area and a nursery ground (FES, p. 5-20), although dozens of other fish species, most common among them the white perch, bay anchovy and spot, are found at various life stages in the canal, according to sampling data reported by the Corps of Engineers and the Applicant's biological consultants, Ichthyological Associates (ER §5.1.7; Appl. Ex. 5, Table 3; FES, pp. 5-20-5-24). The Applicant's calculation of entrainment losses to the most valuable of these species other than striped bass, the white perch, using 1972 and 1973 egg and larval density data from a sampling station at the proposed intake location, and assumed survival rates and replacement values, was less than \$500 per year (ER §5.1.7) in terms of equivalent reduction annually to the adult white perch population. No testimony suggested the likelihood of any irreversible adverse effect to the populations of these various species, and the Board finds that there will be none.

Effect of Summit Operation on Striped Bass

23. The Summit station intake structure will be located on the south bank of the Chesapeake and Delaware Canal, approximately two miles east of Summit Bridge (Appl. Ex. 46, pp. 2, 20, Figs. 2-5). It will be equipped with $\frac{3}{8}$ inch mesh traveling screens, through which approximately 42.5 cfs of water on the average will be drawn during normal operation into the Summit station's circulating water system. Intake approach velocity will be approximately 0.44 fps at design low water level using maximum makeup flow rate; with more normal water elevations and makeup flow rates, the intake approach velocity will be less (ER §3.4.2; FES, p. 5-25). Aquatic organisms small enough to pass through the traveling screens would be subject to entrainment (being drawn through the screens and into the plant's circulating water system); aquatic organisms too large to pass through the screens and not sufficiently motile to escape against the approach velocity will be subject to impingement on the screens.

24. The potential effects of entrainment of striped bass eggs and larvae in the Chesapeake and Delaware Canal were evaluated in detail by the Applicant, the Staff and the State of Maryland on the record in this proceeding. See also ER §5.1.7, DES §5.5.2.1, FES pp. H-50 through H-55. The importance of the canal as a spawning site was also recognized by the Environmental Protection Agency, which recommended that the Applicant explore all viable means for the reduction of entrainment impacts (FES pp. H-55, 59, 60). In its Final

Environmental Statement, the Staff calculated that 4.5% of the striped bass eggs and larvae in the canal might be entrained annually, but stated that because of several unquantified factors, the figure calculated might be either an overestimate or an underestimate of the potential loss (FES p. iii). The Board, in a letter dated July 19, 1974, asked the parties for further illumination of the issue of entrainment of striped bass eggs and larvae by the Summit Station. The Applicant and Maryland filed testimony on August 9, 1974, in response to this request; Staff counsel advised the Board at the hearing session of August 20, 1974 (Tr. 67) that the Staff would not be able to present testimony on striped bass entrainment at that set of hearings. The hearings recessed on August 22, 1974, for, *inter alia*, preparation of further testimony on this issue by all parties. Supplemental testimony filed subsequently by the Applicant, the Staff and the State of Maryland dealt in detail with the following aspects of the striped bass entrainment issue: (1) the nature and extent of striped bass spawning in the canal region; (2) the amount by which the Summit Station's operation would likely deplete any year's recruitment of eggs and larvae produced in the canal region; (3) the yearly loss caused by the plant measured in pounds of adult striped bass; (4) the value in dollars per pound of the annual loss of adult fish; and (5) the cost-effectiveness of various alternatives to reduce any such impacts. The Applicant's testimony on these issues was set forth in eight supplemental testimony filings: Applicant's Exhibits 45-48 and 54-56. The Staff's supplemental testimony consisted of two filings with errata: the testimony of Christensen *et al.* ("Christensen testimony"), relating to biology and mathematical modeling of entrainment effects, and that of Knighton, relating to the costs and benefits of mitigating alternatives. Maryland's supplemental testimony consisted of four filings: Maryland Exhibits 1 through 4. Cross-examination on this testimony occupied the entire or principal portion of five hearing days (April 22-25, May 2) and a portion of a sixth (April 29). The Boland rebuttal testimony and Perl redirect-rebuttal testimony were admitted into evidence by the Board following the end of evidentiary hearing sessions, pursuant to stipulation among the parties ("Ruling Admitting Striped Bass Testimony into Evidence Pursuant to Stipulation. . .," 3 June 1975).

25. The parties are all in agreement that operation of the Summit Power Station will *not* cause irreversible long-term damage to the striped bass population (Appl. Ex. 48, p. 6; Staff: Christensen *et al.*, pp. xi-xii; Md. Ex. 1, p. 30). The estimated impact as calculated by all parties is of the order of a 1% reduction or less in the affected population (Appl. Ex. 48, p. 6; Md. Ex. 1, p. 5-6).

26. A loss of this magnitude may nonetheless have substantial economic and recreational consequences. The principal contentions among the parties center on:

- (a) Whether the loss is in fact negligible due to action of biological compensatory mechanisms.

(b) The value in dollars per pound of the potential recruitment to the fishery destroyed by the plant, if the loss is not offset by compensatory mechanisms.

(c) The desirability of some alternative intake system or other mitigating device to further reduce the aquatic impact, based on either a benefit-cost analysis or on general considerations of placing a limit on the maximum allowable local entrainment loss within the C&D canal system.

27. The Board directed the following comment to the Staff:

The present treatment of the impact of the plant on striped bass, characterized as it is by the statement "... [the calculation of the local depletion factor] may be either an overestimate or an underestimate of potential loss..." (FES, p. iii), cannot form an adequate basis for the required environmental assessment. We will need more information on this matter. (Board letter, dated July 19, 1974).

28. The language cited by the Board was based upon several factors of importance in the calculation of the local depletion factor which the Staff was not able to quantify in the FES. (Staff Ex. 1, pp. 5-21-5-22). The factors identified by the Staff were: (1) enlargement of the canal, (2) possible flow control structures, (3) age differential at the plant site, (4) uneven lateral distribution of larvae in the canal, (5) drift and migration out of the canal and (6) avoidance of the intake by juveniles. (Id.). The Staff (Christensen, *et al.*), the Applicant (Appl. Exs. 45-48) and the State of Maryland (Md. Ex. 1) filed testimony in response to the Board's request for further information. In addition to addressing the local depletion factor, the parties attempted to estimate the annual loss to the striped bass fisheries and the benefits and costs of alternatives to mitigate the predicted losses. We will address, below, not only the factors affecting local depletion, but also the additional matters raised by the parties.

29. The testimony of Staff witness Christensen, *et al.* (following Tr. 1551) addressed two major questions:

1. Will the operation of the Summit Station, as proposed by the Applicant, result in an irreversible reduction in striped bass populations in the Chesapeake Bay and Delaware Bay system (Chesapeake-Delaware System)?

2. What is the likely loss in the total striped bass fishing catch due to the operation of the Summit Station, as proposed by the Applicant, and what are the bounds of that loss? (Christensen, pp. ix-x).

30. To answer the first question the Staff employed the following methodology. (Christensen, p. 1-8). The Staff first developed an estimate of the annual local depletion factor (LDF) in the Chesapeake & Delaware (C&D) Canal. (Id.) Then the canal contribution factors to the Delaware and to the Chesapeake were estimated. (Id.) A life-cycle model was next introduced to assist in

estimating the long-term impact of the station. (Id.) When the local depletion factor was multiplied by a canal contribution factor and a scaling factor for population impact from the life-cycle model, estimates of the effect of Summit on striped bass populations in Delaware Bay and Chesapeake Bay were generated. (Id.)

31. The Staff then undertook to calculate the total annual catch of striped bass that could be lost as a result of operation of the Summit Power Station. (Christensen, pp. 1-8-1-9).

32. The Staff made three numerical estimates for each of the factors outlined above (Christensen, p. 1-9). The Case A estimate is the minimum expected value, the Case C estimate is the maximum expected value, and the Case B estimate is the arithmetic mean of minimum and maximum expected values. (Id.) The Board endorses the use of ranges of values in view of the uncertainties involved in these calculations.

33. Each of the parties to this proceeding has presented at least one model for estimating the local depletion factor and the resulting loss to the Chesapeake-Delaware system. Additionally, Maryland provided a description of a new "hydrological-biological model" on which it is working (Md. Ex. 1, pp. 14-17, I-21-I-32), and the Staff commented upon its most recent modeling work, which involves further modifications to Maryland's "modified Delmarva model". (Tr. 1381).

34. The Staff's model for striped bass is conceptually a completely mixed, closed system model of the canal region and the contiguous Elk River region. A total computational period of 90 days is assumed for the time for striped bass to develop from eggs to non-entrainable juveniles. (Christensen, pp. 2-10-2-11).

35. The Delmarva model (Appl. Ex. 46) also estimates the production of striped bass eggs over time in the canal region and a portion of the Delaware River. The model calculates the number of 91-day-old bass produced with and without the plant in operation. The difference between these two values is then taken as the local depletion factor.

36. Maryland's model (Md. Ex. 1) is a modification of the Delmarva model, with natural departure of striped bass eggs and larvae from the canal used as a specific input. When flushing and migration are assumed to be zero this model is conceptually almost identical to the Staff's striped bass model and produces similar results.

37. Based upon the application of its striped bass model and consideration of the factors of uncertainty identified in the FES, the Staff concluded that the local depletion factor would be in the range of 0.5% to 5%. (Christensen, pp. 2-9-2-10). Maryland's predicted range is 1% to 5%. (Md. Ex. 1, p. 4). The Applicant's model produced local depletion factors ranging from 0.171% to 7.467% (Appl. Ex. 46, p. 20), but the Applicant considered 0.995% to 2.002% to represent a realistic range of local depletion factors. (Id., p. 23).

38. The modeling work undertaken by the parties has focused upon the factors of uncertainty identified in the FES. (Staff Ex. 1, pp. 5-21–5-22). It now appears that the factors of greatest importance are lateral distribution of larvae, which would tend to increase the local depletion factor, and drift and flushing, which would tend to decrease the local depletion factor. (Tr. 1455). In the Staff's opinion, if the parties are able to further quantify drift and flushing as opposed to lateral distribution, the likely effect would be to decrease the local depletion factor. (Id.).

39. The predominant effect of enlargement of the canal, which has now been completed, is expected to be an increase in flushing, which would tend to decrease the local depletion factor. (Christensen, p. 2-2; Tr. 1455). Since the Staff is not aware of any present plans by the Corps of Engineers to install flow control structures in the canal, no further consideration was given to the possible effects of such structures. (Christensen, p. 2-2). We conclude that the parties have substantially narrowed the uncertainties associated with the calculation of the local depletion factor. We consider the range of local loss estimated by the Staff (0.5% to 5%), and substantially concurred in by Maryland, to provide a workable, reasonable and conservative figure for use in the Board's environmental assessment. The Applicant's figure (0.995% to 2.002%) is not so greatly different for an estimate that includes the consideration of so many variables (the Staff chose 2.75% as its "baseline" case).

40. Both the Staff (Christensen, Ch. 8) and Maryland (Md. Ex. 1, pp. 58-61) developed projections of the reduction in yield to the Mid- and North Atlantic striped bass fisheries due to operation of the Summit Power Station. The first step in both of these analyses was the determination of the percentage contribution of the C&D Canal region (including the Elk River) to Chesapeake Bay striped bass recruitment (Christensen, Ch. 4; Md. Ex. 1, pp. 35-52). The Staff divided its analysis into three subcategories: (1) the fraction of upper Chesapeake Bay (above the Bay Bridge) recruitment that originates in the canal region, (2) the fraction of Middle Chesapeake Bay (including the Potomac) recruitment that originates in the upper Chesapeake Bay, and (3) the fraction of the Chesapeake Bay system (including both Maryland and Virginia) recruitment that originates in the Middle Chesapeake Bay (Christensen, p. 4-1). Maryland's analysis was divided into considerations of (1) the contribution of the C&D Canal region to upper Chesapeake Bay recruitment (Md. Ex. 1, pp. 39-52), and (2) the contribution of upper Bay spawning to Middle Chesapeake Bay recruitment. (Id., pp. 36-39).

41. Based on ichthyoplankton and juvenile sampling studies, the Staff estimated the fraction of upper Bay recruitment that originates in the canal region would fall in the range of 25% (Case A) to 75% (Case C), with a Case B value of 50%. (Christensen, p. 4-5). Maryland estimated that the range would be 50 to 100%. (Md. Ex. 1, pp. 51–52). Considering that substantial numbers of eggs, larvae, and juveniles have been collected in areas of the upper Bay outside

of the canal region (Christensen, pp. 4-2-4-5), we find that it would be unreasonable to assign an upper value for the canal contribution to the upper Bay of 100% and we believe that a reasonable minimum estimate could be as low as 25%. Accordingly, we adopt the Staff's estimated range of 25% to 75%.

42. The Staff and Maryland are in substantial agreement on the contribution of upper Bay spawning to Middle Bay recruitment. The Staff estimated that that would be in the range of 20% (Case A) to 50% (Case C), with a Case B value of 35%. (Christensen, p. 4-11). Maryland's estimate was 40%. (Md. Ex. 1, p. 39). Both estimates are based on commercial catch data for the years 1960-1972. (Md. Ex. 1, Tables 4 and 5; Christensen, Tables 4.1 and 4.2). We find that these estimates are supported by the evidence.

43. Relying on commercial catch data, the Staff estimated the percentage contribution of the Middle Bay to the entire Chesapeake Bay to be in the range of 60% (Case A) to 80% (Case B) with a Case B value of 70%. (Christensen, p. 4-11). These estimates are based upon March-April average commercial catch data, as corroborated by annual data over the period 1952-1971. (Id.) We find these estimates to be reasonable.

44. By multiplication of the three successive contribution factors, the Staff derived the overall canal contribution factor to the Chesapeake (CCC). (Id., Table 4.3). The values ranged from 3% (Case A) to 30% (Case C), with a Case B value of 12%. (Id.) We conclude that the Staff's estimated range for the overall canal contribution factor to the Chesapeake is reasonable.

45. The Staff, but not the other parties, presented testimony on the percentage contribution of the C&D Canal region to the Delaware Bay. (Christensen, Ch. 3). The Staff testified that eggs and larvae have been found in tributaries to the Bay and in the Bay itself, although the production appears to be considerably less than in the canal. (Id.) The Staff concluded, and we concur, that upon the data available it is advisable to allow a range of 25% (Case A) to 75% (Case C) for the canal contribution factor to the Delaware.

46. The Applicant claims that entrainment mortalities of striped bass eggs and larvae are of no consequence to the fisheries (Appl. Ex. 45, p. 28) because of natural compensatory processes (Appl. Ex. 42). The State of Maryland found evidence for compensatory processes, and concluded that these are important in preventing a reduction in mature females in one generation from producing a reduction in the size of the next generation of mature females. (Md. Ex. 1, pp. 21-30). But Maryland concluded that there is a direct relationship between the number of juveniles and the subsequent yield to the fisheries. (Id., pp. 31-35). This implies incomplete compensation from juvenile to adult. The Staff agrees that natural compensatory processes operate in striped bass populations, but argues that they should not be relied upon to substantially offset entrainment mortalities. (Christensen, p. 5-7). (Id.) There is some dependence of year class size on the abundance of spawners and the year class size is largely determined by the time the young reach a length of 1.5 inches. (Tr. 1441). Furthermore, the

production of a dominant year class by a relatively small adult stock could be the result of particularly favorable physical and biological conditions related to fresh water flow, availability of nutrients, and high productivity in the estuary, conditions unrelated to the density of striped bass. (Tr. 1443). Also, it is not known how much compensatory reserve is left in a heavily-fished population, like the Chesapeake Bay striped bass population. (Id.) Therefore, the Staff assumed no egg-to-adult compensation to offset entrainment losses and used a range of values for the scaling factor for yield, the factor that reflects the degree to which a reduction in the size of the spawning stock affects the size of the next generation available to the fishery. (Christensen, pp. 5-2, 5-7). The scaling factor for yield, which is derived from the Staff's life-cycle model and includes a density-dependent fishing-mortality function, ranged from a value of 1 (no compounding of loss through generations) to a value of 2 (partial compounding of loss). (Id., Table 5.3 and p. 5-9). Given the uncertain capacity of natural compensation to offset entrainment losses, we agree with the Staff that a range of values for the scaling factor for yield is appropriate.

47. Having developed estimates of the local depletion factor, the canal contribution factors to the Delaware and to the Chesapeake, and a scaling factor for population reduction, the Staff was able to postulate the potential fractional reduction in Chesapeake and Delaware striped bass populations. (Christensen, Ch. 6). The resulting values ranged from 0.09% to 8% for the Delaware (Id., Table 6.1) and 0.01% to 3% for the Chesapeake. (Id., Table 6.2). The Staff concluded, and no party disputed, that these fractional reductions in the size of adult striped bass populations in the Delaware and the Chesapeake will not be irreversible. (Id., p. 6-3). We agree.

48. The Applicant's evaluation was based on two approaches, one of them strictly biological and the other using a mathematical model. The data for both approaches concerning the quantities of entrainable striped bass eggs and larvae were taken from the 1973 and 1974 sampling programs of Ichthyological Associates (I. A.), which measured egg and larval densities at ten sampling stations over the length of the canal, including one station (Station 4S) approximately at the proposed location of Summit intake. The I. A. data show, in general terms, high striped bass egg concentrations in the western end of the canal at times during spawning season, diminishing as one travels eastward (Appl. Ex. 45, pp. 12-13). Larval concentrations show much the same geographic distribution as eggs but are far less numerous (*Ibid.*). Net non-tidal flow in the canal is eastward, from the Chesapeake to the Delaware, but variable with water levels and dominated at each tidal cycle by a considerably larger tidal flow. The net non-tidal flow has been increased in recent years by a program of dredging and enlargement of the canal. Transport analysis by the Applicant's hydrological witness, Dr. Cook, concluded that water particles "originating" at the proposed Summit intake location would ultimately exit to the Delaware end of the canal in over 90% of all cases and in close to 100% of all cases during the months of

March through May, when most striped bass spawning occurs. Transport time to the Delaware was less than 60 hours in 65% of the cases, March to May. Striped bass eggs are nonmotile, and prolarvae (the first larval stage) virtually so; striped bass in these stages drift with the current. (Appl. Ex. 47, pp. 1, 4; Tr. 835-40). Post larvae and small young up to 91 days old, the age at which striped bass are generally considered no longer susceptible to entrainment, possess limited to fair motive ability.

49. The Applicant's biological consultant, Dr. Raney, estimated that the Summit station would entrain approximately 1.7% of the eggs and larvae carried past its intake annually, based upon measured mean monthly densities off the proposed intake location, net non-tidal flow rates and plant intake flow rates (Appl. Ex. 45, p. 24). Dr. Raney's opinion was that the effect of entrainment at these levels would be "miniscule and probably undetectable in the adult population." (Appl. Ex. 45, p. 25). Dr. Raney's conclusion was based on and illustrated by such factors as the known prolific nature of striped bass (a single 50-pound female can lay nearly 5,000,000 eggs annually); the capacity of Chesapeake Bay striped bass (caught there and in the Atlantic Ocean) to sustain increasing commercial and recreational harvest levels (estimated to be in the range of 30% to 50% of each year class); the fluctuation in size and vitality of spawn and of year classes; and the apparent independence of size of number of eggs produced to size of year class. (Id., pp. 7-9, 22; Md. Ex. 1, Table 2, p. 24). The net effect of such factors may be summarized under the rubric of "natural density dependent compensatory mechanisms," which, in summary, tend to operate to allow any given species whose population is in equilibrium to maintain itself at that level despite pressures on it.

50. The Applicant, the Staff and the State of Maryland agree that natural compensatory mechanisms may exist which could serve to, at least, partially offset the effects of entrainment (Appl. Ex. 42; Appl. Ex. 45, p. 25; Md. Ex. 1, p. 18; Tr. 1254; Staff: Christensen, *et al.*, p. 5-7; Tr. 1440, 1443). The parties, however, are unable to agree as to the extent to which such mechanisms operate, as to the life stages at which they operate, and as to the extent to which they should be relied upon to offset the loss of eggs and larvae caused by the Summit power plant.

51. The Staff and the State of Maryland take the position that there is insufficient evidence to conclusively determine the extent of compensatory mechanisms in the early life stages, especially for the larval states (Tr. 1201; Tr. 1254; Tr. 1261; Tr. 1265-1266; Tr. 1279; Tr. 1442-1443; Md. Ex. 1, p. 35). This is supported by testimony that there is a weak or non-existent relationship between eggs and subsequent yearclass strength (Md. Ex. 1, p. 28; Tr. 1265-1266; Tr. 1440-1442), but an apparent correlation between fingerlings of age 3 to 4 months and subsequent yearclass strength (Tr. 821; Tr. 968-969; Tr. 1261-1264; Tr. 1820; Md. Ex. 1, pp. 32-35).

52. The Applicant's position is that the striped bass population has the capacity, within certain limits, to compensate for an increased rate of mortality (Appl. Ex. 42, p. 2) and that this compensatory reserve could be relied upon to offset all the effects of the Summit plant. This conclusion is supported by expert testimony that there is no known linear relationships between the abundance of striped bass eggs and larvae and the subsequent yearclass strength (Tr. 816-817; Tr. 882; Tr. 1009; Tr. 1816-1817; Tr. 1820).

53. As outlined by the Applicant, whose testimony on compensatory mechanisms was considerably more extensive than that of the other parties, the effect of such mechanisms is both to restrict the growth of species in the absence of outside competition for food, habitat and other factors, and to enable the species to resist the effects of external pressures on it, such as natural or man-made predation (Appl. Ex. 42; Tr. 864-865, 883-886). Compensatory mechanisms operate primarily at the earlier, more sensitive life stages of a species, and the size of the striped bass adult population which will result from a given spawning effort will be determined by the end of its first year of life (Tr. 872). There is, for instance, little or no relationship between the striped bass egg population and the size of the resulting year class (Tr. 816-817, 1265; Md. Ex. 1., p. 28). The earliest point at which such a positive correlation—and not necessarily a linear correlation—has been shown to exist has been at the point where striped bass are one-and-a-half inches long (Tr. 968-969, 1263-1264); at this point they are three- to four-month old juveniles and considered by all parties to be beyond the point of entrainability. At earlier life stages no such correlation has been shown to exist (Tr. 880-881; 1264); and, in the opinion of Dr. Raney, the Applicant's principal biological consultant, no such correlation could be shown to exist because of the operation of compensatory mechanisms (Tr. 880-881). Thus, compensatory mechanisms would be expected to operate during the early life stages in the direction of offsetting the effects of predatory forces, such as entrainment, on the population of striped bass young.

54. Maryland does not claim that there is any positive—or necessarily linear—correlation between the population of striped bass organisms during their entrainable stages and the size of the resulting adult population. It merely asserts that “there could well be” a linear relationship between egg and larval entrainment levels and levels of adult population, and limits the role of compensation to the prevention of compounding of annual entrainment losses, as a “prudent” position to be taken by the Board (e.g., Md. Ex. 1, p. 35; Tr. 1266). The Staff acknowledges the operation of compensatory mechanisms (Christensen *et al.*, p. 5-7). Nevertheless, it totally omits natural density-dependent compensatory mechanisms in calculating survival rates at all life stages (Christensen *et al.*, p. 5-1), and assumes only that calculated reductions in striped bass populations will lead to reductions in fishing pressure. This procedure necessarily results in projecting annual fishing losses at least as large as entrainment losses (the Staff's “realistic” Case B values calculate a fishing loss of

1.4% per 1% of entrainment loss) [Christensen *et al.* testimony, p. 5-8; Tr. 1338-1341]. The Staff takes a "position" that "natural density-dependent mechanisms . . . should not be relied on to significantly offset losses of intensively harvested species such as the striped bass." (Christensen *et al.*, p. 5-7).

55. In view of (1) the universal agreement that compensatory mechanisms operate, and (2) the uncontroverted testimony that the earliest stage at which positive correlations have been found between striped bass population size and resulting adult population size (implying the cessation of operation of natural density-dependent compensatory mechanisms) is later than the stages of entrainability, the Board must view the Staff's position and Maryland's "prudent assumption" in omitting entirely the natural density-dependent biological compensation mechanisms as being a conservative rather than a realistic approach. A "rule of reason" approach, rather than "the use of the *most* conservative assumptions," should be used in the NEPA analysis of adverse environmental impacts. *Consolidated Edison Company of New York, Inc.* (Indian Point Station, Unit No. 2), ALAB-188, RAI-74-4 323, 358 (April 4, 1974). The Board finds that the Applicant's evidence that natural density-dependent mechanisms will probably operate to substantially offset entrainment losses—as opposed to merely preventing them from being compounded—makes reasonable and realistic use of existing data and other scientific knowledge. However, this does not eliminate the need for and desirability of the monitoring program proposed by both the Staff, and the State of Delaware (FES pp. iv, v, para. 7, Tr. 1895-1897; §401 FWPCA certif. condit. 2). If the Applicant is wrong on its "compensatory mechanisms" theory, the fishery is too valuable a resource to leave to the vagaries of random, non-systematic observations. For this reason, the Board elects to analyze further the "conservative" approach of both the Staff and Maryland in attempting to estimate what the fish loss *might* be if the compensatory mechanisms do not work as satisfactorily as the Applicant's expert expects them to. We do this with a view toward evaluating the need for, or potential value of, the protection to be afforded by monitoring systems geared to detecting fish population losses.

56. There was substantial agreement between the Staff and Maryland regarding the contribution of the Chesapeake-Delaware system to the Mid- and North Atlantic striped bass fisheries. Maryland testified that the contribution of Chesapeake Bay to these fisheries would be about 60%. (Md. Ex. 1, p. 57). The Staff estimated that the contribution of the Chesapeake-Delaware system would be 55% to the North Atlantic and 60% to the Mid-Atlantic sport fisheries (Case B values). (Christensen, Table 7.3). For commercial catches, the contribution would be approximately 100% (Case B value) in the area from Virginia north through Cumberland County, New Jersey and 70% (Case B value) in the area from Cape May County, New Jersey north through Maine (excluding the Hudson River, the western half of Long Island Sound, and the New York

Bight; the contribution to these regions is assumed to be 10%). (Id., pp. 7-1-7-2). We find these estimates (and the ranges of each as set forth by the Staff) to be supported by the evidence cited by the Staff and Maryland.

57. The Staff and Maryland next developed estimates of the size of the affected fisheries. (Christensen, Ch. 7; Md. Ex. 1, pp. 53-61). Based on average commercial catch figures for the period 1961-1969, the Staff calculated a range of 7,357,000 lbs. (Case A) to 8,145,000 lbs. (Case C) for the annual striped bass commercial catch for the Mid- and North Atlantic fisheries (including the Chesapeake and Delaware Bays) supplied by the Chesapeake-Delaware system. (Christensen, Table 7.1). The Case B estimate was 7,751,000 lbs. (Id.) Maryland estimated the total Mid- and North Atlantic commercial catch (including Chesapeake Bay) to be 7,900,000 lbs. annually. (Md. Ex. 1, p. 5, and Table 9). For sport catch, the Staff estimated a range of 14,640,000 lbs. (Case A) to 21,511,000 lbs. (Case C). (Christensen, Table 7-3). Case B was estimated to be 18,076,000 lbs. (Id.) Maryland estimated a recreational catch of 22,000,000 lbs. (Md. Ex. 1, p. 5, and Table 9). In calculating these figures the Staff multiplied the reported catch from angler surveys by 0.5 for "exaggeration tendencies" (Christensen, pp. 7-6-7-8) and Maryland multiplied by 0.4 (Md. Ex. 1, Table 9). We find the estimates provided by both the Staff and Maryland to be reasonable.

58. The final step in the analyses conducted by the Staff and Maryland is the calculation of the potential reduction in yield to the striped bass commercial and sport fisheries due to operation of the Summit Power Station. By use of a formula utilizing the local depletion factor, the canal contribution factor, the system depletion factor, the scaling factor for yield, and the system depletion factor for yield, the Staff has calculated Case A, B, and C estimates of potential total catch lost annually. (Christensen, Table 8.2, pp. A-4, A-5). The Case B estimate is approximately 200,000 lbs. (Christensen, Table 8.2). This estimate has been generated by taking the arithmetic average of upper (Case C) and lower (Case A) expected values for the individual factors. (Id., p. 8-9). The Staff considers that Case B represents the magnitude of the likely loss, but that the "true" loss value is more likely to fall below than above this value. (Id.) The Staff considers the Case A loss (7,000 lbs.) to represent a reasonable lower bound (Id., Table 8.1, and p. 8-8); the Case C loss (1,100,000 lbs.) an absolute upper bound. (Id., Table 8.3 and pp. 8-8-8-9).

59. Maryland approached the problem somewhat differently than the Staff. Maryland generated an estimate of the upper Chesapeake Bay striped bass recruitment to the Mid- and North Atlantic fisheries, excluding Chesapeake Bay. (Md. Ex. 1, Table 10). This calculation results in 4,718,000 lbs. of sport catch and 2,172,000 lbs. of commercial catch contributed by the upper Bay. (Id.) Applying a range of local depletion factors (1%, 2.5%, and 5%) and contribution factors of the canal region to the upper Bay (50% and 100%) yielded annual losses ranging from 34,500 lbs. to 345,000 lbs. (Id., Table 11).

60. In discussing the Applicant's Delmarva Model earlier, we noted that it generated directly an estimate of the number of 91-day-old striped bass

entrained by the plant. Applying the model, the Applicant derived an average annual loss of eggs and larvae equivalent to 74,900 91-day-old larvae. (Appl. Ex. 48, p. 14). This, the Applicant testified, is equal to 7,490 three-year-old striped bass each of which weighs an average of two pounds. (Id.). The result, therefore, is a loss of 14,980 pounds of three-year-old striped bass. (Id.).

61. We have, then, before us for consideration the Staff's, Maryland's, and the Applicant's estimates of the average annual loss of adult striped bass as a result of operation of the proposed Summit Power Station:

Average Annual Loss (Pounds of Striped Bass)	Source of Estimate (Testimony)	Comments (from Source)
14,980	Appl. Ex. 55, p. 14	Average hypothetical loss per year of two- pound (3-year-old) striped bass. Page 26— probably an overestimate
Range from 34,500 to 345,000 7,000	Md. Ex. 9, p. 60 Christensen, p. xii (Staff)	See also Table 11, p. 61 Case A; reasonable lower bound. From Table 8.1.
200,000		Case B; magnitude of likely loss. True loss more likely to be below than above this figure. Rounded from Table 8.2.
1,100,000		Case C; absolute upper bound. Rounded from Table 8.3.

62. We conclude that sufficient information has now been provided in the record of this proceeding for this Board to make an informed independent judgment as to the potential impact of entrainment of striped bass by operation of the Summit facility. We find that the Delmarva model rests upon assumptions regarding (1) egg production, (2) natural survival rates, (3) durations of life stages, (4) sampling gear efficiency, and (5) uniformity of densities. (Christensen, p. 2-14; Md. Ex. 1, p. I-15). These assumptions are reflected in the predicted quantity used in the denominator in the Applicant's model. (Christensen, pp. 2-13-2-14). By using *measured* larvae densities as the basis for its denominator, Maryland has attempted to avoid dependence on assumptions as to egg production, natural survival rates, and sampling gear efficiency. (Md. Ex. 1, p. I-15). As Maryland recognizes, its modified Delmarva model is actually an

extension of the Staff's striped bass model. (Id., p. I-16). We find that both the Staff's and Maryland's modeling work have generated what appear to be somewhat conservative, but reasonable, ranges of estimated average potential annual losses to the fishery. We prefer to use the Staff's range because it is based upon ranges for each of the subsidiary components in the calculation. (See, for example, Christensen, Table 4.3). We have, accordingly, used the Staff's Case B estimate of 200,000 lbs. average annual loss in the benefit-cost discussion. (We find that the Staff's "Case C" approach would violate the "Rule of Reason" approach, i.e., that it would unnecessarily lock us into an evaluation based on the "most conservative assumption" possible—an evaluation *not* required by NEPA. See *Con. Edison* (Indian Pt. 2), ALAB-188, *supra*, at 358). We recognize, as the Staff itself acknowledges, that the "true" loss is more likely to be below than above this figure (Id., p. xii), but believe that use of a conservative value is appropriate in this aspect of the benefit-cost analysis.

Benefit-Cost Analysis of Potential Fish Loss Due to the Summit Intake

63. A principal issue in this proceeding has been the appropriate valuation of recreationally-caught striped bass. There was greater agreement among the parties concerning the valuation of commercial catch. The Staff testified that the retail market price of striped bass of \$1/lb. (adjusted to \$1.16/lb. to reflect inflation between 1973, when the estimate was generated, and 1975) should be used. (Knighton, Tr. following 1551, p. 5). Maryland acknowledges "the approximate \$1/lb. retail price", but considers that only \$0.50/lb. represents "use value" which it defines as the benefit or satisfaction derived from the acquisition or consumption of the fish, less the satisfaction that could have been obtained had the same resource of time, money, and equipment been devoted to the next most productive activity ("the opportunity cost"). (Md. Ex. 1, pp. 68, 72). In order to arrive at the use value of commercially-harvested striped bass, Maryland has had to determine the opportunity cost of the people who caught, processed, transported, sold, stored, prepared, served, and consumed the fish. (Id. . ., pp. 69-72). The Applicant has testified that several recent valuations of striped bass have placed values of from \$0.30 to \$0.50/lb. for commercial catch (reflecting the dockside price). (Appl. Ex. 48, pp. 9-11). Nevertheless, the Applicant argues that any apportionment of striped bass loss between commercial and sport fisheries would be arbitrary and, therefore, assigns a \$1/lb. value for striped bass, however caught, which apparently represents an averaging of commercial and sport values. (Id., pp. 13-14). Based on data discussed above, which indicates that reasonable estimates of the relative size of the sport and commercial striped bass fisheries can be developed, we conclude that it is appropriate to assign different values to recreationally- and commercially-caught striped bass. We further conclude that the retail price (approximately \$1/lb. presently) reflects the valuation added by the fisherman, the middle-men, and

the retailer, and is, therefore, a sound basis for valuing commercially-caught striped bass.

64. As noted above, the Applicant advanced an argument that different values should *not* be assigned to commercial and sport catch because of the unreliability of catch data, but, rather, that a value of \$1/lb. should be assigned to striped bass, however caught. (Appl. Ex. 48, pp. 13–14). The Applicant subsequently advanced, as an alternative approach for placing a value on the diminution in the recreational striped bass catch which might be caused by operation of the proposed facility, the theory of “consumer surplus”. (Tr. 1015–1041; Appl. Ex. 55, Tr. following 1972). Consumer surplus is the “value”, in this case the value attributed to a day of recreational fishing for striped bass, which a fisherman enjoys over and above the actual costs the fisherman incurs for that day of fishing. (Appl. Ex. 55, p. 2). The theory is based upon the premise that this psychological value of the recreational fishing experience decreases with each additional day of fishing, until some point at which the fisherman perceives that the psychological value of fishing is worth less than his actual out-of-pocket expenses. (Id.) Fixed costs (such as those already incurred in purchasing fishing equipment, clothes, boats, etc.) are not even considered because they do not influence the fisherman’s decision to engage in additional days of fishing (Id., pp. 5–6; Tr. 1019–1026).

65. The Applicant thus has attempted to quantify the value of fishing to a sport fisherman by noting the statistics of behavior as costs of fishing and fishing opportunities change. Both by quantifying the cost of a fisherman-day and the average amount of fish caught, and by attempting to estimate the statistical reduction in fishing as fish become less available, the Applicant generated numbers for the worth of sport fish of the order of less than a dollar per pound.

66. The Staff and the State of Maryland both generated proposed values around \$5 per pound, using somewhat less sophisticated approaches based upon total expenditures and total fish caught.

67. The Board feels that any of these techniques are so subjective and so poorly developed as to be mere qualitative indicators. However, even such qualitative indicators may be of value in striking what is patently a subjective balance in costs versus benefits. While we do not place great reliance on the actual numbers, we feel that \$5/lb. probably overvalues the sports fishery and \$1/lb. probably undervalues it. A value for the commercial catch of \$1/lb. seems reasonable.

Proposals to Mitigate Potential Fish Losses

68. We turn next to a consideration of the various means which have been proposed by the parties to mitigate the potential impact on striped bass, should such measures prove necessary. Proposals included replacement of eggs and larvae entrained, stocking of the canal region with artificially-reared juveniles, a leaky breakwater, a groundwater intake, microdrums, a fast filter system,

moving the planned intake eastward on the canal, and taking makeup water from the discharge of the Applicant's Delaware City power plant. (Tr. 1042-1117, 1341-1376, 1463-1478, 1811-1814). The costs and effectiveness of the leaky breakwater, groundwater intake, microdrums, and fast filter system were not discussed at the hearing.

69. The Applicant claimed that the least costly and most effective means of mitigating potential impact to the striped bass fishery due to entrainment at the Summit Power Station is to stock the canal with eggs, yolk sac larvae, and postlarvae, and/or perhaps with juveniles. (Tr. 1115-1116; Appl. Ex. 54). The claim that this is the least costly alternative is not in dispute. What is not at all certain is that this is the most effective means of mitigating impact. The survival of hatchery-reared striped bass in an estuary, compared to the survival of wild fish, is also unknown, even though at least one attempt has been made to determine it. (Tr. 1848-1854).

70. Since the effectiveness of stocking eggs, larvae, and juveniles is not at this time obvious, it cannot be said that this means of attempting to mitigate fishery losses is clearly the most effective. It does appear, however, to be among the less costly alternatives, and we, therefore, conclude that the Applicant should give serious consideration to its use, should that prove necessary. (Tr. 1115, 1895, 1941-1945).

Analysis of Possible Alternative Intake Locations

71. Testimony was submitted by each of the parties on (1) alternative locations of the intake on the canal to the east of the location proposed by the Applicant and (2) use of Delaware City discharge water for makeup water required by Summit. (Appl. Ex. 48, pp. 15, 25; Knighton, pp. 6-11; Md. Ex. 1, pp. 80-88). All of the parties agreed that each of these alternatives would involve lower entrainment losses than the Applicant's proposed intake. (Appl. Ex. 48, Table III; Knighton, Table IV; Md. Ex. 1, p. 80). The parties did not, however, agree on the benefit-cost balance associated with these alternatives.

72. The Applicant's analysis based on its calculations of the monetary cost of alternative intakes, its calculations of entrainment losses, and an estimated value of \$1/lb. of striped bass lost to the fisheries due to entrainment by the Summit facility, indicated that none of the alternatives would be justified on a benefit-cost basis. (Appl. Ex. 48, pp. 22-25). Maryland argued that the Delaware City alternative appeared to be reasonable on an economic basis. (Md. Ex. 1, p. 88). The Staff's position was that Delaware City appeared to have the most favorable benefit-cost ratio among the alternative intake regimes reviewed. (Knighton, Table VI on p. 10). The Staff's balance, however, utilized the value \$5/lb. for sport fish, a value that the Board feels is too high. Further, in view of additional considerations (uncertainties in the Staff's Case B estimate of fishery losses, land acquisition costs, tunneling costs, costs associated with crossing wetlands, possible impact of the Delaware City intake on the Delaware fishery,

and the questionable reliability of the Delaware City alternative), we have concluded that any apparent advantage of the Delaware City alternative is, at this time, outweighed by the uncertainties in the benefit–cost calculation. This ultimate conclusion agrees with that of the Staff. (Knighton, p. 11; Tr. 1328–1337).

73. The Applicant has outlined in testimony (Appl. Ex. 48, pp. 18–21, Tr. 1045–1048, 1061–1069, 1475, 1478) the operational difficulties inherent in full-time reliance on the existing intakes at the Delaware City Power Plant. These difficulties led it to conclude that if use of the Delaware City intake were required (a position it does not accept), it would also build the intake currently planned on the canal, for use in the majority of the year, when spawning was not taking place (Id.). The Staff's evaluation of the Delaware City intake gives no indication of having taken account of these operational problems (Knighton testimony, pp. 8, 11), though the Staff found that sufficient uncertainties surround Delaware City to offset any apparent present advantages (Id., p. 11). Maryland's testimony (Md. Ex. 1, pp. 80–81) similarly did not evaluate the operational problems of the Delaware City intake location.

74. In essence, the Applicant's operational difficulties with Delaware City may be characterized as an extreme reluctance to make the water supply for Summit, its largest, newest base load plant, permanently and entirely dependent on the continued operation of a distant intake built to serve plants more than 20 years older than Summit and not even owned by the Applicant. Getty Oil Company owns the intake (Appl. Ex. 48, p. 18), which is not even connected directly to the Delaware City plants (Tr. 1060). Getty also has an option to buy the Delaware City plants themselves from the Applicant at five-year intervals (Tr. 1063). Because of the greater age of the Delaware City complex (built 1958–1961) (Appl. Ex. 48, p. 19; Tr. 1061–1062), Getty lacks the incentive to maintain it in the fashion that the Applicant would want for the Summit water supply (Tr. 1063). Getty has also apparently indicated its readiness to shut down the Delaware City complex even prior to the end of its useful life, for reasons unrelated to the matter at hand (Tr. 1064). Added to these are such possible problems as fires or other accidents at the Delaware City complex (Appl. Ex. 48, p. 19, Tr. 1106), and licensing and right-of-way difficulties associated with pipeline construction or with physical modification of the Delaware City intake to ease existing problems (Tr. 1049, 1478).

75. The Applicant does not object to use of pipelines as such: it evaluated one for its proposed Denton site (an alternative to Summit); but there it would have had control over the pipeline and the associated intake (Tr. 1068–1069). Nor does the Applicant oppose the concept of multiple use of intake water when feasible: such an arrangement will be used at its Indian River plant (Appl. Ex. 48, pp. 18–19). The Applicant's opposition to full-time use of Delaware City is based on its prudent judgment that the likelihood of obtaining adequately reliable service from it is unsatisfactorily low to serve its newest, largest base

load facility (Appl. Ex. 48, p. 19; Tr. 1062). This is a judgment almost uniquely within its province, and is not opposed by any testimony on point.

76. The Board finds the Applicant's operational arguments against full-time reliance on the Delaware City intake convincing even if, as is unlikely, its use were to be found justifiable in cost-benefit terms; and finds that the Delaware City intake would not impose zero entrainment costs over the life of the Summit plant, as had been assumed by the parties; and that, consequently, its use in the form proposed by the State of Maryland cannot be justified on the present record.

77. To resolve some of the uncertainties in the potential fish loss aspect of the benefit-cost calculation, as affected by the proposed intake structure and location, the Staff proposed the following construction permit *condition*:

The Applicant, during his preoperational environmental studies, shall attempt to determine if larvae and young juvenile striped bass are concentrated at banks or shallows in the canal during specific life stages. In addition, the interchange of larvae and young juveniles between the canal and contiguous waters and the relationship between age and geographical location in the canal region shall be studied by the Applicant in an effort to quantify factors discussed in Section 5.5.2.1 of the Final Environmental Statement. These studies will be carried out in accordance with a study plan which has been approved by the Staff. If the application of the results of these studies indicates that the local depletion factor (LDF) for the striped bass is greater than 5%, the Applicant shall propose, and be prepared to implement, measures to reduce such losses. If the local depletion factor indicated is between approximately 2.75% and 5% the Applicant shall propose mitigation measures with their cost and technical basis for consideration by the Staff in determining the degree of mitigation which is appropriate. The Applicant shall report to the Commission the results of these studies and mitigating considerations, as appropriate, within 18 months of issuance of these construction permits (Knighton, pp. 11-12, as amended at Tr. 1895-1897).

78. At the hearing the Staff presented a detailed outline of the study program to be undertaken by the Applicant pursuant to the proposed condition. (Tr. 1297-1302). The Applicant has agreed to undertake this program. (Tr. 1297). The Staff further stated that the final details of the study plan would be settled only after discussions with the interested states. (Tr. 1390). The study program is particularly designed to narrow the uncertainties associated with flushing and lateral distribution which the Staff believes to be the predominant factors in determining the local depletion factor. (Tr. 1455). The Staff testified that it is continuing to refine the model which will be used in the study program. (Tr. 1381, 1455-1459). Although this model is still in the process of development, the Staff expressed confidence that the model will be able to

quantify the factors of uncertainty (*i.e.*, flushing, lateral distribution, gear avoidance, and age differential). (Tr. 1381).

79. The Staff testified that if the results of the study program indicated that the local depletion factor was greater than 5%, the Applicant would be required to institute mitigating measures. (Tr. 1898). If the study should indicate LDFs in the range of 2.75% to 5% the Applicant would be required to propose mitigating measures, with their costs and technical bases, for consideration by the Staff in determining the degree of mitigation which is appropriate. (Tr. 1898–1899, 1939). The Staff testified that the 2.75% level was chosen because it represented the Staff's Case B loss value. (Tr. 1944). We conclude that the Staff's proposed condition is likely to narrow the uncertainties associated with the calculation of the local depletion factor and hereby impose it as a condition upon any construction permits which may issue.

80. Maryland criticized the Staff's benefit–cost analysis for alternative intake locations on the basis that it did not include any allowance for inflation in the value of the fish loss. We are unable on the record before us to predict the rate of future inflation or to conclude that fish will inflate at the same rate as capital and operating costs. (*See*: Tr. 1916–1918). Furthermore, we do not consider it necessary to determine an exact benefit–cost ratio for the alternative intakes. We expect that the local depletion factor study program will substantially narrow the uncertainties and enable the Staff to make a more precise benefit–cost analysis. We have noted the range of benefit–cost ratios generated by Maryland (Md. Ex. 3, p. A-5) and cannot say, recognizing the many uncertainties that go into the ratio, that any of those values persuades us that the intake must be moved at this time.

81. Another intake modification was proposed in this proceeding: the Applicant has proposed that the intake not be a shoreline intake as originally proposed, but rather that the intake structure protrude into the canal. (Appl. Ex. 46, p. 20, Figs. 2 and 4). Since the Staff's analysis of entrainment impact was based on the shoreline originally proposed (Staff Ex. 1, p. 3-4), this proposed modification has not yet been reviewed by the Staff pursuant to proposed condition 7(g) in the FES; (Staff Ex. 1, p. V) condition 7g is one of the several conditions authorized by the Board in the "Conclusions of Law" portion of this Initial Decision.

Transportation of Nuclear Fuel To and From the Summit Power Station

82. The Board addressed two inquiries to the parties on the transportation of nuclear fuel to and from the Summit Power Station. The first inquiry questioned whether the exposures and hazards associated with the shipping of HTGR fuel are the same as for light water-cooled reactor (LWR) fuel. The second inquiry contained three subparts: (1) whether spent fuel would traverse Lum's Pond

State Park and, if so, did the accidental and normal exposure estimates make allowance for the possibly curious onlookers in the park, (2) whether any exposure could be expected in a transport accident and from what source, and (3) how great a residual risk of unauthorized diversion of fuel would exist, given compliance with 10 CFR Part 73.

83. The Staff and Applicant presented testimony in response to the Board's comments. Staff witness Barker testified that in his opinion the Staff's "Environmental Survey of Transportation of Radioactive Materials To and From Nuclear Power Plants" (WASH-1238, December 1972, which was prepared under his supervision) could be appropriately applied to the transportation of HTGR fuel, although the Survey was undertaken for LWRs. (Barker, Addendum 9, p. 3). The shipping distances and frequencies in WASH-1238 were averages for the 39 nuclear power stations surveyed, which included one HTGR. (Id., pp. 3-4). Since these nuclear power stations are spread throughout the United States, the average figure is considered representative of shipping distances to and from the Summit site. (Id.) Similarly, the frequency of shipments surveyed in WASH-1238 represented the average for the stations surveyed and the frequencies for Summit fall within the range reported for LWRs surveyed. (Id., pp. 4-5). We conclude that the shipping distances and frequencies reported in WASH-1238 are applicable to Summit.

84. The Board also queried whether it is appropriate to use release estimates based on the LWRs studied in WASH-1238, since those estimates assume escape of water coolant and isotopes and gases associated with LWR fuel. Barker testified that an accidental release from an HTGR fuel cask is less likely than from an LWR fuel cask because (1) the coolant is in a solid, rather than a liquid form (Tr. 517-518), (2) greater physical restraints are provided by the matrix of the HTGR fuel (Tr. 518; Barker, p. 5), and, unlike an LWR cask, an HTGR cask does not have a pressure release valve. (Tr. 518). While the types of radioactivity that could escape would differ somewhat from those associated with LWR fuel, the more hazardous isotopes, such as plutonium and uranium-233, would not be released because of the physical restraints provided by the matrix of the fuel itself. (Id. at 5). The physical configuration of the fuel in transport was described in the Applicant's Supplemental Testimony on Transportation of Nuclear Fuel To and From Summit Power Station (Appl. Ex. 6 incorporated at Tr. following 123, admitted at Tr. 129, pp. 5-6, 10-12) and in the PSAR (Appl. Ex. 2) at §3.8.1 (fresh fuel) and §3.8.2 (irradiated fuel). We conclude that the release estimates of WASH-1238 can be appropriately, and conservatively, applied to transportation of Summit fuel.

85. In response to the Board's question whether spent fuel would normally traverse Lum's Pond State Park, the Applicant testified that the railroad line on which spent fuel will be transported does not traverse the park, though it does pass along the park's eastern boundary. (Appl. Ex. 6, p. 8). In any event, the WASH-1238 exposure estimates used by both the Staff and Applicant do take

into account curious onlookers who might walk up to a railway car carrying spent fuel while it is temporarily stopped on the tracks. (Barker, p. 7; Appl. Ex. 6, p. 8).

86. The Board next inquired whether any exposure could be expected in a transport accident and, if so, from what source. Staff witness Barker testified that crews clearing an accident site could be exposed to radiation levels of 50 to 1000 mrems/hr because of the higher radiation levels permitted close to the surface of the cask. (Barker, p. 8). The period of exposure would, however, likely be brief. (Id.) Also, in the extremely unlikely event of an accident more severe than hypothesized, a limited amount of radioactive gas might escape and could result in small exposures. (Id.)

87. In its final question on transportation of fuel to and from the Summit facility, the Board asked for an estimate of the residual risk of unauthorized diversion, assuming compliance with 10 CFR Part 73. The greatest threat of diversion exists during the shipment of fresh fuel, which contains fully enriched uranium (*i.e.*, uranium containing more than 90% U-235). (Barker, pp. 8–9; Appl. Ex. 6, p. 10). Fresh fuel being shipped to Summit will be required to meet the requirements of 10 CFR Part 73, in addition to 10 CFR Part 70 pertaining to the issuance of licenses for, *inter alia*, transport of special nuclear material (SNM). (Barker, p. 9). Part 70 requires an applicant for a license to (1) prepare a plan for protection of SNM in transit and submit the plan to the Staff for approval and (2) provide appropriate physical protection during transit. (Id.) Part 73 requires additionally (1) armed guards, (2) radiotelephone communications, (3) no scheduled intermediate transfers and (4) identifying letters or numerals on tops and sides of vehicles. (Id.) The extreme difficulty of extracting U-235 from the fuel matrix serves as a further deterrent to unauthorized diversion. (Appl. Ex. 6, pp. 10–14). Based on the factors enumerated above, the Staff (Barker, p. 13) and the Applicant (Appl. Ex. 6, p. 14) conclude, and we concur, that the residual risk of unauthorized diversion of fresh fuel being shipped to the Summit facility is extremely low. Considering the high radiation levels (Appl. Ex. 6, p. 10; Barker, p. 9) and the size, weight, and immobility of the rail car used (Appl. Ex. 6, pp. 11–12, and Fig. 2), we conclude that the residual risk of diversion of irradiated fuel is even more remote. High radiation levels are also a deterrent to any potential diversion of radioactive wastes shipped from Summit. (Appl. Ex. 6, p. 10; Barker, p. 9).

Environmental Impacts Of The HTGR Fuel Cycle

88. The Staff (Hill and Haws, Tr. following 1671) and the Applicant (Appl. Ex. 62, Tr. following 1601) presented testimony on the environmental impacts of the HTGR fuel cycle. The HTGR being a relatively new commercial technology, the Staff's testimony represented its first public assessment of the HTGR fuel cycle impacts. (Hill, p. S-1). Accordingly, the Staff addressed the

topic in some depth. The Staff investigated the environmental impacts associated with uranium mining, uranium milling, uranium hexafluoride production, uranium enrichment, thorium production, the preparation of fuel elements, commercial waste burial, storage of irradiated fuel from Summit, and transportation between the above-enumerated fuel cycle facilities. (Hill, *passim*). Transportation of fresh fuel to Summit and irradiated fuel and wastes from Summit was considered in separate testimony filed by the Staff in this proceeding.) The Staff's fuel cycle study was based upon the production of an initial core for one of the two Summit units. (Hill, p. S-1). Since subsequent annual reloads (approximately one-fourth of a Summit core will be replaced annually) will require only approximately 40 percent of the initial requirements of highly enriched uranium and roughly one-fourth of the initial amount of thorium, this approach provides a conservative estimate of the average annual environmental considerations. (Id.) The environmental impacts of the Summit fuel cycle are summarized in the Staff's Table S-3. (Hill, pp. S-8-S-10). The Staff then compared the environmental impacts from Table S-3 with the environmental impacts associated with operation of the Summit Power Station, itself (two units versus two initial cores). (Guberman, Tr. following 1673, Table 2). On the basis of this comparison and the benefits of the Summit facility set forth in Section 10 of the FES (Staff Ex. 1), the Staff concluded that the environmental impacts of fuel cycle activities supporting production of initial cores for the Summit units are small when compared to the overall benefit-cost balance for the Summit Power Station (Guberman, p. 3).

89. The results of the Applicant's investigation of the environmental impacts of the HTGR fuel cycle (Appl. Ex. 62, Table 2, pp. 9-11) are in substantial agreement with the Staff's conclusion. The Applicant's calculations are for an annual fuel requirement (AFR), rather than the initial fuel load used by the Staff. (Id., p. 4). The Applicant has, however, introduced an element of conservatism into its calculations by basing it upon a hypothetical 1,000 MWe HTGR (each Summit unit is rated at 770 MWe). (Id.) A second element of difference between the Staff's and the Applicant's analyses is that the Applicant has included reprocessing of irradiated fuel and fabrication of recycle fuel in its study. It is the Staff's position (Tr. 769-770), and the Applicant concedes (Appl. Ex. 62, p. 2), that use of recycle fuel at Summit cannot commence until Staff approval has been obtained. Furthermore, the Applicant admitted that facilities for reprocessing spent fuel from Summit and for fabricating recycle fuel do not presently exist, nor are they yet under construction (Tr. 1733-1734). We conclude that the Staff's testimony includes consideration of all of the fuel cycle steps that are appropriate for consideration upon this application. The environmental impacts associated with the reprocessing and refabrication steps will be considered in later proceedings. (Tr. 769-770). Upon consideration of the testimony filed by the Staff and the Applicant, we further conclude that the incremental environmental impact of the fuel cycle activities supporting Summit

is small when compared to the overall benefit–cost balance for the Summit facility and does not tip the balance against construction of the facility.

Emergency Planning

90. While emergency planning is not technically a subject for determination at the environmental and site suitability phase of this proceeding, New Jersey did file testimony concerning its state plan for responding to emergencies at nuclear facilities. (New Jersey Exs. 1 through 4). The testimony was offered to indicate that should an emergency arise at the Summit facility, a plan exists to handle that contingency within New Jersey provided that state receives prompt notification. (Tr. 210). Testimony by the Applicant indicates that it will notify the radiological health authorities of the States of Delaware, New Jersey, Maryland, and Pennsylvania should any emergency arise which might have off-site consequences. (Appl. Ex. 2, §13.3.11.4, p. 13.3-14). The acceptability of the Applicant's emergency plan is a subject for determination in the radiological health and safety phase of this proceeding.

Environmental Summary

91. Based on the entire record, the Board finds that the environmental and economic benefits from the construction of the Summit facility, particularly the necessity for the Applicant to supply electrical power to meet the demand and expected growth in electrical use within its service area (FES §§8.2, 8.4, 8.5), will be greater than the environmental and economic costs that will necessarily be incurred by construction and operation of the facility. Therefore, the Board finds that the balance between the benefits and costs involved in the construction of the Summit facility favors granting the construction permit for the facility.

92. Further, independently considering the final balance among conflicting environmental factors set out in the record in this proceeding, the Board finds that the appropriate action to be taken is to authorize the granting of the construction permit for the Summit Power Station, Units 1 and 2, if such action is also found to be warranted following completion of the health and safety portion of this proceeding.

93. The Board finds on the record in this proceeding that a systematic, interdisciplinary approach has been employed in the environmental (NEPA) review of the proposed Summit Power Station, that environmental factors have been given appropriate consideration in decision-making along with technical and other considerations, and that evaluation of alternatives to minimize environmental impacts and suitable cost–benefit analyses, as required by NEPA and 10 CFR Part 51, have been conducted.

The State of Delaware's § 401 Conditions

94. Delaware has imposed two conditions on its issuance of the § 401 FWPCA water quality certification.⁶ The first relates to chlorine concentrations and is not in issue. The second, relating to monitoring for substantial adverse effects of the intake structure on the striped bass population and corrective measures, is attacked by the Applicant as going beyond the permissible scope of the State's conditioning authority under § 401, since the condition relates to the intake rather than the plant discharge.

95. The Applicant cites the Appeal Board's decision in *FitzPatrick*⁷ as decreeing "the manifest duty" of a hearing board to disregard any State conditions not expressly and solely related to water quality. However, we do not read *FitzPatrick* to be so restrictive. A careful reading of the Appeal Board's language in that decision together with the wording in § 511(c)(2)(A) and 316(b) compel us to conclude otherwise. § 511(c)(2)(A) of the FWPCA states as follows:

(2) Nothing in the National Environmental Policy Act of 1969 (83 Stat. 852) shall be deemed to—

(a) authorize any Federal agency authorized to license or permit the conduct of any activity which may result in the discharge of a pollutant into the navigable waters to review any effluent limitation *or other requirement established pursuant to this Act* or the adequacy of any certification under section 401 of this Act; . . . [Emphasis added.]

FWPCA § 316(b) states:

(b) Any standard established pursuant to section 301 or section 306 of this Act and applicable to a point source shall require that the location, design, construction, and capacity of cooling water intake structures reflect the best technology available for minimizing adverse environmental impact.

96. Accordingly, we hold that both of Delaware's conditions expressed in its § 401 FWPCA water quality certificate must be included as conditions in any Federal permit or license for construction or operation at the proposed plant site.

⁶Since receipt of a copy of the § 401 certificate, the Board has received from the Deputy Attorney General of the State of Delaware a correction to the chlorine portion of the certificate, as follows: "free residual chlorine" should read "total residual chlorine," in paragraph number 1. See Appl. Ex. 70A.

⁷*Power Auth. of the State of N. Y., et al. (FitzPatrick Nuclear Plant)*, ALAB-173, RAI-74-1, 45, 50-51 (Jan. 29, 1974).

III. CONCLUSIONS OF LAW

97. The Board has given careful consideration to all of the documentary and oral evidence presented by the parties. Based upon our review of the entire record in this proceeding and the foregoing findings, and in accordance with §50.10(e) and 10 CFR Part 51 of the Commission's regulations, the Board has concluded as follows:

(1) The certification from the State of Delaware issued to the Applicant on June 12, 1975 (the §401 certification) meets the requirements of Section 401(a)(1) of the Federal Water Pollution Control Act Amendments of 1972 (FWPCA).

(2) The two conditions imposed by the State of Delaware in the §401 FWPCA certification must be incorporated as conditions to any construction permits issued hereunder as well as subsequent operating licenses issued to the Applicant for this plant site, pursuant to the provisions of Section 401(d) of the FWPCA.

(3) The environmental review conducted by the Staff pursuant to the National Environmental Policy Act of 1969, as presented in the FES (Staff Ex. 1) and the Staff's supplemental written and oral testimony in this proceeding, has been adequate.

(4) The requirements of Section 102(2)(A), (C) and (D) of the National Environmental Policy Act of 1969 and 10 CFR Part 51 have been complied with in this proceeding.

(5) The Board has independently considered the final balance among conflicting factors contained in the record in the proceeding and determines that the appropriate action to be taken (if this Board, after hearing the evidence in the radiological health and safety phase of this proceeding, should make affirmative findings on issues 1-3 and a negative finding on issue 4 set forth in the Notice of Hearing) is issuance of construction permits for the proposed Summit Power Station, Units 1 and 2, subject to the conditions for the protection of the environment recommended by the Staff on pages iv-v [para. 7(a) through (g)] of the FES (Staff Ex. 1), except that condition 7(d) is amended to read as set forth in Finding 77 above, and condition 7(e) is amended to be consistent with the §401 FWPCA certification issued to the Applicant herein, and subject, also, to the two conditions imposed by the State of Delaware in its §401 FWPCA water quality certification issued to the Applicant on June 12, 1975 (Appl. Ex. 70, 70A), and the Board's chlorination restriction contained in Finding 18.

(6) Based upon the available information and review to date, there is reasonable assurance that the Summit site is a suitable location for a nuclear power reactor of the general size and type proposed from the standpoint of radiological health and safety considerations under the Atomic Energy Act

of 1954, as amended, and rules and regulations promulgated by the Commission pursuant thereto.

IV. ORDER

98. Based upon the Board's Findings and Conclusions, IT IS ORDERED THAT: This Partial Initial Decision shall constitute a portion of the Initial Decision to be issued upon completion of the radiological health and safety phase of this proceeding. IT IS FURTHER ORDERED THAT: In accordance with Sections 2.754, 2.755, 2.760, 2.762, 2.763, and 2.764(a) of the Commission's Rules of Practice, 10 CFR Part 2, this Partial Initial Decision shall be effective immediately and shall constitute the final action of the Commission thirty (30) days after the date of issuance hereof, subject to any review pursuant to the Rules of Practice. Exceptions to this Partial Initial Decision may be filed by any party within seven (7) days after service of this Partial Initial Decision. A brief in support of the exceptions shall be filed within fifteen (15) days thereafter, twenty (20) days in the case of the Staff. Within fifteen (15) days after service of the brief of appellant (twenty (20) days in the case of the Staff), any other party may file a brief in support of, or in opposition to, the exceptions.

IT IS SO ORDERED.

THE ATOMIC SAFETY AND
LICENSING BOARD

Robert L. Holton, Member

Frederick J. Shon, Member

Thomas W. Reilly, Esq., Chairman

Issued at Bethesda, Maryland
this 1st day of August, 1975.

(Appendixes A and B are omitted from this publication but are available at the Commission's Public Document Room, Washington, D. C.)

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

LBP-75-44

ATOMIC SAFETY AND LICENSING BOARD

Thomas W. Reilly, Chairman
Frederick J. Shon, Member
Dr. Robert L. Holton, Member

In the Matter of
DELMARVA POWER & LIGHT COMPANY
and
PHILADELPHIA ELECTRIC COMPANY
(Summit Power Station, Units 1 and 2)

Docket Nos. 50-450
50-451
August 5, 1975

SUPPLEMENT TO THE
PARTIAL INITIAL DECISION
OF AUGUST 1, 1975

Licensing Board issues supplement to its partial initial decision on environmental and site suitability aspects of the facility (LBP-75-43).

ATOMIC ENERGY ACT: APPENDIX I

The Board accepted the fact that the plant's effluents would meet the design objectives of proposed Appendix I to 10 CFR 50 as a demonstration that the plant's radiological impact would be small, but specifically rejected the idea that an HTGR must be shown to comply with the finally adopted Appendix I, since the appendix is strictly applicable only to light water reactors.

APPEARANCES

Donald P. Irwin, Esq., and F. Case Whittemore, Esq., of Hunt, Williams, Gay & Gibson, Richmond, Virginia; E. Dickerson Griffenberg, Esq., of Potter, Anderson and Corroon, Wilmington, Delaware, for the Applicant, Delmarva Power & Light Co., et. al.

Michael Parkowski, Esq., Deputy Attorney General, Dover, Delaware, for the State of Delaware.

Mark L. First, Esq., Deputy Attorney General, Trenton, New Jersey, for the State of New Jersey.

Barbara Gellman, Esq., Spec. Asst. to the Attorney General; Edward F. Lawson, Esq., and Dr. Paul D. Massicot, for the State of Maryland.

Stephen H. Lewis, Esq. Thomas M. Bruen, Esq., and Frederic S. Gray, Esq., Office of the Executive Legal Director, U. S. Nuclear Regulatory Commission, Washington, D. C., for the NRC Regulatory Staff.

I. INTRODUCTION

On August 1, 1975, this Board issued a Partial Initial Decision (Partial Construction Permit Proceeding—Environmental Matters and Site Suitability Only) in the above-captioned case. This Supplement is intended to supply certain findings inadvertently omitted from that Partial Initial Decision.

II. FINDINGS OF FACT

Radiological Impact of Plant Operation

1. During routine operation of the plant, small quantities of radioactive materials will be released to the environment. The gaseous and liquid effluent treatment systems, which are designed pursuant to 10 C.F.R. Sections 50.34a, 50.36a and 10 C.F.R. Part 20, to keep radioactive releases as-low-as practicable, (See Findings 2–4, *infra*) also serve to minimize the radiological exposure of biota other than man. The Staff has concluded that no detectable radiological impact is expected to the aquatic biota or terrestrial mammals as a result of the quantity of radionuclides to be released into the canal and into the air by the Summit Station. (FES Sections 5.4.1.1–5.4.1.3)

2. In order to aid in its assessment of the potential radiological impact of Summit Power Station on man, the Board posed the following question:

The consistent assumption throughout the FES that releases “as low as practicable. . .” for this reactor can be taken to be identical to releases “as low as practicable” for LWR’s seems ill-founded. For example, it is clear that a release rate “practicable” for tritium generated essentially carrier-free in the primary gas coolant might not be “practicable” for tritium generated in water solution in an LWR. Similarly, the physical and chemical forms of

other isotopes generated by an HTGR differ vastly from the forms generated by an LWR. The Board will require further evidence that the LWR limits are appropriate.

3. In response to the Board's question, testimony was filed by the Staff (Burke, following Tr. 418) and the Applicant. (Applicant's Exhibit 5) The Staff agreed with the Board's observation that the Staff was using "as low as practicable" (ALAP) numerical values derived from experience with LWRs. (Burke, page 2) Specifically, the Staff testified that it was using in its review of the Summit application the numerical design objectives set forth in its *Concluding Statement of Position* in the Appendix I rulemaking proceeding, Docket No. RM-50-2 (the relevant portions of which appear as Staff Exhibit 2 in this proceeding) to determine whether the effluent releases from Summit would be as low as practicable. (Tr. 434) The Staff and the Applicant agree that there does not yet exist a sufficient data base drawn from operating experience with HTGRs to develop ALAP guidelines specifically applicable to HTGRs. (Burke, page 3; Applicant's Exhibit 5, page 3) The Staff also testified that the impact from radioisotope releases at the levels set forth in its *Concluding Statement* would be insignificant. (Burke, page 3) The Applicant concurs. (Applicant's Exhibit 5, page 3)

4. The Staff acknowledges that the available data from operating HTGRs (e.g., Peach Bottom 1) indicate that some of the radioactive discharges may be lower than those from LWRs with comparable electric generating capacity. (Burke, page 2) The Staff also agreed with the Board that the composition and physical forms of the isotopes generated in HTGRs will be different from those generated in LWRs. (*Id.*) For example, since (as the Board pointed out) tritium will be in the form of a gas in the HTGR, it can be effectively removed from the reactor coolant by means of titanium sponge and disposed of as a solid. (*Id.*) This will reduce tritium releases to the environment from an HTGR as compared to an LWR. (*Id.*) The Staff went on to point out, however, that noble gases releases from HTGRs and LWRs are expected to be similar. (*Id.*) With respect to radioiodine releases from HTGRs, the data indicate that such releases will be lower than from LWRs due to a plate-out mechanism, but it is not known if this mechanism will be effective throughout the life of the plant. (*Id.*) We conclude that although the releases and associated doses may for some isotopes prove to be lower from HTGRs than LWRs, there is insufficient data available at this time to determine exactly what appropriate numerical design objectives would be for HTGRs. However, we agree with the Staff and the Applicant that it is reasonable and prudent to use the proposed Appendix I numerical values, as stated in the Staff's *Concluding Statement*, as interim working benchmarks against which to determine whether the releases from Summit will be as low as practicable.

5. The source term for gaseous effluents calculated by the Staff reveals iodine-131 releases of less than 0.0001 Ci/yr. (Staff Exhibit 1, Table 3.4) The

Applicant's calculation yields the same value. (Applicant's Exhibit 1, Table 3.5-41) These calculated values are well within the design objective of 1 Ci/yr. (Applicant's Exhibit 5, Table 1) The Staff's calculated source term for liquid effluents yields a total release, excluding tritium, of approximately 0.1 Ci/yr. (Staff Exhibit 1, Table 3.3) The Applicant calculates 1.44×10^{-3} Ci/yr. (Applicant's Exhibit 1, Table 3.5-23) Both calculated values are significantly below the design objective of 5 Ci/yr. (Applicant's Exhibit 5, Table 1)

6. The Staff's calculated doses from radioactive material in liquid effluents are set forth in the FES for various pathways of exposure and affected organs. (Staff Exhibit 1, Table 5.6) The doses to the total body, GI tract, thyroid, and bone comply with the design objective value of 5 mrem/yr. (*Id.*, Applicant's Exhibit 5, Table 1)¹ The Applicant's calculations also yield values well within the design objective. (Applicant's Exhibit 1, Table 5.3-1) The Staff's calculated doses from gaseous effluents are set forth in the FES for the site boundary, the "first real cow", the nearest farm, the nearest residence, and the nearest recreation area. (Staff Exhibit 1, Table 5.7) Calculations have been made for the doses to the total body, skin, and thyroid. (*Id.*) At each of these locations, the Staff's calculated dose is well within the design objectives of 5 mrem/yr. to the total body, 15 mrem/yr. to the skin, and 15 mrem/yr. to the thyroid from radioactive iodine and radioactive material in particulate form. (*Id.*; Staff Exhibit 2, pages 27-29) The air dose calculated by the Staff is also well within the design objectives of 10 millirads/yr. due to gamma radiation and 20 millirads/yr. due to beta radiation. (Staff Exhibit 1, Table 5.7; Staff Exhibit 2, page 28) The Applicant's calculated doses from gaseous effluents are also well within the design objectives. (Applicant's Exhibit 1, Tables 5.3-3, 5.3-4; Applicant's Exhibit 5, Table 1) We conclude that the gaseous and liquid effluents from Summit and the resulting dose to man will be in accordance with the proposed Appendix I design objectives as stated in the Staff's Concluding Statement.

7. Delaware filed testimony on the impact on the population within a 100 mile radius of the Summit site of doses from 21 nuclear power plants (operating, being built, or on order) which it calculated to fall within this 100 mile radius. (Delaware Exhibit 1, Multiple Plant Impact, page 2) Delaware maintained that it was impossible to achieve the objectives of proposed Appendix I to 10 CFR Part 50 because the effluents from each of these contributing plants were greater than the guidelines set forth in proposed Appendix I. (*Id.*, Multiple Plant Impact, page 1)

¹ The Applicant incorrectly identified 15 mrem/yr. as the design objective for dose to the thyroid from liquid effluents. (Applicant's Exhibit 5, Table 1) The correct value is 5 mrem/yr., since that numerical value applies to "an annual dose or dose commitment to the total body or to any organ". (Staff Exhibit 2, page 26)

8. We have already concluded, above, that the releases and doses from Summit will be in accordance with the proposed Appendix I design objectives as set forth in the Staff's Concluding Statement. It appears that Delaware, in formulating its testimony, was relying upon the original proposed rule issued for comment in 1971. (Tr. 434) Furthermore, Delaware did not focus so much upon the numerical design objectives for effluents and doses from a particular site, as upon the 400 man-rems/yr. per 1,000 megawatts electrical nuclear generating capacity at a site and 1 millirem per year average exposure to large population groups which the Staff expected to result from all reactors in the year 2000 based upon adherence to its proposed site boundary design objectives. (Delaware Exhibit 1, Dose Evaluation)

9. The Staff testified that in its review of the Summit application, as in all reviews of applications for nuclear power reactors, it did not specifically evaluate the cumulative regional radiological impact of operation of all existing and proposed nuclear plants within a 100 mile radius of the Summit site. (Murphy and Essig, following Tr. 420, pages 1-2) Rather, the Staff assessed only the incremental effects of the Summit plant over and above already existing environmental radiological conditions ("background"), which would include contributions from already-licensed plants. (*Id.*, page 2) The Staff testified that by holding releases and doses from Summit to the proposed Appendix I values, an annual average total body dose (and thyroid dose) of 0.1 millirem could be achieved. (*Id.*, pages 2-3) The average annual total body dose from gaseous releases to the 6.4 million people within 50 miles of the Summit site was calculated by the Staff to be 0.0014 millirem. (Staff, Exhibit 1, Table 5.9) The Staff also calculated the annual cumulative dose to this population and found it to be 30 man-rem. (Staff Exhibit 1, Table 5.10 and page 5-16, as revised, *infra*) The Staff testified that the 400 man-rem per 1,000 MWe figure from the original proposed Appendix I was a measure of the impact on the population in a region from all the reactors at one particular site. (Tr. 425-426) In that sense, it was a measure of regional impact. (*Id.*) We conclude that the 1 millirem average annual dose (since revised to 0.1 millirem) and the 400 man-rem dose per 1,000 MWe set forth in the original proposed Appendix I are not design objectives themselves, but are, rather, the population exposures expected to result given the design objectives. We find that the cumulative annual dose (in man-rem) and the average annual dose (in millirem) to the population within 50 miles of the Summit site are well within these values.

10. The Board thus finds that the total radiological impact implied by the doses set forth in the FES is negligibly small. We further find that, although the numerical values of proposed Appendix I are not strictly applicable to HTGR technology, it is unlikely that any protection measures which could be termed "practicable" would require expenditures of a size which would materially affect a cost-benefit balance or a choice of alternative power sources.

11. Delaware also raised concerns relative to the potential buildup of radionuclides in aquatic organisms and the program which would be required to monitor this buildup. (Delaware Exhibit 1, Monitoring page 2) The Staff agrees that radionuclides do tend to concentrate in aquatic organisms (Staff Exhibit 1, Table 5.5) and that monitoring of such organisms should be conducted. (Murphy and Essig, following Tr. 420, page 3) The Staff testified that the Applicant has committed to conduct a preoperational radiological environmental monitoring program, including monitoring of aquatic organisms for levels of radioactivity, which is to begin thirty months prior to startup of Summit. (Applicant's Exhibit 1, page 6.1-19) The Staff has reviewed this program and found it acceptable. (Staff Exhibit 1, page 6-5) The program is also similar to that recommended by the U. S. Environmental Protection Agency. (Murphy and Essig, following Tr. 420, page 3) The Staff further testified that the preoperational data will be examined during its review of the operational monitoring program and that based upon that examination, appropriate changes in the scope of the operational monitoring program could be required. (*Id.*, page 4) We conclude that the Applicant has set forth an acceptable program for monitoring of buildup of radionuclides in aquatic organisms.

12. We conclude that the impact due to the buildup of radionuclides in biota will, therefore, also be confined to a negligible level and properly monitored.

13. Subsequent to the environmental hearing, the Commission issued its Opinion in the Appendix I rulemaking hearing. (CLI-75-5, NRCI-75/4R 277, April 30, 1975). By letter dated May 13, 1975, we requested the parties to comment upon the applicability, if any, of Appendix I to the Summit proceeding. In response, we received memoranda of law from the Applicant (dated May 23, 1975) and the Staff (dated July 11, 1975). The Staff also submitted the affidavits of Messrs. Collins and Kastner under cover of a motion for their admission. There have been no objections to the Staff's motion. We hereby admit the Staff's affidavits into evidence in this proceeding.

14. The Staff took the position that Appendix I is not applicable to Summit. As basis for its position, the Staff pointed to the unambiguous statement of the Commission that "[t]he guides in [Appendix I] are appropriate only for light water cooled nuclear power reactors and not for other types of nuclear facilities." (NRCI-75/4R at 288) The Staff noted that this limitation follows directly from the fact that the numerical guides were adopted based upon experience with operating LWR's (Collins, *supra*). The Staff also noted that reevaluation of parameters and models used in calculating radioactive releases were being undertaken by the Staff pursuant to Appendix I, but testified that the need for any reevaluation for HTGR releases was not apparent, since there does not yet exist sufficient operating data for HTGR's. (*Id.*) The Staff concluded that radioactive releases had been properly evaluated against proposed Appendix I and that no further evaluation was necessary to demonstrate that releases from Summit will be as low as practicable. (*Id.*)

15. The Staff testified that the Commission had clearly stated that the dose guidelines of Appendix I were applicable only to LWR's. (Kastner, *supra*) The Staff noted, additionally, that the doses calculated by both the Staff and Applicant were well within the design objectives of proposed Appendix I and any recalculation using the new models currently under development would not affect its conclusion that the Summit releases will be as low as practicable. (*Id.*)

16. The Applicant took the position that although Appendix I literally applies only to LWR's, it should nevertheless be applied to Summit. (Applicant's Memorandum pages 4-13) The Applicant argued that since the Staff had applied the design objectives of proposed Appendix I, it should logically apply Appendix I as finally promulgated. (*Id.*, pages 4-5) The Applicant believed, however, that the further evidentiary submissions required could await the radiological health and safety hearing. (*Id.*) pages 9-13)

17. We are persuaded by the Staff that Appendix I is not applicable to HTGR's (e.g., Summit). The Commission has clearly indicated that Appendix I is applicable only to LWR's. (NRCI-75/4R at 288) The testimony in this proceeding further indicates that there is insufficient operating data from HTGR's to determine whether Appendix I values are truly appropriate for HTGR's. (Burke, page 3; Applicant's Exhibit 5, page 3)

18. We have found, above, that the radiological releases expected from Summit will be in accordance with proposed Appendix I. On this basis, we have concluded (Finding 10, *supra*) that the environmental impact will be minimal and that any "practicable" improvement in such impact will be of negligible weight in the associated balances.

III. FINDINGS OF FACT

Site Suitability

19. The Applicant and the Staff have evaluated the suitability of the proposed site for the Summit Power Station from the standpoint of radiological health and safety considerations. The Applicant introduced its Preliminary Safety Analysis Report for the limited purpose of providing evidence on this subject (Appl. Ex. 2), and the Staff submitted a document entitled "Report of AEC Regulatory Staff on Site Suitability (hereinafter, "Site Suitability Report" (Tr. following p. 283) The Staff's testimony concluded that the site was acceptable with respect to considerations of population density and use characteristics; nearby industrial, transportation, and military facilities; seismology and geology; meteorology; and hydrologic engineering. Delaware raised questions respecting meteorology (Tr. 717-718) and Delaware and the Board inquired into the hydrology of the site. (Tr. 718-734) In response to these questions the Staff prepared further supplemental testimony on hydrologic suitability of the Summit site. (Tr. following 1755) That testimony revealed that

groundwater hydrologic suitability of a proposed nuclear power plant site is based, *inter alia*, upon a determination of compliance with 10 CFR Part 20 concentration limits on radioactive effluents in the nearest body of water as a result of a postulated liquid radwaste spill. (*Id.*, pp. 2,4,5) With respect to the Summit site, as it now exists or might exist during plant life as a result of hydrologic changes, the Staff concluded that concentrations of critical isotopes would be well within Part 20 limits and that peak concentrations would be of only short duration. (*Id.*, pp. 4-5) In response to Delaware, the Staff noted that the boring holes at the site had been either filled with cement grout or cased and then grouted outside the casing (if they were to be used as observation wells). (*Id.*, pp. 5-6) The Staff testified that this procedure assured that it would be highly unlikely that a liquid radwaste spill would reach the water-table or deeper aquifers. (*Id.*, at 6) On the basis of the above testimony the Board finds that the Summit site is acceptable with respect to hydrologic considerations.

20. The Staff concluded that the site is acceptable with respect to meteorological characteristics. (Site Suitabil. Rep. Sec. D) Pending receipt of one year of onsite meteorological data taken at the Summit site, the Staff reviewed data taken at the Salem Nuclear Generating Plant site (about 9 miles east-southeast of Summit). (*Id.*) The Staff believed that data from the Salem site would be reasonably representative of conditions at the Summit site. (*Id.*) In any event, the Staff will review the onsite data from the Summit site in the Safety Evaluation Report. (*Id.*) After reviewing the available data we find that the Summit site is acceptable with respect to meteorological characteristics.

21. The Applicant has provided a detailed description of the site (Appl. Ex. 1 §2; Appl. Ex. 2 §2). The 1,807 acre site for the proposed plant is located 15 miles southwest of Wilmington, Delaware, the nearest population center with a population greater than 25,000. Wilmington's 1970 census population was 80,386. (Appl. Ex. 1, p.2.2-1) The Applicant has selected a distance of 2 miles as the radius for the low population zone (Appl. Ex. 2 §2.1.3.3, p. 2.1-6); thus the population center distance is greater than one and one-third times the radius of the low population zone as required by 10 CFR Part 100. The 1970 population density was 326 or fewer people per square mile at any distance within a radius of thirty (30) miles. This density is projected to increase to about 821 people per square mile in the year 2020 (Site Suitability Report, p. 2).

22. The minimum radius of the exclusion area boundary is 560 meters (Appl. Ex. 2 §2.1.2.1, p. 2.1-1; Appl. Ex. 50, p. 1). The exclusion area lies entirely within the Applicant's property (Appl. Ex. 50, p. 1). For the minimum exclusion area, low population zone, and population center distances, the Staff has concluded that there is reasonable assurance that adequate engineered safety features can be provided to meet the dose guideline values of 10 CFR 100 (Site Suitability Report, p. 3).

23. The Staff and Applicant have described and considered the industrial, transportation, and military facilities in the site vicinity. (Appl. Ex. 2 §2.2;

Appl. Ex. 1 §2.2; Site Suitability Report, pp. 3–6). The nearest railroad line is operated by Penn Central and is located 1.2 miles west of the site. The nearest highways to the site are U. S. Highway 13-301N two miles east of the site and Delaware Highway 896-72-301S about 1.5 miles west of the site. The C&D Canal, approximately 1.2 miles north of the site, provides access for shipping between the Delaware River and the Chesapeake Bay. Considerable quantities of freight passing the site via the railroad and the canal may present potential hazards to the operation of Summit Power Station. Analyses performed by the Applicant (Appl. Ex. 2, PSAR Q.2.15–2.16b, Q.2.64 and 2.64a) on effects of gasoline explosion, flammable vapor clouds, and release of chlorine have led the Staff to conclude that the plant can be designed to safely withstand the possible adverse effects of these accidents (Site Suitability Report, pp. 4–6). However, the Staff will require that gasoline vapor detectors be installed in the control room ventilation air intakes (Site Suitability Report, p. 5).

24. The nearest chemical plant is a refinery complex located 5 miles to the northeast. Industrial activity in the vicinity of the site will not adversely affect the safe operation of the plant. (Appl. Ex. 2 PSAR Q.2.17 and 17a; Site Suitability Report, p. 3).

25. The nearest airport to the site is the privately owned Summit Airpark located 1.2 miles west of the site as measured from the western boundary (Site Suitability Report, p. 5; Tr. 291). The distance from the plant center to Summit Airpark is approximately 1.8 miles (Tr. 291).

26. Based on data provided by the Applicant regarding the type of aircraft, flight paths, and the frequency of operations (Appl. Ex. 2, PSAR Q.2.14 and 2.18–18i), projected over the life of the plant, the Staff has determined that the Summit Power Station should be designed to accommodate the impact of an aircraft weighing 30,000 pounds and traveling at a speed of 125 knots (PSAR Q.2.18–18i). The Applicant has committed to this design basis (Appl. Ex. 2, PSAR, Q.2.18b §2.0). The Staff has concluded that the plant can be designed to withstand such an impact and not cause the release of significant quantities of radioactive materials, nor prevent a safe and orderly shutdown of the plant (Site Suitability Report, p. 5).

27. There are two natural gas pipelines within the plant vicinity. A six (6) inch pipeline is located approximately 1.5 miles west of the site and a ten (10) inch pipeline is located approximately 1.5 miles east of the site. Analyses performed by the Applicant on the rupture of the ten (10) inch pipeline considering adverse meteorological conditions concluded that such event will not prevent the plant from being safely shutdown (Appl. Ex. 2, PSAR, Q.2.68 and 2.68a; Site Suitability Report, p. 6). The closest military installation is located at the Greater Wilmington Airport located 11 miles north-northeast of the site.

28. The Board finds that there are no industrial, transportation, or military facilities likely to interfere with the safe operation of the proposed facility.

29. Plant grade at the Summit site is 80 feet MSL, about 78 feet above mean high tide level in the Chesapeake and Delaware Canal. The C&D Canal is a sea level canal that connects to the Delaware River, a tidal estuary, on its eastern end and the Chesapeake Bay on its western end. The flood potential at the site was evaluated from both sources in the Canal by the Applicant and the Staff (Appl. Ex. 1 §2.5; Appl. Ex. 2 §2.4; Site Suitability Report, pp. 11–13); both concluded that flooding will not constitute a threat to site safety-related facilities because of the relatively high plant grade compared to the estimated flood water levels. The Board agrees.

30. The ultimate heat sink is designed to operate without water and therefore is not dependent on the canal or groundwater for emergency operation. (Appl. Ex. 2, p. 2.4–40; Site Suitability Report, p. 13).

31. There are no known geotechnical hazards such as surface faulting, land sliding potential, or ground failure presenting a risk to the proposed Summit plant (PSAR §2.5; Site Suitability Report, p. 6). There is a unanimity of opinion (Regulatory Staff, U. S. Geological Survey, Delaware Geological Survey, and Applicant) that if faulting does exist, it does not extend through the upper portion of the Upper Cretaceous and is confined to the lower portion of the Lower Cretaceous Potomac formation. On the basis of assignment of pre-Tertiary faulting with an age of at least 65 million years, the near site faults are considered non-capable, as defined in 10 CFR Part 100 Appendix A (Site Suitability Report, p. 8) and, as such, present no safety hazard to the proposed facilities.

32. The Safe Shutdown Earthquake for the Summit site (MM VII) is based on the seismicity of the tectonic provisions of the southern Appalachian Mountain system and the Atlantic Coastal Plain province, taking into account the historical tendency to clusterings of earthquake activity and the distance of such clusterings from the site. Within the Atlantic Coastal Plain, one such cluster of activity has been associated with the vicinity of Charleston, South Carolina, with the southeast Georgia embayment and the other with the Salisbury embayment in Maryland and Delaware. (Site Suitability Report, p. 8) However, neither cluster has been associated or correlated with geologic structure. Therefore, the Applicant and Staff believe that in the near future earthquakes in the Coastal Plain may occur (Appl. Ex. 2, p. 2.5–2; Site Suitability Report, p. 8); however, the Applicant and Staff do not expect that an earthquake in the Coastal Plain province will cause an intensity at the Summit site that will exceed approximately intensity VII on the Modified Mercalli Scale. (PSAR pp. 2.5–56–2.5–57; Site Suitability Report, pp. 8–9)

33. The largest known shock intensities felt at the site were from the 1871 Wilmington, Delaware earthquake. Epicentral location is considered rather imprecise; however, damage reports and newspaper accounts place the location of the epicenter 15 miles east-northeast of the site. The maximum intensity experienced in the site was probably no greater than Modified Mercalli

(MM) Intensity V-VI (PSAR, p. 2.5-45). Several events of MM Intensity V or greater have occurred within fifty (50) miles of the site; however, it is not expected that intensities greater than associated with the 1871 Wilmington, Delaware earthquake would ever be felt at the site. (PSAR, p. 2.5-46)

34. The Staff has concluded, based on its review of available data, including investigations performed by the Applicant, that there are no geologic or seismic considerations that would preclude acceptability of the site (Site Suitability Report, p. 9); the Board concurs.

35. In its July 19, 1974, letter the Board posed the following question:

6. The PSAR (at 15.2-30) assumes that the largest potential in-leakage of moisture would be by cracking around the steam generator tube sheet. Could not greater leakage be caused by a catastrophic failure of the blower rotor, the compressor rotor, or associated rotating machinery and the flying missiles resulting therefrom?

We indicated at the Prehearing Conference of August 1, 1974, that we believed that such an accident, if possible, is characteristic only of HTGRs. (Tr. 17) Accordingly, we stated that the potential for such an accident is appropriate for consideration "...perhaps not in detail but to some extent..." in determining whether the site is indeed suitable for a reactor of the general type and size proposed. (*Id.*)

36. Testimony was filed in response to our question by the Applicant (Appl. Ex. 7, Tr. following 133) and the Staff. (Miner, Tr. following 737) The Staff testified that in reviewing the Summit site for compliance with 10 CFR Part 100 it considered, among other accidents, a steam ingress accident. (Miner, pp. 1-2) The steam ingress accident is based upon a steam in-leakage rate of 90 lb./sec due to a failure in the tube sheet. (*Id.*, p. 2) The relevant question, in the Staff's view, is whether the 90 lb./sec leakage rate could be exceeded by the accident postulated by the Board. (*Id.*) Both the Applicant and the Staff testified that the rotor assemblies are designed to remain intact at speeds in excess of the maximum that could arise in an accident situation. (Appl. Ex. 7, pp. 3-4; Miner, p. 2) Nevertheless, should the assemblies fail, a disk catcher is provided to contain any missiles that might be generated. (Miner, pp. 2-3) Since the turbine drive is located outside of the steam generator and is surrounded by a massive containment structure, the Staff and Applicant conclude that no missiles from the compressor rotor and its associated disks and blades could reach the steam generator. (Miner, p. 3; Appl. Ex. 7, pp. 5-6) We conclude that the Summit facility has been adequately designed against such an accident and that this accident does not, therefore, raise any special site suitability questions.

37. The Applicant concludes that the site is considered suitable for the construction of the proposed nuclear power station (PSAR p. 2.5-3). The Staff concludes that there is reasonable assurance that the proposed site is a suitable location for nuclear power reactors of the general size and type proposed from the standpoint of radiological health and safety considerations under the Atomic

Energy Act and rules and regulations promulgated by the Commission pursuant thereto. (Site Suitability Report, pp. 15-16). The Board agrees.

38. The foregoing findings of fact shall be deemed to be a part of the Board's Partial Initial Decision issued on August 1, 1975.

IV. EFFECT ON EARLIER CONCLUSIONS OF LAW

39. The Board does not deem the findings of fact set forth herein to alter in any way the conclusions of law set forth in the Partial Initial Decision of August 1, 1975. These findings form a part of the supporting basis for those conclusions.

V. ORDER

40. In view of the incomplete nature of the Partial Initial Decision as issued on August 1, 1975, the Board hereby directs that all of the time periods provided for appellate review and the filing of exceptions and briefs in paragraph 98 of the August 1 Partial Initial Decision shall start to run from the date of service of this supplement to the Partial Initial Decision. In all other respects the Order embodied in paragraph 98 remains the same. [See also §§2.711(a) and 2.760(c)(4).]

IT IS SO ORDERED.

FOR THE ATOMIC SAFETY AND
LICENSING BOARD

Frederick J. Shon, Member

Dr. Robert L. Holton, Member
joins in this Decision

Thomas W. Reilly, Esq., Chairman

Issued at Bethesda, Maryland
this 5th day of August, 1975.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

LBP-75-45

ATOMIC SAFETY AND LICENSING BOARD

Dr. Robert M. Lazo, Chairman
Dr. Richard F. Cole, Member
Dr. Walter H. Jordan, Member

In the Matter of
NORTHERN STATES POWER COMPANY
(Monticello Nuclear
Generating Plant, Unit 1)

Docket No. 50-263
August 5, 1975

Upon intervenor's motion to admit additional contention (on anticipated transients without scram) in operating license proceeding, Licensing Board finds (1) that such contention is clearly stated with reasonable specificity and complies with the requirements of 10 CFR §2.714(a), and (2) that, in the circumstances of this case, the intervenor has made a satisfactory showing of good cause for filing the contention at this stage of the proceeding. Board also rules that record should be kept open pending submission by the applicant of its plans for complying with newly adopted Appendix I to 10 CFR Part 50, so that issues raised by those plans could be considered, if necessary.

Motion to admit contention granted.

RULES OF PRACTICE: PETITION TO REOPEN THE RECORD

Delay in the issuance of an operating license caused by reopening the record to consider an intervenor's legitimate contentions based on new information raising serious safety problems is mandated. See: *Vermont Yankee*, ALAB-124, 6 AEC 358, 365 (1973).

RULES OF PRACTICE: AMENDMENT TO INTERVENTION PETITION

New information appearing in previously unavailable documents generally constitutes good cause for allowing an amendment to an intervention petition. See: *Indiana and Michigan Electric Company* (Donald C. Cook Nuclear Plant, Units 1 and 2), CLI-72-25, 5 AEC 13, 14 (1972).

MEMORANDUM AND ORDER

MPCA'S MOTION CONCERNING ANTICIPATED TRANSIENTS WITHOUT SCRAM

On May 7, 1975, during a hearing session in the above-captioned proceeding, Intervenor Minnesota Pollution Control Agency (MPCA) filed with the presiding Atomic Safety and Licensing Board (Board) and parties a document entitled "Submission of Additional Contentions." The contentions raised therein related to the Applicant's analysis of the consequences of anticipated plant transients in the event of a postulated failure to scram. At the request of the Board, MPCA filed a reframed contention in the form of a "Submission of Revised Additional Contention" (hereafter, Contention C.1) on May 14, 1975. In response to the requests of the parties on May 15, 1975 (Tr. 1817), the Board agreed to defer its ruling on MPCA's motion to admit Contention C.1, in order to permit all parties to have the opportunity to file written legal arguments. Thereafter, on June 2, 1975, Northern States Power Company (the Applicant) and the Nuclear Regulatory Commission Staff (the Staff) each filed a response to MPCA's submission of the additional contention. In addition MPCA filed a memorandum of law dated June 3, 1975.

By way of background, it is to be noted that one of MPCA's contentions in this proceeding (Contention II-33) was admitted as a challenge to the appropriateness of the staff assertions of low probability of Class 9 accidents as set forth in the Final Environmental Statement. Pursuant to an agreement between counsel for the Staff and MPCA, the Staff's prepared testimony on Contention II-33 was limited to consideration of two kinds of Class 9 accidents, pressure vessel failure and anticipated transients without scram (ATWS). The Staff's testimony on ATWS was considered during the evidentiary hearing in this proceeding on May 6 and 7, 1975. As noted above, MPCA's motion to introduce additional ATWS contentions was presented during the course of the evidentiary hearing on May 7, 1975.

Contention C.1, as revised, is as follows:

The Monticello plant, as it is currently engineered and operated, does not conform to the Staff's safety objective with regard to the probability of ATWS. Therefore, the plant should be modified so as to reduce the probability of such incidents.

The basis for the contention is stated to be the following:

- (1) "Supplemental Testimony of Nuclear Regulatory Commission Staff on Contention II-33," particularly pp. 3 and 92.
- (2) "Technical Report on Anticipated Transients Without Scram for Water-Cooled Reactors," WASH-1270, which is referenced in the Supplemental

Testimony and was served on the parties along with the Supplemental Testimony.

(3) Cross-examination of Staff witnesses (Tr. at 1046-1049).

(4) "Anticipated Transients Without Scram: Study for the Monticello Generating Plant," NEDO-20846.

(5) Letter of April 1, 1975, from L. O. Mayer, Manager of Nuclear Support Services, Northern States Power Company, to A. Giambusso, Director, Division of Reactor Licensing, U. S. Nuclear Regulatory Commission.

In its response, Applicant requests that the Board reject Contention C.1 because it is overly vague as well as being premature. With regard to the latter, Applicant argues that WASH-1270 makes it clear that, for the Monticello plant (and others in its category), "the Staff's position as to its safety objective is to be determined by *the Staff* on an individual case basis," and that the Staff evaluation, which has not yet been done for Monticello, will take from four to six months to complete.

The Staff supports the admission of MPCA's Contention C.1 as an issue in controversy in this proceeding and urges the Board to find that MPCA has shown good cause for the nontimely filing of the contention.

The sufficiency of Contention C.1 must be measured against the requirements of 10 CFR § 2.714 of the Commission's Rules of Practice. In accordance with § 2.714(a), the contention must be stated with reasonable specificity and with some basis provided. *Northern States Power Company* (Prairie Island Nuclear Generating Plant, Units 1 and 2) ALAB-107, RAI-73-3 at 188, 194 (March 29, 1973). If the filing is nontimely, the petitioner must also make a substantial showing of good cause for failure to file on time. We believe that Contention C.1 is clearly stated with reasonable specificity and with sufficient basis provided. (See: *Virginia Electric and Power Company* (North Anna Power Station, Units 1 and 2) ALAB-146, RAI-73-9 at 631, 633 (September 14, 1973); *Public Service Electric and Gas Company* (Salem Nuclear Generating Station, Units 1 and 2) ALAB-136, RAI-73-7 at 487, 489 (July 12, 1973)). In order to determine whether MPCA has shown good cause for the late filing of the revised contention, it is necessary to consider the history of the ATWS matter as it relates to the Monticello plant.

In September 1973 the Staff issued a "Technical Report on Anticipated Transients Without Scram (ATWS) for Water-Cooled Power Reactors", WASH-1270. This Report established three categories (A, B, and C) of nuclear power reactors and prescribed "programs of implementation" with respect to ATWS considerations for each category. (*Id.*, Appendix A). Monticello falls within Category C, applicable to plants for which neither the Commission's Safety Evaluation Report nor the Advisory Committee on Reactor Safeguards' Report at the construction permit stage identified ATWS as a matter under review. For Category C plants the Staff required submission by October 1, 1974, of analyses of ATWS consequences and reviews of reactor shutdown system

design. Thereafter, the Staff would determine the need for plant changes on "an individual case basis". (*Id.*, p. 90).

Pursuant to WASH-1270, the Applicant submitted on October 1, 1974, a review of the design of Monticello's reactor protection system (NEDO-20635, "Evaluation Report—Common Mode Failure Vulnerability of Reactor Protection System Instrumentation for the Monticello Nuclear Generating Station") and was granted an extension until April 1, 1975, to file its analysis of ATWS consequences. On April 1, 1975, the Applicant filed this analysis in a document entitled "Anticipated Transients Without Scram Study for the Monticello Nuclear Generating Plant" (NEDO-20846).

MPCA states that its revised contention is based upon the Applicant's April 1, 1975, submittal on ATWS consequences (including the covering letter thereto) and the testimony of Staff witnesses at the recently completed hearing session. In NEDO-20846 the Applicant's vendor (General Electric) clearly states that "... if a serious ATWS event is postulated, the conditions could exceed the General Electric guidelines without plant changes". (p. 3) For that reason, G. E. continues, "... minimal plant modifications are considered in this analysis". G. E. then proceeds to enumerate the following plant modifications: recirculation pump trip, feedwater pump trip, and modification of the Automatic Depressurization System. The Staff concluded after reviewing NEDO-20846 that "... the analysis submitted was not for the facility presently constituted. It was for a hypothetical facility." (Tr. 1054). The report does not, therefore, comply with the requirements set forth in WASH-1270, *i.e.*, an analysis of ATWS consequences based on existing Monticello configuration. (Appendix A, particularly pp. 89-90).

A further conflict between the Staff and Applicant regarding ATWS was revealed in the April 1, 1975, submittal and the Staff's response thereto at the recent hearing. The Applicant, despite its recognition that plant changes will be necessary to accommodate serious ATWS events, concludes in its covering letter (p. 2) that "... we do not believe backfitting of Monticello is presently warranted." Responding to that conclusion, a Staff witness stated that "... the letter does not agree with the present Regulatory Staff position that backfitting is required for the Monticello facility." (Tr. 1143)

It is apparent, therefore, that MPCA could not have known the Applicant's position on whether backfitting is required until it received, at the same time as the Staff, the April 1, 1975, report. Nor could MPCA have known the Staff's position on backfitting until it heard the testimony of the Staff at the recent hearing session.

Section 2.714 of 10 CFR establishes a standard for admission of nontimely filings. That standard requires a petitioner to make "a substantial showing of good cause" to justify the lateness of his/her actions. Four factors are set out, to which the Board must give special consideration. They are:

(1) The availability of other means whereby the petitioner's interest will be protected.

(2) The extent to which the petitioner's participation may reasonably be expected to assist in developing a sound record.

(3) The extent to which petitioner's interest will be represented by existing parties.

(4) The extent to which the petitioner's participation will broaden the issues or delay the proceeding.

While it is true that WASH-1270 has been available for some one and one-half years, its application to this proceeding and to this plant was finally established only in the Staff's testimony on MPCA Contention II-33, served on the parties in late February 1975. Further, it was not until the receipt of the Applicant's April 1, 1975, letter transmitting NEDO-20846 that MPCA became aware that the Applicant's position on this issue was in such fundamental conflict with that of the Staff. Until that time, MPCA might have determined that the Applicant and the Staff could come to agreement as to the appropriate retrofit for Monticello, thereby negating the necessity for the Board to consider this matter. Finally, it was not until MPCA's cross-examination of Staff witnesses during the recent evidentiary session in this proceeding that the conflict between the Applicant and the Staff became direct and obvious, and therefore became an issue to which MPCA could legitimately and appropriately respond.

In view of the above, the question of tardiness does not arise. MPCA has acted as expeditiously as possible in an effort to bring the issue before the Board as soon as its scope and details became clear to MPCA.

An examination of the factors cited in 10 CFR 2.714 shows that MPCA's contention C.1 should be admitted as an issue in this proceeding.

There are no other means by which the safety of the Monticello plant in the event of an ATWS and the extent of the consequences of such an event can be considered fully and publicly before an impartial tribunal such as this Atomic Safety and Licensing Board. With regard to whether MPCA's participation on this issue may assist in developing a sound record, had MPCA not raised this issue, there would be no record at all. Similarly, one cannot conclude that MPCA's interest in the matter of ATWS events and their consequences can be adequately represented by "existing parties." While there is an obvious conflict between the Applicant and the Staff on this issue, if MPCA's contention is not admitted, there will be consideration of this issue before the Board, but no party will represent MPCA's position.

The Appeal Board has provided some guidance as to the extent to which delay in the proceeding should preclude consideration of new issues. In considering a motion to reopen the record, the Appeal Board in the *Matter of Vermont Yankee Nuclear Power Corporation* (Vermont Yankee Nuclear Power Station), Docket No. 50-271, ALAB-124, RAI-73-5, 358 at 365, said:

In this same vein, the applicant has suggested that the effect of granting the motion to reopen would be to permit intervenors to seize upon, as a justification for reopening a hearing, every letter which the staff, in the exercise of its continuing regulatory responsibility, sends to an applicant. Thus, according to the applicant, an intervenor would be able to prevent indefinitely the termination of the proceeding and the rendition of an initial decision authorizing the issuance of an operating license.

We cannot accept the applicant's unstated premise that the desirability of completing the hearing outweighs the need to resolve potentially serious safety matters. This is so even though the staff believes that the matters raised by a letter do not warrant consideration in the hearing but instead can be handled by the staff outside the hearing process. The intervenors have every right, in presenting contentions for consideration, to rely upon consequential safety matters brought to light by the staff's technical experts.

In short, delay in the issuance of an operating license attributable to an intervenor's ability to present to a licensing board legitimate contentions based on serious safety problems uncovered by the staff would establish not that the licensing system is being frustrated, but that it is working properly. Any delay in such a situation would be fairly attributable not to the intervenors but to the non-readiness of the facility for operation. *Delay in the issuance of the license is entirely appropriate—indeed, mandated—in that circumstance.* (Emphasis added.)

The facts giving rise to this decision are closely analogous to the extant situation, and the decision should be dispositive of any argument based on delay. As in the *Vermont Yankee* decision, the intervenor, here MPCA, has raised before the Board a serious safety question. Indeed, an argument based on delay is even weaker in this proceeding since the record in this proceeding has not been closed, so any inconvenience or prejudice attendant to admission of the contention is surely less than it would have been in the *Vermont Yankee* setting.

More general guidance as to the standard which the Board must use has also been provided by the Commission. Its order of September 29, 1972, in *Matter of Indiana and Michigan Electric Company* (Donald C. Cook Nuclear Plant, Units 1 and 2) has long provided a precedent for Licensing Boards in considering new issues. The Commission said:

We note our longstanding practice of permitting amendments to petitions to intervene for good cause shown. Unless special considerations dictate otherwise in specific circumstances, *new information appearing in previously unavailable documents would generally constitute good cause for amendment*, assuming of course that the request to amend is expeditiously presented and is otherwise proper. Such determinations rest in the sound discretion of the Licensing Board. (Emphasis added.)

As noted earlier, MPCA's Contention C.1 is based on documents and information available only shortly before the motion to add the contention was made. Therefore, according to the Commission's standard, MPCA has made a fully satisfactory showing of "good cause" for its filing of Contention C.1 at this point in the proceeding. Because the issue raises a serious safety question, any possible delay in the issuance of Monticello's full term operating license due to admission of this contention is entirely appropriate—indeed, mandated. Accordingly, MPCA's motion is *granted* and Contention C.1 is admitted as an issue in this proceeding.

Appendix I—Implementation At Monticello

During the course of the hearing, the Commission issued a new regulation, Appendix I to 10 CFR 50. Inasmuch as many of MPCA's contentions were directed at quantities of radioactive effluents released by the Monticello plant and the attendant health effects, the Board asked the parties for guidance as to how the new regulation should be applied in this proceeding. Oral arguments were heard on two occasions during the recently concluded session of the hearing. Counsel for Applicant argued that, with the adoption of Appendix I, the Intervenor's contentions dealing with "as low as practicable" were mooted and that the hearing should be concluded without those contentions. He pointed out that under Appendix I, the Applicant had a choice of options: (1) The Appendix I, Section II guides could be met by the plant or (2) the Applicant could demonstrate that the radioactive emission from the plant would be kept "as low as practicable" as provided in Sec. I.

The Board was advised that Applicant was not prepared to state which option it would choose at this time. Further, Applicant has until June 4, 1976, to submit its proposal for meeting Appendix I guides. MPCA argued that whether the present contentions are moot depends upon the option chosen by the Applicant. Therefore, counsel for MPCA moved for permission to submit new contentions and suggested that the record be held open until the Applicant has submitted its proposal for complying with Appendix I, so that at that time MPCA would be in a position to revise its contentions or choose to withdraw them. The NRC Staff counsel is of the opinion that present contentions are moot but urges that the record be held open and that MPCA be given an opportunity to submit revised contentions.

The Board has carefully weighed all arguments. We consider that compliance with Appendix I is an important issue and is the heart of the MPCA's contentions. However we do not believe that a requirement for the presentation of further testimony would be productive prior to the receipt of Applicant's

proposal for implementation. Therefore, the Board has determined to hold the record open in this proceeding, until resolution of the Appendix I issue is possible.

The Board notes that the Staff has agreed to keep the Intervenor advised during the coming months while revised technical specifications are being considered and a final position document is prepared by the NRC Staff. The Board urges all parties to work together in an attempt to reach a stipulation concerning the Intervenor's contentions. If at any time it becomes apparent to any party that such an agreement is not possible or that the Applicant's proposal for complying with Appendix I is not satisfactory to either the Staff or Intervenor, we will entertain a motion for reconvening the hearing for the receipt of further evidence on this issue.

It is so ORDERED.

FOR THE ATOMIC SAFETY AND
LICENSING BOARD

Robert M. Lazo, Chairman

Dated at Bethesda, Maryland
this 5th day of August, 1975.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

LBP-75-46

ATOMIC SAFETY AND LICENSING BOARD

Elizabeth S. Bowers, Chairman
Cadet H. Hand, Jr., Member
Frederick J. Shon, Member

In the Matter of

Docket Nos. 50-498

HOUSTON LIGHTING & POWER
COMPANY, et al.

50-499

August 8, 1975

(South Texas Project Nuclear
Generating Station, Units 1 & 2)

Upon application for construction permits for the South Texas Project Units 1 and 2, Licensing Board, in uncontested proceeding, issues a partial initial decision on environmental and site suitability aspects of the facility, making factual determinations requisite for the issuance of LWAs and imposing certain conditions.

APPEARANCES

Melbert D. Schwarz, Esq., and Charles G. Thrash, Jr., Esq., Baker and Botts, 3000 One Shell Plaza, Houston, Texas, and Jack R. Newman, Esq., and J. A. Bouknight, Esq., Lowenstein, Newman, Reis & Axelrad, 1025 Connecticut Avenue, N.W., Washington, D. C., for the Applicant

Robert L. Pendergraft, Esq., and Rod Gorman, Esq., Assistant Attorney General, Environmental Division, Supreme Court Building, Austin, Texas, for the State of Texas

Lawrence J. Chandler, Esq., and Iver Stridiron, Esq., Washington, D.C. 20555, for the Nuclear Regulatory Commission

PARTIAL INITIAL DECISION—ENVIRONMENTAL AND SITE SUITABILITY

I. INTRODUCTION

1. This proceeding involves an application filed with the Commission¹ on July 1, 1974, by Houston Lighting & Power Company (Applicant) as Project Manager acting pursuant to a Participation Agreement, executed as of July 1, 1973, as amended, on behalf of itself and the City of Austin, Texas, the City Public Service Board of San Antonio, Texas, and Central Power and Light Company. The application, filed in accordance with the Atomic Energy Act of 1954, as amended, requests issuance of Construction Permits authorizing the construction of two pressurized water reactors, each having a design capacity of 3817 Mwt or approximately 1312 MWe. (App. Exh. 1, p. 1).²

2. The application was docketed on July 5, 1974. The proposed facility, to be named the South Texas Project Nuclear Generating Station, Units 1 and 2 ("the facility"), will be located in Matagorda County, Texas, approximately 12 miles southwest of Bay City, Texas, and approximately 12 miles northeast of Palacios, Texas. (App. Exh. 2, p. 2.1-1; Testimony of Betterton, p. 7 [fol. Tr. 433]).

3. On July 19, 1974, in accordance with the requirements of the Act and 10 CFR Parts 2 and 50, the Commission published in the *Federal Register* (39 *F.R.* 26472) a "Notice of Hearing on Application for Construction Permits". The Notice of Hearing specified that any person wishing to participate as a party in the proceeding must file a written petition, under oath or affirmation, for leave to intervene in accordance with the provisions of 10 CFR § 2.714. The Notice of Hearing also made provisions for filing of requests by interested persons to make limited appearances pursuant to the provisions of 10 CFR § 2.715.

¹The application was originally filed with the Atomic Energy Commission. Since the date of filing, the Atomic Energy Commission has been abolished and its regulatory responsibilities have been transferred to the Nuclear Regulatory Commission in accordance with the Energy Reorganization Act of 1974, 88 Stat. 1233. All references in this Decision to the "Commission" shall mean the Nuclear Regulatory Commission, unless otherwise stated.

²References to the record of this proceeding shall be as follows:

(1) References to the transcript of the prehearing conference and evidentiary hearing are cited as "Tr. —".

(2) References to Applicant's exhibits introduced into evidence are cited as "App. Exh. —, p. —".

(3) References to Regulatory Staff's exhibits introduced into evidence as "Staff Exh. —, p. —".

(4) References to prepared testimony incorporated in the transcript, but not numbered sequentially with the pages of the transcript are cited to the transcript page immediately preceding the testimony as follows: "Testimony of —, p. —, [fol. Tr. —]".

4. The Notice of Hearing set forth the issues to be considered and decided by this Board in a public hearing to determine whether or not construction permits should be issued to the Applicant. This Partial Initial Decision addresses only the environmental issues specified by 10 CFR Part 51 and the site suitability issues specified by 10 CFR §50.10(e)(2). The initial decision on the remaining radiological health and safety issues will be issued upon the conclusion of public hearings on those aspects of the Application.

5. On September 5, 1974, the State of Texas filed a "Motion for Leave to Intervene" as a participating State pursuant to 10 CFR §2.715(c). The Parties responded favorably, and the Board admitted the State of Texas as a participant by its Order of September 24, 1974.

6. On February 6, 1975, a prehearing conference was held in Bay City, Texas, to identify the key issues in the proceeding, and to establish a schedule for further actions in the proceeding.

7. The evidentiary hearing on environmental issues and site suitability was held on April 22-23, 1975, in Bay City, Texas, pursuant to a notice, issued April 3, 1975, and published in the *Federal Register* on April 9, 1975 (40 F.R. 16102). In accordance with 10 CFR §2.715, a number of limited appearances were made at the evidentiary hearing, both in support of and opposed to the construction of the facility. (Tr. pp. 79-123; 349-351). The statements in opposition to the facility raised various questions concerning the environmental and site suitability aspects of the facility and were addressed by the Applicant and Staff during the course of the proceeding. (Tr. pp. 362-414). The Board has considered these questions and responses, and is satisfied with such responses.

8. Prior to the evidentiary hearing, the Applicant, the Staff and the State, acting through their respective counsel, entered into a stipulation and agreement relating to receipt into evidence of certain Exhibits to be offered by the Applicant and the Staff, and to the written testimony to be submitted by the Applicant and the Staff. With the exception of paragraph 8 of that agreement, the Stipulation was accepted by the Board and received into evidence as Joint Exhibit No. 1. (Tr. pp. 125-126, 145, 153). Pursuant to this Stipulation, Applicant's Exhibits Nos. 1, 2, 4 and 5 and Staff's Exhibits 1 through 4 were received into evidence, and the written testimony of each of the Applicant's and the Staff's witnesses was incorporated into the record.

9. The record in this case consists of a 461-page transcript of the evidentiary hearing containing, *inter alia*, the testimony of twelve witnesses presented by the Applicant and nine witnesses presented by the Staff, and the following exhibits which were received in evidence:

Joint Exhibit No. 1	Stipulation (except paragraph 8)
Applicant's Exhibit No. 1	Application
Applicant's Exhibit No. 2	Environmental Report

Applicant's Exhibit No. 3	401 Certificate
Applicant's Exhibit No. 4	Agricultural Impact Study
Applicant's Exhibit No. 5	Chapter 2 of Preliminary Safety Analysis Report (PSAR) and Appendices D and E thereto insofar as the responses therein relate to Chapter 2
Applicant's Exhibit No. 6	Errata
Staff's Exhibit No. 1	Final Environmental Statement for South Texas Project, Units 1 and 2
Staff's Exhibit No. 2	Staff Responses to Late Comments Received on Draft Environmental Statement
Staff's Exhibit No. 3	Final Environmental Statement, Summary and Conclusion Changes
Staff's Exhibit No. 4	South Texas Project, Units 1 and 2, Docket Nos. 50-498, 499 Errata to Final Environmental Statement

By Board Order of July 14, 1975, the record was reopened to receive the following two submittals from the Applicant: an affidavit from Michael P. Noel dated June 17, 1975, and Amendment No. 6 to the Environmental Report.

A motion was filed by the Staff on July 18, 1975, to reopen the record to receive the affidavits of Messrs. J. S. Boegli and James A. Long III and Dr. Jacob Kastner. The Board issued an Order on July 23, 1975, requesting supplemental information relative to Dr. Kastner's affidavit. Before receiving the response, the Board received a document from the Applicant dated July 28, 1975, which stated that Applicant does not object to the Staff's motion. In a conference call on August 1, 1975, the State of Texas concurred with the motion and the Applicant and the State had no objection to receiving into the record the supplemental affidavits from Mr. J. S. Boegli and Dr. Jacob Kastner which were submitted in response to the Board's Order of July 23, 1975. The record therefore is herewith reopened to receive the affidavits and the supplements thereto and same are in evidence and will be considered by the Board in arriving at the decision.

II. BASIS FOR PARTIAL INITIAL DECISION

10. On April 24, 1974, the Commission published in the *Federal Register* (39 *F.R.* 14508) and adopted amendments to its Rules and Regulations, *viz.*, 10 CFR §2.761(a), §50.10(c) and (e), which provide procedures for authorization for the Applicant to conduct certain site preparation activities prior to issuance of construction permits (hereinafter referred to as a "limited work authorization" or "LWA"). Such limited work authorization may be granted by the

Director of the Division of Reactor Licensing following issuance by the Staff of its Final Environmental Statement³ and following the requisite findings by the Atomic Safety and Licensing Board relative to environmental and site suitability issues.⁴

11. By letter dated August 22, 1974, the Applicant requested the issuance of an LWA. The activities which the Applicant seeks authorization to conduct are described in Applicant's letter, and in the testimony of the Applicant's construction manager for the South Texas Project. (Testimony of Riddle, pp. 1-4 [fol. Tr. 202]). These activities are all within the scope of activities contemplated by the Commission's Regulations.

12. Section 50.10(e)(4) of 10 CFR provides that activities undertaken pursuant to an LWA shall be entirely at the risk of the Applicant, and the Applicant has acknowledged this fact. (Testimony of Riddle, p. 5 [fol. Tr. 202]).

13. Following completion of the Staff's safety review, the Board will convene another hearing to complete the health and safety phase of this proceeding and thereafter will issue its full decision concerning the construction permits applied for by the Applicant.

III. ENVIRONMENTAL MATTERS

Compliance with the National Environmental Policy Act of 1969

14. As required by 10 CFR Part 51, the Applicant submitted, with its application, an Environmental Report (ER) dated July 1, 1974. The ER, as amended, was received into evidence as Applicant's Exhibit No. 2. (Tr. 167). Based on the environmental information submitted by the Applicant in the ER, as supplemented, and on its independent analysis and review, the Staff prepared a Draft Environmental Statement (DES) which was issued in November 1974. By a Notice of Availability published November 29, 1974, the public was invited

³The Final Environmental Statement relating to the South Texas Project was issued in March 1975. Authority under 10 CFR §50.10(e)(1) has been delegated.

⁴Section 50.10(e)(2) provides that an LWA shall be issued only after the making of (1) findings relative to the environmental issues in 10 CFR Part 51, and (2) a determination that there is reasonable assurance that the proposed site is a suitable location for a nuclear power reactor of the general size and type proposed from the standpoint of radiological health and safety considerations under the Act and the Commission's Rules and Regulations.

Section 50.10(e)(3) provides that authorization of structural foundation work and subsurface preparation for structures which are subject to Appendix B to 10 CFR Part 50 may be issued upon a finding that there are no unresolved safety issues relating to such activities which constitute good cause for withholding such authorization. The Applicant has not requested authorization for any construction pursuant to 50.10(e)(3).

to comment on the DES. (39 *F.R.* 41575). Copies of the DES were also provided to appropriate Federal, State and local agencies for their comment. In March 1975, the Staff published its Final Environmental Statement (FES) (40 *F.R.* 14123) which includes, among other things, the full text of all comments received with respect to the DES (Appendix A) as well as the Staff's responses to those comments (Chapter 11), with the exception of the late filed comments from and Staff response to four interested groups and agencies which were separately made part of this record. The FES was received into evidence as Staff Exhibit 1. (Tr. 226).

15. Certain testimony filed by the Staff at the evidentiary hearing amended the FES in some respects. The FES, as amended by the record of this proceeding, fully describes the need for the Units, the plant site, the major systems of the plant, the environmental effects of site preparation and transmission line construction, the environmental effects of both plant operation and postulated design basis accidents, and the Applicant's environmental monitoring program. The FES also contains a cost benefit analysis which considers and balances the environmental effects of the proposed facility, alternatives available for reducing or avoiding adverse environmental effects, alternative methods for generating electricity, and the environmental, economic, technical and other benefits of the STP. The Staff concluded on the basis of its analysis and evaluation, set forth in the FES, after weighing the environmental, economic, technical and other benefits of the STP against its environmental and other costs, that the action called for under the National Environmental Policy Act of 1969 (NEPA) and 10 CFR Part 51 is the issuance of construction permits subject to certain limitations to protect the environment. (Staff Ex. 1, p. iv).

16. In accordance with the provisions of 10 CFR Part 51, the Board has considered whether the environmental review conducted by the Staff has been adequate and whether the requirements of NEPA have been complied with in this proceeding. Moreover, the Board has independently considered the final balance among conflicting factors contained in the record of the proceeding, has weighed the environmental, economic, technical and other benefits against environmental and all other costs, and has considered available alternatives to determine whether the construction permits sought should be issued, denied, or appropriately conditioned to protect environmental values. In this regard, the Board makes the following findings:

1. Final Environmental Statement

17. The Board finds that the FES (Staff Exh. 1), as modified by Staff Exh. 3, and as supplemented and clarified by the direct testimony of the Staff in this proceeding (Tr. 223-225), is an adequate and comprehensive review and evaluation of the environmental impact resulting from facility construction and

operation. Further, the Board finds that the FES, as so supplemented and clarified, sets forth an adequate evaluation of all alternatives to the proposed action as to which evaluation may be required.

18. In response to the Staff's review, the Applicant has made a number of commitments to limit the adverse environmental effects of construction of the facility, including measures to minimize erosion and sedimentation during site preparation and construction; measures to prevent careless disposal of waste material; measures to minimize effects of transmission construction; and measures to minimize the effects of traffic and dust during construction and operation. A more detailed summary of these commitments is set forth in Section 4.5.1 of the FES (Staff Exh. 1, pp. 4-16 through 4-18). The Applicant also agreed to comply with the conditions recommended by the Staff on pages iv and v and in Section 4.5.2 of the FES, as modified by Staff Exh. 3, pp. 1 and 2, and by direct testimony in this proceeding. (Tr. 223-225). These include in part: (1) A study to determine the need for diversion of water to Little Robbins Slough-Marsh Complex and the parameters required to minimize impacts on the Marsh Complex; (2) Scheduling of work along the transmission line rights-of-way inhabited by Attwater's prairie chicken to avoid construction in booming areas during the courting and nesting period of January 1 to June 1; and (3) Certain revisions to Applicant's monitoring programs (Staff Exh. 1, pp. iv and v and 4-18; Tr. 142, 143). The Board, on the basis of its consideration of the entire record, concurs that these are appropriate conditions to be imposed on the construction permit.

19. The primary impact of the STP on land use will be the removal of approximately 12,350 acres of land from possible agricultural development. (Staff Exh. 1, p. 5-1). The proposed South Texas Project (STP) will consist of two identical pressurized water nuclear reactor steam supply systems, turbine generator units, and auxiliary equipment. (Staff Exh. 1, pp. iii, 3-1). Cooling water for plant operation will be drawn from and discharged to a cooling lake which will occupy approximately 7310 acres of land. (Staff Exh. 1, pp. iii, 4-1). Because the alternate use of this land is for possible future agricultural production, the Board has given close scrutiny to the impacts on local as well as national agricultural requirements resulting from preemption of this acreage for the proposed STP. (See Findings 87-101 below).

20. Construction-related activities on the site will disturb about 625 acres of land, not including the 7600 acres of land disturbed to build the STP cooling lake and embankments, which will be constructed in conjunction with the project. (Staff Exh. 1, p. 4-3). Transmission line corridors will require about 5685 acres of land for rights-of-way. (Staff Exh. 1, pp. iii, 3-20).

Impacts of Construction

21. Construction of the plant will require excavating a considerable area to approximately 50 feet below the existing grade. (Staff Exh. 1, p. 4-1; Applicant Ex. 2, pp. 4.1-3, 4.1-5). The cooling lake and embankments represent the largest commitment of land in the project. These embankments will be primarily constructed of rolled earth fill removed from within the lake area and will necessitate the excavation, hauling, dumping, and compacting of approximately 23 million cubic yards of dirt. (Staff Exh. 1, pp. 4-1, 4-2). The stripping operation associated with the base of the embankments will precede the deposition of fill material. To aid compaction and reduce dust, the embankment fill material will be wetted to the proper moisture content. To control erosion on the embankments, the outer slope surfaces will be seeded and the interior slopes will be stabilized with soil cement. (Staff Exh. 1, p. 4-16, Tr. 141-143; Applicant Ex. 2, p. 4.1-3). A service road will be constructed along the top of the embankment for maintenance purposes. (*Id.*, p. 4-2). Construction of the transmission lines will affect approximately 5685 acres. Only about seven acres of this land will be taken out of production permanently (land occupied by transmission line tower bases). (*Id.*) FM 521 will be rerouted north around the STP exclusion area and an access road to the plant area will be built, affecting about 96 acres of land. (Staff Exh. 1, pp. iii, 4-2). Neither the rerouting of FM-521 nor construction of the access road and the railroad spur to the plant site is expected to have a significant environmental impact. (Staff Exh. 1, p. 4-2). The major part of the site area will be cleared during the initial phase of site preparation. Merchantable logs and pulpwood will be sold and the remaining vegetation will be burned in accordance with State and local regulations. (Staff Exh. 1, p. 4-1). The construction of the plant will cause some smoke and dust near the construction area, and noise due to construction activities will have an audible range of one-half mile, well away from all residents or passersby. Overall, the impact of these fairly localized effects is expected to be minimal.

22. Construction of the cooling lake and other plant facilities will remove about 5800 acres (27 percent) of the total Little Robbins Slough watershed. These 5800 acres represent 65% of the drainage area north of the southern boundary of the site. (Staff Exh. 1, p. 4-9). The estimated average annual total discharge through the upper reaches of the Slough of 11,240 acre-ft. per year will drop to 3950 acre-ft. per year, a 65% reduction, upon construction of the cooling lake. (*Id.*) The loss of fresh water to the Slough as a whole, down to the Gulf Intracoastal Waterway (GIWW) represents a loss of approximately 27 percent of the total surface water input. (*Id.*) The marsh complex ranges from fresh water in the upper reaches to brackish water near the GIWW, and serves as a permanent home for many freshwater and brackish water vertebrates and invertebrates. The marsh is also a breeding ground and nursery for several estuarine and marine vertebrates and invertebrates, and is of critical importance

to wildlife. (*Id.*) Reduced freshwater inflow to the marsh will convert a presently unknown amount of freshwater marsh to brackish water marsh and coastal prairie. It is known, however, that losses of freshwater marsh will adversely affect resident populations of freshwater fish, plants, aquatic insects, and other aquatic invertebrates such as the presently plentiful grass shrimp. (*Id.*) Species of freshwater fish and invertebrates in Robbins Slough that are expected to suffer population declines as a result of reduced freshwater inflow are set forth in Table 4.6 of the Staff's FES. (Staff Exh. 1, p. 4-11).

23. The conversion to brackish and saline water should not significantly impact on most estuarine-dependent organisms in the Slough, because salinities are not likely to exceed those in the GIWW and Matagorda Bay (17 to 30 parts-per-thousand in Matagorda Bay and somewhat lower in the GIWW). However, the Staff reports that many larval and juvenile forms of these organisms prefer lower salinities because food is often more abundant in areas of low salinity, and marine predators such as comb jellies and large fish are usually excluded.* In Texas water, post-larvae of white shrimp seem to prefer salinities ranging from 5 to 10 ppt while brown shrimp post-larvae generally select waters of 10 to 20 ppt salinity. (Staff Exh. 1, p. 4-11). No white or brown shrimp were collected anywhere in Robbins Slough during the Applicant's single reconnaissance sampling in June 1974. However, samples taken in the cut between Matagorda Bay and the GIWW which provides the most direct route to Robbins Slough, consistently yielded greater numbers of both white and brown shrimp than at most other sampling stations. (*Id.*) In addition, post larvae and juveniles of the penaeid shrimp (white, brown, and pink), Atlantic croaker, sand sea trout, pinfish, and southern flounder are believed to utilize relatively low salinity marshes that are similar to those in Robbins Slough. (*Id.*) Other estuarine dependent species found by the Applicant within the Robbins Slough Marsh complex included ladyfish, gulf menhaden, bay anchovy, crevalle jack, black drum, fat sleeper, and striped mullet. The Board therefore finds that little Robbins Slough is an important nursery for estuarine-dependent organisms and reduction of the freshwater inflow will impact on those organisms.

24. The most significant potential impact on wetland wildlife due to changes in the marsh concerns waterfowl. Drying up of the marsh areas coupled with increased salinity of others would necessitate the movement of these species to other areas that are already saturated with large winter populations. (Staff Exh. 1, p. 4-9). The Robbins Slough-Marsh Complex carries approximately 24,000 ducks and geese annually and contributes about 1% of all such wetland habitat in the central flyway of the United States. (*Id.*) We note that if one-half of these freshwater marshes are lost due to reduced flows in Robbins Slough caused by construction of the cooling lake, a moderate impact on the regional waterfowl population will occur.

*Staff Exh. 1, p. 4-9.

25. This Board's assessment of the impact of reduced freshwater inflow to Robbins Slough is necessarily tentative because of the unavailability of comprehensive data regarding groundwater inflow, enumeration of species present and their distributions in time and space, and population sizes. In addition, salinity data is lacking for the area between the GIWW and the freshwater portions of the slough. (Staff Exh. 1, p. 4-11). Consequently the Applicant is required to and has committed to conduct a study to determine the need for diversion of water from the Colorado River or other sources and the parameters required to minimize impacts on the marsh complex. The Staff is required to review the study program and its results and construction will be performed in such manner as to minimize watershed removal and thereby assure the validity of the study. (Staff Exh. 1, p. 4-12).

26. The Texas State Historical Preservation Coordinator states that no sites in the STP area are listed on or are under consideration as nominations for the *National Register of Historic Places*. In addition, neither the *National Register of Historic Places* nor the *National Registry of Natural Landmarks* has shown any listings for historic structures or places within 5 miles of the proposed STP, or as being endangered by the primary or alternate transmission line corridors. (Staff Exh. 1, p. 2-5, Appendix C). An archaeological survey of the site and study of the transmission line corridors, performed by the Texas Archaeological Survey and the University of Texas at Austin identified no archaeological sites. (Staff Exh. 1; p. 2-5; ER, Sect. 2.3.2). However, on reconsideration of their transmission line routes to Velasco, the Applicant has stated that the alternate route is preferable because of the impact of the previously selected route on the San Bernard National Wildlife Refuge, and because of the potential impact to an archaeologically significant area recently discovered during their further route investigation. (Tr. 172-173). The Board's findings on the proposed and alternate transmission line routes are set forth in findings 83 through 85 below.

27. As a result of construction of the STP, approximately 625 acres of the site will be covered by structures including station buildings and associated facilities such as roads, railroad spur, pipelines, materials storage areas, concrete plants, canals, and the essential cooling pond. (Staff Exh. 1, p. 4-3). The cooling lake will eliminate approximately 7600 acres of terrestrial habitat and will cause the loss of various species of plants and animals. (*Id.*) The Staff has identified some of those species which will be disturbed by the construction activities, including native and cropland communities, floral components, and consumer populations. Quantification of the effect on these species from construction activities is difficult to determine, but will probably be minimal in terms of overall populations. (Staff Exh. 1, pp. 4-4, 4-5). An area of about 1700 acres between the cooling reservoir and the Colorado River will be set aside as a wildlife refuge and allowed to remain in its present state. This area as well as other areas adjacent to the site are expected to absorb the influx of mobile organisms (App. Exh. 2, p. 4.3-3; Staff Exh. 1, pp. 4-4, 4-5).

28. After temporary disruption due to transmission line construction, the major part of the 5685 affected areas will revert back to present usage; only a small area of land will be permanently occupied by transmission line tower bases. (Staff Exh. 1, p. 4-2). The proposed transmission corridors include some Attwater's prairie chicken habitat. Though actual construction would cause some temporary displacement of the birds, the amount of land occupied by the tower bases will be negligible habitat loss. (Staff Exh. 1, p. 4-6). In addition, the decision by the Applicant that the alternate transmission line route from the site to Velasco would be utilized should further mitigate environmental and archaeological impacts. (Tr. pp. 167, 172-173, 238-239). The major impact on the Attwater's prairie chicken would be caused by disruption due to construction activities during the nesting season; however, the Applicant has stated that transmission line construction activities will be restricted so as not to impact upon prairie chicken booming areas from January 1 to June 1. (Staff Exh. 1, pp. 4-6, 4-16 through 4-18; Applicant Exh. 2, pp. 4.2-3 through 4.2-6; Tr. 142, 143).

29. The activities associated with construction of the STP will affect the aquatic biota in three existing aquatic ecosystems: (1) the Little Robbins Slough; (2) the lower Colorado River; and (3) the Robbins Slough-Marsh Complex. In addition, construction activities will include creation of the STP cooling lake. (Staff Exh. 1, p. 4-7).

30. Construction impacts on the Little Robbins Slough ecosystem prior to filling of the cooling lake will include elimination of aquatic habitat in the upper reaches of the Slough, increased siltation and suspended solids in the lower reaches of the Slough, and destruction of approximately 6 stream miles of the Slough. These losses will be replaced by a single drainage ditch along the western boundary of the cooling lake embankment. (*Id.*, Applicant Exh. 2, p. 4.1-16). A portion of the Slough south of the lake will be straightened and deepened. (*Id.*) The Staff will require that straightening and channelization of Little Robbins Slough be limited to the area within the site boundary. (*Id.*) Appropriately treated wastes associated with plant construction and the work force will be discharged to the Colorado River. (*Id.*) Other wastes such as those from the concrete mixing plant, and spilled oil and gasoline from heavy equipment will be discharged to settling basins or cleaned up as appropriate. (*Id.*)

31. The major effects of construction of the STP on the lower Colorado River will result from general construction activities which will temporarily increase suspended solids and turbidity associated with barge slip construction intake structure, discharge structure, and lake spillway construction. (Staff Exh. 1, pp. 4-7, 4-8). These structures will require the destruction of less than 2 acres of river bottom habitat, and there will be no significant long-term adverse impacts on the lower Colorado ecosystem from construction of these structures. (Staff Exh. 1, p. 4-8).

32. The construction of the plant and associated facilities including the cooling lake will not impact on the Colorado River Floodway as defined in the Federal regulations for area flood insurance. (Tr. pp. 370-373, 401). The Eastern embankment of the cooling lake will coincide approximately with the western boundary of the area designated as a flood hazard area as indicated on the Federal Insurance Administration Flood Hazard Boundary map for Matagorda county. (*Id.*) The Applicant's calculations of the hundred-year flood on the Colorado River shows that the elevation of the flood adjacent to the cooling lake approximately coincides with the eastern embankment of the cooling lake. (*Id.*) The Board agrees that the plant site and the cooling lake are outside of the floodway.

33. The Applicant has proposed a substantial number of measures to limit adverse effects of construction of the STP. (Staff Exh. 1, pp. 4-16 to 4-18; Tr. 142, 143). The Staff has evaluated Applicant's commitments, and has concluded that, if combined with certain Staff recommendations, these measures are adequate to ensure that adverse environmental effects from construction of the STP will be at the minimum practicable level. (Staff Exh. 1, p. 4-18). Both the Applicant's commitments and the Staff's recommendations to mitigate the environmental effects of construction are to be included as conditions on the construction permits for the STP and, as appropriate, any Limited Work Authorization which may be issued.

34. The Board finds that the adverse impacts on the site area of construction of the STP have been adequately described and evaluated. The Board further finds that the measures committed to by the Applicant, together with the additional measures recommended by the Staff, will ensure that adverse environmental effects will be at the minimum practicable level during construction of the STP.

Impacts of Operation

35. The primary impacts of the STP on the terrestrial ecosystem, as discussed above, will be from construction; the operation of the STP will not have a significant impact on the terrestrial ecosystems of the site nor will the transmission line routes. (Staff Exh. 1, p. 5-1).

36. The operation of the STP will result in a maximum diversion of Colorado River water of 102,000 acre-feet per year. (Staff Exh. 1, p. 5-1). Makeup pumping will occur only when river flow is greater than 300 cfs, and then only up to fifty-five percent (55%) of the excess over 300 cfs, with total withdrawal rate not exceeding 1,200 cfs. (Staff Exh. 1, p. 5-1). Blowdown to the Colorado River will be permitted only when the net river flow after makeup diversion is greater than 800 cfs. (*Id.*) Permits for withdrawal of and discharge of all streams have been filed with the Texas Water Rights Commission and the Texas Water

Quality Board. (*Id.*) Other inflow to the STP cooling lake will include about 25,000 acre-feet per year as direct rainfall. (*Id.*)

37. The total consumptive use of the Colorado River water is estimated to be 40,000 to 45,000 acre-feet per year. Since about 7500 acre feet of rainfall retained by the lake would otherwise have drained to the river, the total water loss to the river due to building and operating the STP with the cooling lake is estimated to be 47,000 to 53,000 acre-feet year. (*Id.*)

38. Seepage losses from the cooling lake are estimated at 1,450 acre-ft/yr. after steady state is attained. (Applicant Exh. 2, p. 5.1-33; Staff Exh. 1, p. 5-1). This seepage will end up in the shallow aquifer zone without affecting the groundwater level. (Staff Exh. 1, p. 5-1). No intrusion of seepage into the deep aquifer will occur. (*Id.*) The Applicant has developed a groundwater monitoring program. (Applicant Exh. 2, Sec. 6.1.2; Staff Exh. 1, p. 6-1). Mathematical models will be used in conjunction with a preoperational monitoring program to predict changes in groundwater level, dispersion of contaminants and transport through aquifers to surface water bodies. (*Id.*) The Board finds the Applicant's monitoring program acceptable.

39. The operation of the STP will potentially affect the aquatic ecosystems on and near the site through the entrainment and impingement of organisms, blowdown effects—both thermal and chemical—and through the reduction of freshwater inflow to the lower Colorado-Matagorda Bay estuary. (Staff Exh. 1, p. 5-21). Operation of the STP will not have a significant impact on the biota of Little Robbins Slough; rather, the significant impact on the biota of the Slough will occur as a result of construction of the STP. This impact has been discussed above.

40. Those organisms too small for impingement on the traveling screens of the makeup structure will be subject to entrainment in the makeup line and subsequent introduction into the cooling lake. (Staff Exh. 1, p. 5-23). Though a small percentage of these entrained organisms will eventually find their way back to the Colorado River by way of the blowdown line (*Id.*), we make a conservative assumption that all organisms entrained in the makeup line will be permanently lost from the lower Colorado ecosystem.

41. The Applicant conducted baseline studies in and around the site and identified numerous members of the ichthyoplankton, macroinvertebrate larvae, and plankton families which are subject to entrainment in the makeup line (*Id.*; Applicant Exh. 2, Suppl. to Amendment 1). A number of these organisms are commercially valuable. (*Id.*) These studies indicate that periods of high densities of these organisms occur during March through May and August through November. (Staff Exh. 1, p. 5-23). Maximum makeup water withdrawal from the Colorado River on the other hand will occur during the winter months (December through February). (*Id.*, p. 5-24). Thus, periods of maximum makeup withdrawal will not generally coincide with the presence of high densities of ichthyoplankton, post larval shrimp and larval crabs. (*Id.*) We are

therefore satisfied that entrainment of marine organisms will be minimal. However, this Board is concerned that there is a possibility that diversion of makeup at relatively low freshwater flows may result in the loss of substantial numbers of ichthyoplankton, young shrimp, and crabs. This latter possibility exists because of the preference of young estuarine organisms for brackish waters. (*Id.*, p. 5-25). Such brackish waters may occur during low flows in the Colorado River. (*Id.*)

42. The Board concludes that entrainment losses will be markedly reduced at higher net river flows, as a result of the more saline waters being limited to lower portions of the river. For those intervals when low flow conditions may prevail, entrainment of these organisms might attain serious proportions. To mitigate such adverse impacts, no makeup diversion will be allowed when freshwater flow is less than 300 cfs as measured at the Bay City gauging station. Makeup diversion will be allowed when freshwater flow exceeds 300 cfs. Such diversion will, however, be limited to 55% of net freshwater flow in excess of 300 cfs as determined at the Bay City gauging station. We note that the Applicant has previously committed to these conditions.

43. Those organisms too large to pass through the $\frac{3}{8}$ -in. mesh traveling screens will be subject to impingement. Once impinged upon, the intermittently operated screens as proposed for the STP makeup intake structure, death may result due either to injury, exhaustion, or suffocation. (Staff Exh. 1, p. 5-29). The maximum approach velocity to the screens is 0.55 fps. This should permit most adult fish and shrimp to escape impingement. Placement of the intake structure flush with the riverbank and the provision for free passage between the trash racks and screens along the length of the structure should facilitate the escape of any fish wandering into the trash racks. (*Id.*) Due to their lower swim speeds, juvenile fish will be more subject to impingement. However, during low flows, when the salt wedge is expected to carry high densities of juveniles of the estuarine-dependent fish upriver, the corresponding lower intake velocities resulting from low diversion rates will allow most juveniles to escape.

44. The Staff in its evaluation of the potential impacts of impingement of aquatic organisms has concluded that impingement should not occur to an extent that would adversely affect fish and shrimp populations of the lower Colorado River. The Board concurs in the conclusion reached by the Staff. However, we require the Applicant to initiate an impingement monitoring program that will coincide with the entrainment monitoring program. (Staff Exh. 1, pp. 5-26, 6-2 through 6-3).

45. The water which will be discharged from the STP cooling lake into the Colorado River will be the same temperature as the cooling lake itself at the circulating water intake structure. (Staff Exh. 1, p. 5-8). For all practical purposes, the Colorado River water temperature will be equivalent to the equilibrium temperature of the STP cooling lake. (Staff Exh. 1, p. 5-4). In most cases, the difference between the discharge from the cooling lake and the

equilibrium temperature of the Colorado River is a maximum of 5°F. (Staff Exh. 1, Table 5.5) Both the Staff and the Applicant predicted that the highest cooling lake temperatures would occur in July. (*Id.*) The Board concludes that the slight temperature increases to the Colorado River due to the operation of the STP will not significantly affect the aquatic populations in the Colorado River. (Staff Exh. 1, p. 5-30).

46. Chlorine will be added as a biocide to each unit approximately twice each day in 20 minute applications. (Staff Exh. 1, pp. 3-18, 5-13). The addition of chlorine to the circulating water outfall is to be controlled so that the concentration of free residual chlorine at the point of discharge to the circulating system outfall is limited to 0.2 ppm. (Staff Exh. 1, p. 5-30; Applicant Exh. 2, p. 5.4-6). Total residual chlorine in the blowdown to the Colorado River will be insignificant due to the approximate 20 day circulation time between condenser discharge and blowdown. (*Id.*)

47. The concentration of total dissolved solids (TDS) in the Colorado River as a result of the periodic discharges from the cooling lake is estimated to range from a minimum of 214 ppm to a maximum of 460 ppm. (Staff Exh. 1, p. 5-30). However, this should not result in significant adverse impacts on biota in the discharge area since most aquatic organisms can tolerate TDS levels far in excess of 460 ppm. (*Id.*)

48. An intake structure will be located on the Colorado River to supply makeup water for the STP cooling lake. The makeup structure will consist of pumps, trash racks on the river bank, and traveling screens. (Staff Exh. 1, pp. 3-5 through 3-7; Applicant Exh. 2, p. 3.4-9). Water velocity through the traveling screens will be limited to a maximum of 1 fps. (Staff Exh. 1, p. 3-7). Consequently, entrainment and impingement losses of aquatic species will be minimized. In addition, the Applicant has committed to a program of studies to develop capabilities for predicting the degree and potential effects of entrainment losses and the defining of acceptable limits of entrainment. (Staff Exh. 1, pp. 5-26, 6-2, 6-3, App. Exh. E-4, E-6; Tr. p. 142, 143).

49. The Board concludes that operation of the STP will not have a significant impact on the aquatic biota of the Little Robbins Slough or the Colorado River. The Board also takes note of the fact that the Applicant has received a certificate from the Texas Water Quality Board which certifies that the facility will comply with all applicable water quality standards and limitations, pursuant to Section 401 of the Federal Water Pollution Control Act. (Applicant Exh. 3). (See Findings 102-104).

50. The site is sufficiently remote that the noise of operating machinery will not be audible to local residents. (Staff Exh. 1, p. 5-31). The air pollution from occasional operation of the diesel engines on emergency equipment will not be significant. Transportation of operating personnel is expected to have only a minor impact on traffic, and the upgrading of roads for construction will be more than adequate for continued use during plant operation. The infrequent

use of the railroad spur will have only a minor effect on traffic on the roads that it crosses. (*Id.*) There will be some continuing aesthetic impacts where the STP transmission lines are visible from roads and residential areas, and some local fogging will occur near the cooling lake. However, this impact should not significantly affect traffic on nearby highways. (*Id.*) The impact from the influx of operating personnel on housing and community services in Matagorda County will be less than that experienced during the peak construction period, and is acceptable. (*Id.*)

Radiological Releases

51. On April 30, 1975, the Nuclear Regulatory Commission issued its Opinion in *Rulemaking Hearing—Numerical Guides for Design Objectives and Limiting Conditions for Operation to Meet the Criterion "As Low As Practicable" for Radioactive Material in Light-Water-Cooled Nuclear Power Reactor Effluents* (Docket No. RM-50-2, CLI-75-5, NRCI-75/4R 277), and thereby adopted a new Appendix I to 10 CFR Part 50 which established numerical limits on maximum individual radiological doses. As Appendix I became effective June 4, 1975, and affects the allowed limits of radiological releases, it is applicable to this proceeding. On May 30, 1975, the Staff informed this Board of the need to reopen the record on those matters regarding the radiological impacts of the facility and to revise the evidentiary basis and findings regarding these matters. On July 18, 1975, the Staff moved the introduction into evidence of certain affidavits⁵ which present a revised NEPA evaluation and cost-benefit analysis for radiological impacts from normal operation of the STP. The Board hereby grants the Staff's Motion and receives these affidavits and the supplements thereto into the record of this proceeding. (See para. 9).

52. Application of the new Appendix I will require reassessment of the proposed radwaste treatment system and may entail modification of that system in order to meet the established guides. (Affidavit of James A. Long III, p. 2). The NRC Staff is presently in the process of reassessing assumptions and evaluation models for projected radiological releases and doses to reflect the Commission's direction that such assumptions and models reflect the best available evidence and result in models which do not substantially underestimate actual exposure. (*Id.*) Appropriate models are also under development for use in determining man-rem estimates for sequential cost-benefit assessment of a range of potential radwaste augments. It will be some time before these model developments are completed by the Staff and can be applied specifically to the radwaste systems proposed for the STP to determine compliance with Appendix

⁵ These affidavits were prepared by Dr. Jacob Kastner, Mr. J. S. Boegli and Mr. James A. Long III.

I. It is anticipated that the assessments will be completed in connection with radiological health and safety hearings. (*Id.*)

53. In the interim, the Staff has attempted to estimate how the use of newer data and a broader population would affect the information presented and the conclusions drawn in the FES. Therefore, the Staff has performed certain calculations which result in an upper-bound assessment of the potential radiological impacts from normal operation of the STP. These interim calculations are reflected in the affidavits of Mr. Boegli and Dr. Kastner. The upper-bound dose estimates were calculated using revised estimated releases which were based by Mr. Boegli on current operating data. (Affidavit of J. S. Boegli, p. 3). The release values used in the Staff's interim dose calculations are not anticipated to differ significantly from the values for the final assessment. (*Id.*) In any event, Dr. Kastner's calculation of upper-bound estimates includes sufficient conservatism to account for any variation that might occur in the Staff's final calculation of radiological releases. (*Id.*, pp. 3-4).

54. Though the Staff's interim calculations have not been performed for the purpose of demonstrating compliance with Appendix I (Affidavit of James A. Long III, p. 3), the calculations performed by Mr. Boegli, and those prepared under the supervision of Dr. Kastner, result in dose estimates which are unlikely to be exceeded in the detailed assessment to determine compliance with the radiological health and safety hearings. (Affidavit of J. S. Boegli, pp. 3-4; Affidavit of Jacob Kastner, p. 3; Affidavit of James A. Long III, p. 3). Because changes to the Applicant's radwaste system could adversely affect the interim assessment of the potential radiological environmental impact, it was necessary for the Staff to seek confirmation that Applicant will not modify or remove any part of the radwaste treatment systems and equipment presently described in its Preliminary Safety Analysis Report and Environmental Report. As described in Mr. Long's affidavit (pp. 3-4), Applicant has so committed. The Technical Specifications issued at the time of the operating license will establish effluent release limits which will assure that Applicant operates the facilities in conformance with the requirements of Appendix I to 10 CFR Part 50. (Affidavit of J. S. Boegli, p. 3). On the basis of information presently available on the technology to reduce radioactive effluent releases, there is no technological reason that the STP cannot be designed to meet the requirements of Appendix I should any design change be necessary. (Affidavit of J. S. Boegli, p. 2) Should the detailed assessment to determine compliance with Appendix I show a need for any additional equipment, Applicants have committed to its installation. The cost of any such installation would be insignificant in terms of the overall cost of the facility—less than 1% of the total cost of the STP—and thus would not affect the overall cost-benefit balance. (Affidavit of James A. Long III, pp. 6-7).

55. The Staff's interim dose assessment is based on the most current operating data and includes broader consideration of the population dose (man-rem) impact by inclusion of the thyroid man-rem as required by Appendix

I. In the STP FES, consideration was limited to the maximum individual thyroid dose. In addition, the long-lived radioisotope C-14 has a population dose component of sufficient magnitude to require consideration in the environmental review and has been included in the Staff's interim assessment. (Affidavit of J. S. Boegli, p. 5, Table 1).

56. As indicated in the affidavits of Mr. Long and Dr. Kastner, these upper-bound estimates show that though the radiological impact is greater than discussed in the FES, the maximum dose to individuals, in unrestricted areas, from normal operation of the STP will not exceed the dose criteria outlined in Appendix I. (Affidavit of James A. Long III, p. 3). Additionally, an "upper-bound" estimate of population dose to the general public due to plant effluents has been ascertained. This dose will not exceed 47 man-rem to the total body and 70 man-rem to the thyroid. (Affidavit of Jacob Kastner, p. 3). The supplemental affidavits of Mr. Boegli and Dr. Kastner received by the Board in response to the Board Order of July 23, 1975 have clarified the role of C-14 in this population dose. While the Board agrees that the estimate represents an upper-bound in population dose and can therefore serve the purposes of the present Partial Initial Decision, the Board nevertheless notes that no account has been taken of C-14 produced by the (n,p) reaction on any atmospheric or dissolved nitrogen which may be exposed to a neutron flux. The Board accepts the Staff's implied judgment that this source may be neglected for the present purposes but will expect it to be treated in future safety hearings when compliance with Appendix I is treated in detail. By comparison, a total of about 33,000 man-rem is delivered to the same population as a result of the average natural background dose rate of 0.125 rem per year in the vicinity of the STP. (Staff Exh. 1, §5.4.2.7). Therefore, the dose to the population due to effluents from plant operation will be extremely minor compared to the radiation dose that persons living in the area normally receive from natural background radiation. The Board finds that the low level releases from normal operation of the STP will have no measurable impact. The Board further finds that any additional costs which might be incurred through compliance with Appendix I would be insignificant in terms of the overall cost-benefit balance and do not adversely affect it.

57. Based on its review of the PSAR, the Staff has determined that individual occupational doses can be maintained within the limits of 10 CFR Part 20. Maintaining radiation doses to plant personnel within these limits ensures that the risk associated with radiation exposure is no greater than those risks normally accepted by workers in other present day industries. (Staff Exh. 1, pp. 5-17, 5-18). It is estimated that the average collective dose to all onsite personnel at large operating nuclear plants will be approximately 450 man-rem per year per unit, or 900 man-rem for the two-unit STP (*Id.*). The Applicant's implementation of Regulatory Guide 8.8 and other guidance provided through Staff radiation protection review process is expected to result in an overall

reduction of total doses from those currently experienced. (*Id.*) The Board wishes to express its concern about certain of the implications which inhere in the annual population dose of 900 man-rem per year estimated by the Staff for the operating personnel of the plant. While such a population dose, taken as an upper-bound, clearly seems a minimal environmental impact and can thus form part of the basis for a positive environmental decision, its portent for the safety portion of the ultimate decision is less clearly acceptable. Taken in conjunction with the plant operating Staff enumerated in Fig. 13.1-12 of the Preliminary Safety Analysis Report (not yet in evidence), the 900 man-rem per year seem to be shared by about 100 people. If true, this projected practice would seem irreconcilable with the limits required by 10 CFR 20.101. The Board will expect some resolution of this apparent discrepancy during the safety hearings.

58. The Staff has evaluated the effects of the uranium fuel cycle as it pertains to the STP, and the transportation of fuel to and from the reactor in accordance with standard tables adopted in Commission regulations and has determined that such environmental effects are negligible. (Staff Exh. 1, pp. 5-17, 5-20). The Board concurs in this assessment.

59. The Board asked, in connection with radiological impacts, whether the Staff and the Applicant had considered the possibility that nonuniform corrosion product deposition in the Colorado River could result in doses to human beings greater than had been estimated on the basis of uniform distribution assumptions. (Tr. pp. 195-196). In responding to the Board's questions, the Staff and the Applicant concluded that their respective completed analyses were sufficiently conservative, and no exposures higher than those indicated by the analyses would occur. (Tr. 262-275, 300-301). The Board agrees and finds that the Staff and the Applicant have adequately assessed the radiological impacts associated with the STP and that no significant adverse impacts will occur.

Social and Economic Effects of Construction and Operation of the STP

60. During the construction period, there will be extensive additional use of local highways and roads. The most significant aesthetic impacts during construction will be air pollution resulting from airborne dust and possibly smoke which may create a local nuisance for short periods. (Staff Exh. 1, p. 4-13). In order to mitigate these impacts of construction, among others, the Applicant has made a number of commitments which are outlined in Section 4.5 of the Final Environmental Statement. (Staff Exh. 1, pp. 4-16, 4-17). We dealt with these commitments above. In addition, two households will be displaced by the construction of the STP, and 26 farm operators will have to give up their operations on the site. (Staff Exh. 1, 4-13).

61. It is expected that during the peak construction year, over 2100 workers will be involved in the STP activities. Most of the workers will move into the

region for the time they are needed if they are not already permanent residents. (Staff Exh. 1, p. 4-13). This will result in a population increase of about 2450 persons in the site vicinity during the peak construction time. The permanent operating force will number approximately 125 individuals.* It appears that the greatest demand for additional housing will be primarily satisfied through existing rental units as well as through creation of additional mobile home units in the area. (Staff Exh. 1, p. 4-14). The added population in the area due to construction of the STP will add small increases to the local school population. (Staff Exh. 1, p. 4-15). The record shows that the local school districts are taking steps to deal with this increase. (*Id.*) The local medical facilities are sufficient to accommodate the population growth expected to accompany construction and operation of the STP. (Testimony of DiNunno, pp. 18-20 [fol. Tr. 197]). An increase in other municipal services will be required. (Staff Exh. 1, p. 4-14).

62. Construction and operation of STP will cause substantial tax revenues to accrue to local governmental entities. It is estimated that \$6,576,000 will be paid in taxes each year to such entities, with approximately \$4,378,000 being paid to the Palacios Independent School District, and \$1,993,000 accruing to Matagorda in ad valorem taxes. (Staff Exh. 1, p. 4-15; Applicant Exh. 2, pp. 8.1-20, 8.2-6a). Of course, members of the plant construction force who purchase homes in the local area, and the permanent plant operating force of 125 people will, together with their families, become individual taxpayers on the local level.

63. Construction of the STP will involve, at the peak of construction activity, over 2100 workers with a total payroll for construction of the plant estimated at \$157,000,000. (Staff Exh. 1, p. 4-13; Applicant Exh. 2, p. 8.1-6). In addition, it is estimated that the annual payroll for the full-time operating force will be approximately \$2,000,000. (Staff Exh. 1, p. 5-31; Applicant Exh. 2, p. 8.1-7).

64. The Board finds that the Applicant has adequately described, and the Staff has evaluated the likely social and economic impacts from construction and operation of the STP. The Applicant will take mitigating measures during construction which will, to the maximum extent feasible, reduce the impacts of construction on the local site area. The Board also notes that construction and operation of the STP will cause substantial secondary benefits, such as local taxes, increased payrolls, and increased employment to accrue to the local community and to local governmental entities. The Board wishes to make clear that the existence of these secondary benefits does not play a part in our determination whether or not to proceed with the STP. However, having made the decision to proceed, we think it important to point out for the record that to the extent construction and operation of the STP do have an adverse impact

*Staff Exh. 1, p. 5-31.

on the community, these secondary benefits do exist and will serve in some measure to offset those impacts. *Vermont Yankee Nuclear Power Corporation* (Vermont Yankee Nuclear Power Station) ALAB-179, RAI-74-2, 159 at 177, (February 28, 1974).

Environmental Monitoring

65. The Staff has reviewed the Applicant's preoperational and operational programs for the monitoring of chemical, thermal, and radioactive effluents, and for the conduct of aquatic, terrestrial and radiological surveys. (Staff Exh. 1, Chapter 6, pp. 6-1 through 6-4). The physical parameters of Colorado River water near the plant site, such as water temperature, conductivity, pH, dissolved oxygen, turbidity, color odor, and other chemical properties have been studied by the Applicant. (Applicant Exh. 2, pp. 2.5-5 and following). Models of salinity and temperature distribution and tidal flow are being used in conjunction with the preoperational field studies to predict the environmental effects of plant operation on the Colorado River. (Staff Exh. 1, p. 6-1). In addition, a weekly groundwater-level monitoring program was also initiated by the Applicant. Groundwater quality was determined at three different depths and was analyzed for chemical and bacteriological parameters. (Applicant Exh. 2, pp. 2.5-17 and following). Mathematical models are being used in conjunction with the preoperational monitoring program to predict changes in groundwater level, dispersion of containments, and transport through aquifers to surface water bodies. The Board finds that the preoperational hydrological monitoring programs for the Colorado River and groundwater levels are acceptable.

66. A preoperational onsite meteorological program was initiated by the Applicant. It consists of a 195-foot tower located about 5000 feet east-northeast of the main reactor complex. Wind speed and direction are measured at 33 feet and 195 feet; vertical temperature gradient is measured between 33 feet and 100 feet and between 33 feet and 195 feet; ambient temperature and dewpoint temperature are measured at 33 feet; solar radiation is measured at 10 feet; and precipitation is measured at the ground. (Staff Exh. 1, p. 6-1). The primary data recording system has used strip charts, although a digital recording system is being installed. (*Id.*) The Applicant has submitted to the Staff onsite data for the period July 20, 1973, through July 20, 1974, in the form of joint frequency distributions of wind speed and direction at the 33-ft level. Data recovery was 96%. (*Id.*) The Applicant also submitted similar data for Allens Creek, Corpus Christi, Victoria, and for Galveston. (*Id.*) Based on the foregoing, the Board finds that the preoperational meteorological program is acceptable.

67. The Applicant has obtained baseline data on terrestrial biota. These studies and subsequent preconstruction studies will be used to assess the effects of site preparation and construction. (Staff Exh. 1, p. 6-1). The Staff has recommended that there be additional sampling in the preoperational terrestrial

monitoring program in the estuarine marsh complex south of the site to determine the impact on the marsh due to reduced freshwater flow. (*Id.*, p. 6-2). The Board agrees with the Staff's recommendation. Consequently, the Applicant is required to expand the terrestrial monitoring program to include a vegetational map of the 4343-acre marsh complex delineating freshwater communities (marshes, ponds, seasonal marshes, and wet meadows) and salt water (salt marshes, brackish ponds), which will provide a baseline for future evaluation. In addition, the Applicant is required to acquire distribution data for hydrophytic plant species of the marsh complex so that the species indicative of salinity ranges may be identified and used as early-warning indicators of changes in the marsh complex.

68. The Applicant made baseline studies of the freshwater and estuarine ecosystems on and near the site. These studies began in 1973 and continue to the present and are intended to identify and measure ecological changes brought about by plant construction and operation. (Staff Exh. 1, p. 6-2). Sampling stations have been established and the Staff reports that the Applicant will establish additional sampling stations within the cooling lake upon its completion. (*Id.*)

69. The Staff has reviewed the Applicant's preoperational aquatic monitoring program and has concluded that the program will be adequate to assess the impacts of construction and potential impacts of operation if the program is expanded to include additional studies. (*Id.*) The Board agrees with the Staff's conclusion and requires the Applicant to expand the preoperational aquatic monitoring program to include those studies outlined in Section 6.1.3.2 of the FES. (Staff Exh. 1, p. 6-2).

Effects of Accidents

70. The probability of occurrence of accidents including postulated dam failures on the upper Colorado River (Tr. 447-448), and the spectrum of their consequences to be considered from an environmental effect standpoint have been analyzed using best estimates of probabilities and realistic fission product release and transport assumptions. The radiological effects of accidents on the environment have been assessed using the standard accident assumptions and guidance issued as a proposed amendment to Appendix D to 10 CFR Part 50 on December 1, 1971 (36 *F.R.* 22851). (Staff Exh. 1, Chapter 7). The results of this realistic analysis demonstrate that the environmental risks due to postulated radiological accidents at STP are exceedingly small.

Need for Power

71. The four participants in the South Texas Project serve a combined area of 51,769 square miles which includes four of the eight largest metropolitan areas in the State. The total population for the area served is about 4.8 million;

approximately 41 percent of the population of Texas. (Staff Exh. 1, p. 8-1; Tr. 136). Each of the participants will own an undivided interest in the facility and will be entitled to a like share of the power generated at the facility. (*Id.*, p. 8-2).

72. The STP participants are members of the Texas Interconnected System (TIS), which is a group of ten interconnected utilities serving the bulk of the State of Texas. This affiliation was established for reliability purposes, but imposes no obligation on members. Each member is expected, however, on the average, to maintain a minimum capacity reserve of 15 percent above expected peak load. (*Id.*) The TIS members are also members of the Electric Reliability Council of Texas (ERCOT), which is one of nine regional councils of the National Electric Reliability Council (NERC). Membership of ERCOT is composed of 28 municipalities, 47 cooperatives, 8 investor-owned companies, and 1 state agency. As one of the nine regional NERC councils, ERCOT participates in the review of national planning to solve power problems, considers design and operating criteria to enhance the reliability of service by each member to its customers, and reports annually to the Federal Power Commission (FPC) current and projected data concerning the electric power supply in its region. However, the principal expectation placed upon ERCOT members is that, on the average, reserve margins will be maintained above 15% of expected peak load. (Staff Exh. 1, p. 8-2).

73. The STP participants serve a large and varied load. Generally the City of Austin (COA) and City Public Service Board of San Antonio (CPS) serve commercial, educational, and administrative centers in their respective franchise areas, including military installations. Houston Lighting & Power Company (HL&P) and Central Power and Light Company (CPL) serve substantial industrial loads and also the needs of agriculture in a large geographical area. (Staff Exh. 1, p. 8-2). The Board notes that in the aggregate, the STP participants satisfy a substantial industrial demand. The data presented by the Staff and the Applicant show that the industrial customers consume nearly 50 percent of the output of the four utilities. (Staff Exh. 1, p. 8-2). In 1973, HL&P and CPL had loads with contract provisions permitting limited interruptibility that represented 3.4 percent and 7.4 percent of the peak demands respectively. (*Id.*; Applicant Exh. 1, Table 1.1-2). Forecasts for these two participants indicate that for 1977, their interruptible loads will represent 3.1 percent of the peak demand for the four participants. (Staff Exh. 1, pp. 8-1 through 8-3; Applicant Exh. 2, pp. 1.1-3, 1.1-4 and 1.1-14).

74. Growth in total demand for electricity in the STP service area has increased at an average compound growth rate of 10% between 1963 and 1973. This varies from a low of 7.8% for CPL to a high of 11.4% for COA and is consistent with the findings of a recent report issued by the office of the Governor which indicates that the statewide growth rate in energy demand has been 10% per year. (Staff Exh. 1, p. 8-2; Applicant Exh. 2, p. 1.1-4). HL&P and CPL, the two participants which serve 75% of the population and supply 84% of

the energy demanded in the combined service area (Staff Exh. 1, p. 8-3) experienced a combined average residential use increase from 6930 KWhr per customer in 1966 to 12,082 KWhr per customer in 1972. (*Id.*) In the case of HL&P, it was determined earlier that much of this increased usage could be attributed to the greater employment of air conditioning (Staff Exh. 1, p. 8-3). Since HL&P and CPL serve very similar loads, it is likely that the same is true for CPL. Therefore, we find that the number of residential customers as well as individual demand for the Applicant's services has increased. In the commercial and industrial classes, the consumption per customer increased from 135,000 KWhr in 1966 to 221,000 KWhr in 1972. (Staff Exh. 1, p. 8-3). In the case of HL&P, there was a substantial increase in the use of electricity per dollar of value added in manufacturing during the years 1963 to 1971. (*Id.*) In addition, the average rate increase has increased by about a factor of 2 during those years. (*Id.*) Thus, we conclude that residential, industrial, and commercial activities in the STP service area are becoming more energy intensive.

75. All of the STP participants have predicted declines in their future growth rates. Consumption of electricity, in the HL&P service area has been less than forecast by an average of 2.2 percent during the period of October 1973 to June 1974. (Staff Exh. 1, p. 8-5). These revised forecasts reflect economic factors, weather conditions and conservation measures. (*Id.*) Both the Staff and the Applicant have predicted declines in the growth rate of demand for the future. (Staff Exh. 1, pp. 8-5 through 8-7; Testimony of Dr. Perl, Tr. 362-368). The Applicant's average annual compound growth rate in peak demand for the past 10 years has been about 9.6 percent. (Staff Exh. 1, p. 8-3). From 1963 to 1970 inclusive, CPS sold 30,000 KWhr and CPL purchased 52,000 KWhr, which decreased to 32,000 KWhr in 1970. (*Id.*) The other utilities neither bought nor sold any capacity nor are projected to do so. (*Id.*) Beginning in 1973, CPL began to sell 10,000 KWhr, and sales are projected to increase irregularly settling back to the same value in later years. (Staff Exh. 1, p. 8-3; Applicant Exh. 2, Table 1.1-2).

76. Based on these factors, the Staff has calculated an average future compound growth rate of 8.5 percent for the STP participants. We find that given the above factors, the projected growth rate of 8.5% is reasonable. We also note that even under the Staff's assumed growth rate, the Applicant has calculated that without the STP units 1 and 2, the combined reserve margins of the four participants in 1982 will be below the 15 percent margin required by ERCOT and recommended by TIS. (Staff Exh. 1, p. 8-2; Applicant Exh. 1, Figures 1.1-9 through 1.1-13).⁶ Therefore we conclude, to the extent that the

⁶The Board notes also the comments of the Federal Power Commission on the DES issued by the Staff. The Commission concluded "... that the capacity equivalent to that of the South Texas Project is needed on the Applicant's system and ERCOT to provide reserve capacity to meet their stated generating reserve criteria for adequate bulk power supply reliability while conserving fossil fuels."

required reserve margins will not be maintained in the future without the STP units, the evidence supports the need for the power to be generated by the STP units 1 and 2.

77. In addition to the variations in the STP participants' load projections, there have also been variations in the projected additions to fossil fuel capacity. (Tr. 135, 136). Citing the uncertainty of gas and oil supplies and justifying their decision thereon, the participants have reduced their planned additions to fossil plants, thus increasing the need for the STP. (Applicant Exh. 2, pp. 1.1-6, 1.1-25). In sum, the Board finds that the power to be generated by the STP is needed, and a delay or denial of construction permits, in light of the forecasts of Staff and Applicant, which we find reasonable, would likely force the Applicant below the reserve margin generally regarded by ERCOT and TIS as a safe margin for the maintenance of reliable service in Texas. Therefore, this facility will be needed by the Applicant in the time frame projected.

Alternatives

78. The Staff conducted a thorough review and evaluation of alternatives to the STP. (Staff Exh. 1, Chapter 9). The Staff independently evaluated the Applicant's review of alternative sites within the Applicant's service area (*Id.*), and in response to comments on the DES, reevaluated this analysis in the preparation of the FES. The Applicant's investigation identified eight potential plant sites within its service area, and in addition to those land-based sites, offshore siting was also considered. (Staff Exh. 1, p. 9-3, 9-4). The Staff concluded that the offshore siting concept is potentially suitable as a further alternative to land-based siting. However, in the time frame of the need for the STP generating units, the status of the licensing proceedings for the offshore production facility at Jacksonville, Florida, and the fact that the first two units scheduled to come off the line are to fill an order for placement off New Jersey among other things precludes the concept from consideration for the current application. (*Id.*, p. 9-4). The Board agrees with the Staff's conclusion that offshore siting is not a viable alternative for the South Texas Project.

79. In order to select the best of the eight sites, the Applicant used a numerical rating system for the final evaluation process which resulted in the selection of site B as the preferred site for the plant. (Applicant Exh. 2, Table 9.3-2; Staff Exh. 1, p. 9-10). The Staff assessed the alternative sites and found that proposed site B and alternative sites D, E and F were most acceptable based on the economic and environmental analysis performed. (Staff Exh. 1, p. 9-10). The Staff further concluded that no alternative site demonstrated a significant overall advantage over the proposed site in terms of environmental and technical costs. (Staff Exh. 1, pp. 9-3 through 9-10; Tr. 237, 238; Staff responses to Board questions, p. 11 [fol. Tr. 247]).

80. The Board finds that the site selected by the Applicant for the STP and the Staff's evaluation of that site is adequate, and that none of the alternative sites would prove environmentally more acceptable.

81. The Staff independently evaluated a number of alternative energy sources, including alternative methods of generating the necessary electricity, and alternatives such as purchased power, that would not require construction of additional generating capacity. (Staff Exh. 1, pp. 9-1 through 9-3). Only coal is a viable alternative means of generating the electricity required by the STP service area. (Staff Exh. 1, pp. 8-10, 9-1 through 9-3). Though a coal plant, assuming stringent environmental control standards, would be the approximate equal of the STP on environmental grounds, an economic comparison clearly favors nuclear power. (*Id.*) Neither the purchase of power, diversity exchange from other neighboring utilities, reactivating or upgrading an older plant, nor operating peaking units as base load, are viable alternatives to the generating capacity represented by the STP.* (Staff Exh. 1, p. 9-1).

82. Uranium is the principal natural resource material irretrievably consumed in plant operation. Other materials consumed, for practical purposes, are fuel cladding materials, reactor control elements, other replaceable reactor core components, chemicals used in processes such as water treatment and ion exchanger regeneration, ion exchange resins, and minor quantities of materials used in maintenance and operation. (Staff Exh. 1, p. 10-9). The Staff estimates that between 12,000 and 16,000 metric tons of contained natural uranium in the form of U_3O_8 must be produced to fuel the two units for 40 years. (*Id.*) The assured U. S. reserves of natural uranium, as of January 1, 1973, recoverable at a cost of \$8 or less per pound of U_3O_8 , are 247,638 metric tons of uranium. (*Id.*) Uranium reserves reported at the various forward-cost, cutoff levels are very sensitive to changes in the nation's economy. Inflation and rising costs have caused what appears to be a low inventory of uranium reserves at the lower \$8/lb. forward-cost cutoff. (Staff Exh. 1, p. 10-9; Staff Responses to Board Questions, p. 7 [fol. Tr. 247]). However, a greater reserve exists if more expensively mined ore is considered. (*Id.*) The Board concludes that in view of the quantity of materials in natural reserves, resources, and stockpile, and the quantities produced yearly, the expenditure of such material is justified by the benefits of the electrical energy produced.

83. In response to Board questions at the prehearing conference of February 6, 1975, the Staff's analysis of the proposed and alternate Lon Hill transmission line rights-of-way was reevaluated for the FES. Additional information on the alternate route was also obtained. (Staff Exh. 1, pp. 9-16, 9-17). The Staff concluded that because the Lon Hill route proposed by the Applicant follows existing lines for greater distances than does the alternate

*Nor can such conservation measures as inverse promotional advertisement or change of rate structure be expected to obviate the need for the STP. (Staff Exh. 1, pp. 8-7, 8-8).

route, the Lon Hill route is preferable. (*Id.*; Staff responses to Board questions, p. 11 [fol. Tr. 247]).

84. On reconsideration of their transmission line routes to Velasco, the Applicant has stated that the alternate route is preferable because of the possible impact of the previously selected route on the San Bernard National Wildlife Refuge, and because of the potential impact to an archaeologically significant area recently discovered during their further investigation of the transmission line route. (Tr. 172-173). The Staff has considered the proposed use of the alternate route and has concluded that this route is preferred. (Tr. 239).

85. The Board finds that the transmission line routes selected by the Applicant and analyzed by the Staff, including the proposed route from the site to Lon Hill and the alternate route from the site to Velasco, are acceptable.

86. The Applicant and the Staff conducted a review of alternative plant designs including alternative cooling systems (once-through cooling, using cooling water from the Colorado River or from the Gulf of Mexico as separate alternatives), dry cooling towers, mechanical-draft wet cooling towers, natural-draft wet cooling towers, wet-dry cooling towers, spray canals and a smaller cooling reservoir and intake and discharge structures. The Staff concluded that only mechanical-draft wet cooling towers, natural-draft wet cooling towers, spray canals and a smaller size cooling reservoir were realistic alternatives to the proposed 7000 acre cooling reservoir. (Staff Exh. 1, pp. 9-10 to 9-15). The benefit to be derived from the adoption of any of these realistic alternative cooling systems is the reduction in the amount of land required for the proposed cooling reservoir and, according to the Staff's calculations, a reduction in consumptive water use. However, the character of the source of makeup water at this site is an important factor in the consideration of alternate cooling systems. The source of water for the South Texas Project is the unappropriated flow of the Colorado River which occurs principally in the winter, or nonirrigation months. The reservoir serves not only the cooling needs of the plant but as a storage reservoir as well, removing the need for releases of water from upstream reservoirs and thus freeing waters impounded in those reservoirs for other uses. To capture these unappropriated flows for use by cooling towers would require a reservoir approximately as large as that proposed by the Applicant. Therefore, cooling towers, using the unappropriated flows of the Colorado River for makeup water, would use as much or more water than would be used by the cooling reservoir. (Tr. 171, 172; Testimony of Simmons, pp. 6 and 7 [fol. Tr. 173]). In these circumstances, there are no advantages of cooling towers or spray canals relative to the proposed reservoir; and the alternative of a smaller reservoir is unavailable. The Board finds that the proposed 7000 acre cooling reservoir is the preferred cooling alternative for the South Texas Project facility.

Agricultural Impact of Plant Construction and Operation

87. A primary impact of the STP will be the commitment of a total of about

12,352 acres of land. Approximately 10,000 acres at the site are presently used for agricultural production, most significantly rice. The Board specifically requested the Parties to address this issue. The concern of the Board was whether the preempted 10,000 acres "would be needed to help fulfill the Nation's presently foreseeable demands for agricultural products."⁷ Any assessment of whether this land would be needed for agricultural production through the lifetime of the facility must first establish its value, in terms of comparative productivity, both on a local and a national basis. *Texas Utilities Generating Company, et al.* (Comanche Peak Electric Station, Units 1 and 2) ALAB-260, NRCI-75/2 51, 54-55 (February 26, 1975).

88. The agricultural impacts were fully assessed by the Staff and the Applicant. The Staff provided a detailed discussion of land use impacts in the FES (Staff Exh. 1, pp. 10-2 through 10-7) and supplemented that treatment of the subject matter with testimony by Dr. Jerry R. Kline of the Staff. (Tr. 240-247; Staff Responses to Board Questions, pp. 12-19 [fol. Tr. 247]).⁸ The Applicant submitted testimony by Dr. Philip B. Hildebrand, and Michael P. Noel. (Tr. 178-186).

89. The Staff's assessment shows that Matagorda County has 564,400 acres now in a variety of uses including pastures, crops, and forests which have soil types that would support successful rice production.⁹ Only 49,059 of these are classified as USDA class IV land and the remainder, 515,341 acres are in land capability classes II or III. These capability classes are equivalent to those on the STP site. Only 56,700 acres of available land is used for rice production in Matagorda County; thus, only 10% of the land potentially suitable for rice production is actually used. (Kline, Supp., p. 13).

90. We find, therefore, that the soil resources to be preempted by the South Texas Project are not uniquely productive. Rather, they are comparable to soils found in the neighboring areas.

91. There is neither sufficient water nor market demand for rice to permit even a small fraction of this land to be brought into rice production at present.¹⁰ Nevertheless, ample land exists in the county to replace the production which would be lost due to the STP cooling lake and for future expansion if needed. (*Id.*)

92. Rice production on the STP constitutes 0.66 percent of the state total. (*Id.*, p. 14). The staff has stated that the practical significance of this result is

⁷ *Texas Utilities Generating Company, et al.* (Comanche Peak Steam Electric Station, Units 1 and 2) ALAB-255, NRCI-75/1, pp. 4-6 (January 23, 1975); See also *Commonwealth Edison Co.* (La Salle County Nuclear Station, Units 1 and 2) ALAB-153, RAI-73-10, 821 (October 19, 1973) and ALAB-193, RAI-74-4, 423 (April 15, 1974).

⁸ Hereafter referred to as "Kline, Supp."

⁹ Kline, Supp., p. 13.

¹⁰ *Id.*

that the change in rice production due to STP is not likely to affect prices, planting decisions, export decisions or other social, political or economic decisions which might be based on USDA data tabulations. In assessing the plant itself, it is known that 3,700 acres of rice land will be lost if the project is approved and about 164,000 hundred-weight (cwt) of rice annually will not be produced. This is finite removal with determinable dollar value. This value has already been included in the cost-benefit balancing for the project in terms of the cost of land which is related to the value of products. It is the Staff's opinion after analysis of the possible environmental effects that the significance of this proposed action is adequately assessed by considering the impact in monetary terms and that the "detectability" finding supports the conclusion that no significant underlying social issues remain which go beyond the monetary impact of the project. (*Id.*) The Board concurs in this finding. We also note that the present worth of future crops is already accounted for in the economic value of the land which is included in the cost assessment of alternatives.

93. The Staff has utilized USDA statistics which indicate that there are more than one billion acres actually in farms in the United States. This is land devoted to all farm uses; not all of it is cropland. (Kline, Supp., p. 14; Staff Exh. 1, pp. 10-2 through 10-6). The United States currently has about 335 million acres devoted to harvested cropland. In Texas, there are about 25 million acres devoted to crops exclusive of improved pastures. (*Id.*) Mr. Kline testified that the overall competition for land from nonfarm uses in the United States is not strong relative to the amount available although it can be important in some localities. It currently amounts to a net decrease of land in farms of about 1 million acres per year in the United States. This is about 0.1% of the national inventory. In the United States, about 1.5% of the total land is devoted to urban-industrial uses. (Kline, Supp., p. 15).

94. The testimony presented by the Staff indicates that the food situation in the United States has recently been discussed by a committee of the National Academy of Science. (Kline's testimony following Tr. 247). Their analysis concludes that the United States should be able to feed itself with no trouble for at least the next decade. Beyond that time, they are unwilling to make projections because of uncertainties inherent in forecasting. (*Id.*)

95. Longer term projections of demand for food and need for land have been made by Carr and Culver. (Kline's testimony following Tr. 247). Their analysis of projected need for food grains through the year 2000 indicates that worldwide demand for food grains is expected to rise by 30 to 45 percent between 1980 and 2000. (Kline, Supp., p. 16). Rising demand for food grains is expected to be adequately met through increased crop productivity, even though the rate of increase is slowing somewhat. (*Id.*)

96. Through the year 2000, the United States will harvest between 390 and 471 million acres of cropland, most of which is on classes I, II and III

agricultural soils. Nationwide there are approximately 630 million acres of land presently available. (*Id.*, pp. 15-16).

97. The exact future allocation of energy from the STP is not known, but it is reasonable to assume that additional increments of available energy will have a positive effect on production of technological inputs to agriculture. Only an energy rich society can sustain the high yield required to meet current and future demands for food both for domestic consumption and export. Therefore, it is not clear that the construction of an energy producing facility constitutes an adverse impact on agricultural production even though proportionally small amounts of productive land are preempted. (Staff Exh. 1, pp. 10-5 and 10-6).

98. In addition to the above factors which indicate a minimal impact on agriculture, the Staff has pointed out in the FES that the facility will use only unappropriated flows of the Colorado River when river flow is greater than 300 cfs, and then only up to 55% of the excess over 300 cfs. (Staff Exh. 1, p. 5-1). Therefore, there is little practical likelihood that the diversion of water for the STP will have a significant impact on agricultural production in the area.

99. The Staff also considered alternative cooling systems to the proposed cooling lake in part to determine whether other cooling systems would result in a reduced consumptive water use, land preemption and an even smaller impact on agriculture than has been postulated for the STP while utilizing a cooling lake. (Staff Exh. 1, pp. 9-10 through 9-14; Kline, Supp., p. 17). The Staff determined that ten thousand acre-feet of water would be saved as a result of the use of cooling towers rather than a cooling lake. (Kline, Supp., p. 17). Theoretically, this water could be used to produce another 2,000 acres of rice based on a use rate of 5 acre-feet per acre per year. (*Id.*) However, a significant amount of land would be removed from production as a result of such towers and the need for makeup water storage. (*Id.*) In addition, production of rice in this part of Texas is water limited, not land limited (Staff Exh. 1, pp. 10-6, 10-7), and it is expected that water currently appropriated for rice production at the STP site could be transferred for continued production on other currently available cropland. (Testimony Hildebrand and Noel, pp. 4, 5 [fol. Tr. 186], Tr. 298-299).

100. During plant operation, groundwater withdrawal will average only about 130 gpm. (App. Exh. 2, p. 5.7-2; Staff Exh. 1, p. 5-1). This withdrawal will be exclusively from the deep aquifer zone, while seepage from the reservoir is expected to be limited to the shallow aquifer zone. The Board inquired into the agricultural impact of the use of this amount of groundwater (Tr. 18-19) and the effects of groundwater withdrawal on the aquifer. (Tr. 311-330). This amount of water (210 acre-feet per year) would be sufficient to irrigate about 50 acres of rice land. (App. Exh. 4, p. 7-5; Tr. 186, 343). The anticipated drawdown in the deep aquifer during the life of the plant, both from plant usage and from pumping by other landowners, is not expected to affect existing wells which have historically been drilled to the bottom of the aquifer. (Tr. 326-331).

Over the forty-year life of the plant, the saltwater wedge in the lower aquifer, which is now located near the intracoastal canal, may be expected to intrude about one-half mile north as a result of pumping throughout Matagorda County. Pumping at the plant represents an insignificant contribution to total pumping in Matagorda County. (Tr. 354-355). A late change in App. Exh. 4, accepted into evidence by the Board Order of July 14, 1975, with concurrence of all Parties, altered the alleged historical usage of groundwater (Tables 3.4 and 3.5) so that it now appears that no sharp increase in irrigational use occurred between 1964 and 1969. In the Board's opinion, this change does not affect the conclusion that groundwater use by the plant will be of negligible impact.

101. In sum, the Board concludes that the preemption of land and water for the purpose of the STP will have no significant adverse long-term effects on United States or State agricultural production. Adverse effects at the county level could occur but there exists a potential for compensatory production by bringing other suitable land into production and it may be that the very presence of a substantial new nonfossil energy source may in itself act indirectly to increase agricultural production.

Compliance with the Federal Water Pollution Control Act Amendments of 1972

102. The Commission may not issue any license or permit for the STP unless, in compliance with Section 401 of the Federal Water Pollution Control Act Amendments of 1972 (FWPCA) the State of Texas either certifies (a) that there are no applicable effluent limitations or standards under Sections 301, 302, 306 and 307 of the FWPCA, or (b) that there are such applicable standards and limitations and the discharges from the STP will comply with those standards and limitations; or in the alternative has waived certification.

103. On April 22, 1975, the Applicant received from the Texas Water Quality Board a certificate (the 401 Certificate), pursuant to Section 401, which certifies that the proposed STP "will comply with the water quality standards of the State of Texas and with applicable effluent limitations or other limitations or standards which have been promulgated under FWPCA, Sections 301(b), 302, 306 or 307, insofar as the same are applicable to said project." (Applicant's Exh. 3). The Applicant's 401 certificate, which is in evidence in this proceeding, fully complies with Section 401 of the FWPCA. *Washington Public Power Supply System* (Hanford No. 2), ALAB-113, RAI-73-4, p. 251 (April 12, 1973).

104. Because the State of Texas has certified that the proposed STP will comply with applicable standards and limitations, this Board may not determine compliance. (Interim Policy Statement, §5(c); also see FWPCA §511(c)(2)). In short, the positive 401 certification from the State of Texas is dispositive of the question of compliance with applicable limitations and standards.

Cost Benefits

105. The Staff conducted a cost benefit study of the various alternatives considered, and concluded that the proposed design, as set forth in the Final Environmental Statement (Staff Exh. 1) is an acceptable choice, after weighing economic, environmental, and technical costs and benefits. (Staff Exh. 1, Chapter 10). The Staff has also determined that the benefits from the STP far outweigh its costs. (*Id.*)

106. The primary benefits of constructing and operating the South Texas Project will be the generating and sale of approximately 13.1 to 17.5 billion kilowatt hours of electricity per year, based on a 60 to 80 percent capacity factor. (Staff Exh. 1, p. 10-10).

107. A number of environmental impacts will result from the construction and operation of the STP, which may be summarized as follows:

(a) Approximately 8,000 acres of land will be removed from the natural environment for the life of the plant. (Staff Exh. 1, p. 10-9).

(b) Approximately 50,000 acre-feet of water per year will be diverted from the Colorado River for plant operation.

(c) The topography of approximately 5685 acres will be altered by the construction of new transmission lines.

(d) Small numbers of plankton, small fish, etc. will be destroyed during makeup pumping from the Colorado River to the STP cooling lake and by intake to the circulating water system of the facility. (Staff Exh. 1, pp. 5-23 through 5-29, 6-2, 6-3, App. E-4, E-6; Tr. 142, 143).

(e) Removal of a portion of the watershed of the Little Robbins-Marsh Complex will reduce fresh water inflow to the complex. The Applicant has committed to a study program which will determine whether this impact need be mitigated by introduction of fresh water from other sources.

(f) Smoke and dust from construction activities may create a temporary nuisance within a few miles of the construction area.

(g) There is a very low risk of exposure of the public to accidentally released radiation.

(h) Approximately 12,000 to 16,000 metric tons of U_3O_8 must be produced in order to fuel the two plants for the 40-year plant life.

(i) The environmental effects of the uranium fuel cycle and the transportation of fuel have been accounted for and are so small as to not materially affect the cost-benefit analysis for this facility.

108. The Board, in accordance with 10 CFR Section 51.52(c) has weighed the environmental, economic, technical, and other benefits of the proposed South Texas Project against environmental costs. The Board finds that the benefits of the proposed STP far outweigh its cost.

IV. SITE SUITABILITY

109. The site proposed for the South Texas Project, Units 1 and 2, has been reviewed by the Commission's Staff to determine whether the site is suitable for light water reactors of the type and size proposed by the Applicant. The proposed site is located in south central Matagorda County, Texas, west of the Colorado River, nine miles northwest of Matagorda, Texas, and approximately 89 miles southwest of Houston, Texas. (United States Nuclear Regulatory Commission Report on the Suitability of the Proposed South Texas Project Units 1 and 2 Site,¹¹ p. 1).

110. The proposed South Texas Project will consist of two identical pressurized water reactor units similar in most aspects to those reviewed and approved for other nuclear power plants now in operation or under construction, e.g., the Comanche Peak Steam Electric Station, Units 1 and 2 (Docket Nos. 50-445 and 50-446). Each of the South Texas Project units will have a nuclear steam supply system designed for a thermal output of 3817 megawatts and a net electrical output of 1250 megawatts. This compares with a nuclear steam supply system thermal output of 3425 megawatts and a net electrical output of 1159 megawatts for each of the Comanche Peak units. (*Id.*)

111. The Comanche Peak units are among the class of pressurized water reactors (RESAR-3) with the highest power level approved for a construction permit. The major differences between the design of the units for the South Texas Project (RESAR-41) and approved units using the same general class of pressurized water reactor units (e.g., fuel element length, reactor vessel closure design and ECCS design) do not affect site suitability since the functional requirements for these systems and components will be essentially identical to those approved for other plants. (Staff Report, pp. 1-2). Accommodation of the reactor design differences is a matter affecting consideration of such areas as engineered safety features and operating limitations which would be reflected in the technical specifications for the facilities at the operating license stage. Further consideration of appropriate safety features, which would account for such differences, among other things, will be presented in the Staff's Safety Evaluation Report. The design basis accident analyses related to site suitability will be conducted for technically achievable core thermal power level of 4100 megawatts.¹²

112. The Board's review has been guided by the reactor site criteria given in the Commission's regulations (10 CFR Part 100) concerning site suitability as related to the radiological health and safety of the public. The factors considered are the population distribution and density; use characteristics of the site

¹¹ Hereafter referred to as "Staff Report" following Tr. 448.

¹² However, the Staff has stated its position that if these units are approved for operating licenses, the maximum core thermal power will be limited to 3800 megawatts in accordance with Regulatory Guide 1.49. (Staff Report, p. 2).

environs including whether there are nearby industrial, transportation or military facilities that could influence the acceptability of the site; and the physical characteristics of the site including the meteorology, hydrology, geology, seismology, and foundation engineering. (*Id.*, pp. 2-3).

113. We have evaluated the information provided by the Applicant and the Staff. On the basis of these efforts which are reflected in the following, we have concluded that the South Texas Project site is suitable for light water reactors of the type and size proposed by the Applicant.

Population Density

114. The proposed South Texas Project site is situated on a 12,352 acre tract of land in Matagorda County in south Texas. The area surrounding the South Texas Project site is rural in character. (Staff Report, pp. 2-3; Applicant Exh. 4, p. 1-1). The 1970 population density within 10 miles of the South Texas Project site was ten persons per square mile, and the population density within 30 miles of the site is projected to be 19 persons per square mile by 1980 and 40 persons per square mile by 2020. (Staff Report, p. 3).

115. The nearest population center now containing more than about 25,000 residents, as defined in 10 CFR Part 100, is Victoria, Texas, which is located 59 miles west of the site. (*Id.*) The 1970 population of Victoria was 41,349 persons. At the Staff's request, the Applicants investigated the possibility of another community closer to the proposed site developing into a population center of 25,000 or more residents. Bay City, Texas, located 12 miles north-northeast with a population of 11,733, had the highest 1970 population of any city within 40 miles of the site. (*Id.*, pp. 3-4). According to population projections provided by the Applicants, the population of Bay City, Texas, is projected to be about 24,000 persons in 2020. (Testimony of Betterton, pp. 9-11 [fol. Tr. 433]). Given a literal interpretation of 10 CFR Part 100, Bay City would not qualify as a population center; in any event, based on the Applicants' proposed low population zone radius of three miles, the distance to either Bay City or Victoria is well in excess of the minimum distance of one and one-third times the low population zone radius as required by 10 CFR Part 100 and requires no special considerations. The Staff discussed the designation of a population center with the Applicant and it has agreed that Bay City, Texas, should be the designated population center for the STP. (*Id.*) We concur that this is an appropriate designation.

116. The minimum distance to the exclusion area boundary is 4692 feet (1430 meters). The Applicant presently owns all of the surface and mineral rights within the approximately 1800 acre exclusion area, with the exception of an undivided one-eighth interest in a 32-acre tract. The Applicant has, however, initiated a condemnation proceeding to acquire this interest. (Tr. 360-361). Therefore, we conclude that there is reasonable assurance that the Applicant will

have the authority to determine the activities within the exclusion area as required by 10 CFR Part 100.

117. The Staff's analysis of the offsite radiological consequences of postulated design basis accidents to demonstrate acceptability of the South Texas Project site in accordance with 10 CFR Part 100 exposure guidelines will be performed for a core ultimate thermal power level of 4100 megawatts. (See Finding 111 above). This power level is only slightly greater than the core ultimate thermal power level of the Grand Gulf Nuclear Station boiling water reactors (4025 megawatts thermal) which were recently issued construction permits and about 15 percent higher than that of the largest pressurized water reactor units that have received construction permits. This would increase the activity release term by 15 percent over the largest previously licensed pressurized water reactor unit. (Staff Report, p. 5).

118. We have concluded that there is reasonable assurance based on the factors set forth above and in comparison with recently approved facilities, that feasible and practicable engineered safety features can be provided to meet the radiation exposure guidelines values in 10 CFR Part 100 for the minimum exclusion distance and low population zone specified for the proposed South Texas Project site, and that the revised population center does not present a siting constraint.

119. The Board has inquired whether there were any problems associated with the evacuability of the site which might preclude its suitability. The Staff has analyzed this matter and has concluded that there are no geographical or cultural features which would prevent the development of an acceptable emergency plan. (Staff Responses to Board Questions, pp. 1-2 [fol. Tr. 247]; Testimony of Betterton, p. 10 [fol. Tr. 433]). The Board concurs in this assessment.

Nearby Industrial, Transportation and Military Facilities

120. At present, a county highway (FM 521) crosses the southern part of the proposed exclusion area. However, this highway will be rerouted around the outside of the northern boundary of the proposed exclusion area. (Staff Exh. 1, p. iii; Applicant Exh. 2, p. 4.3-3). The Applicants have made preliminary arrangements with the Matagorda County Highway Department to reroute county highway FM 521. Three other small county roads lie between four and five miles from the proposed site. The closest major highway is State Route 60, which is located about seven miles east of the site. There are no railroad lines within five miles of the proposed site other than two industrial spur lines which terminate about five miles northeast. (Staff Report, p. 506).

121. The Colorado River runs in a generally north-south direction east of the proposed site with its closest point of approach being about three miles. The river is used for barge transportation between the Gulf Intracoastal Waterway

which is located about ten miles south of the proposed site, and a turning basin on the river which is located about five miles north-northeast of the proposed site. The barges carry petroleum products, raw and finished chemicals, and shellfish products. (*Id.*, p. 6).

122. The largest industrial facility near the proposed site is the Celanese Chemical Company plant which is located on the Colorado River 4.8 miles north-northeast of the proposed site. (Staff Report, p. 6; Testimony of Betterton, pp. 11-15 [fol. Tr. 433]). A gasoline and diesel oil unloading facility is also located on the Colorado River about four miles northeast of the proposed site. The facility has the capacity to store 75,000 gallons of petroleum products. (*Id.*) The nearest pipeline to the proposed site is a 16-inch natural gas pipeline about two miles to the northwest. A 30-inch natural gas pipeline is located 4.5 miles from the proposed site. (*Id.*)

123. The Applicant has evaluated and the Staff has reviewed the potential consequences of explosive accidents and accidents involving the release of toxic chemicals which have been postulated to occur as a result of the transportation and industrial activities in the vicinity of the proposed site. No accidents have been identified for which the South Texas Project facilities could not be adequately designed to accommodate. (*Id.*)

124. Four gas and oil (primarily gas) production fields lie within five miles of the proposed South Texas Project site. The South Duncan Slough and Petrucha fields, the closest gas-producing fields, are located approximately 1.7 and 3.5 miles from the proposed site, respectively. (Staff Report, p. 7; Testimony of Betterton, pp. 11-15 [fol. Tr. 433]). The Applicant states that there is little or no potential for future expansion of the gas and oil production fields within five miles of the site for the following reasons:

(1) There is no potential for oil or gas production down to a depth of at least 6,000 feet beneath the proposed site, based on records from eight wells drilled on and immediately adjacent to the site. The logs from these wells indicate a lack of suitable stratigraphic or structural oil traps and a general thinning of the oil- and gas-producing sands in the area.

(2) The zone between 6,000 and 10,000 feet has not yielded commercial quantities of oil or gas in any of the seven wells that have penetrated this zone.

(3) Any possible future source of oil or gas production would have to be from some presently unknown zone at a depth in excess of 10,000 feet. (Staff Report, p. 7).

125. The Staff agreed with the Applicant that it appeared unlikely that there would be further development of the gas and oil fields in the vicinity of the proposed site. However, the Staff requested that the Applicant evaluate the potential hazard to the proposed site in the event that sometime over the lifetime of the plant successful drilling operations might be conducted closer to

the proposed site than is now indicated. (Staff Report, p. 8). The Applicant performed an analysis of a "worst-case" type of drilling accident which was assumed to occur at the site boundary. The Applicant postulated that a well blowout occurred and gas was continuously released at the maximum flow rate which could be delivered from the gas-bearing strata in the vicinity of the proposed site. Backflow from a connecting pipeline was also included in the gas flow rate. Five percentile (accident) meteorology conditions were assumed and the downwind (toward the site) extent of the flammable limits of the gas cloud were determined. (*Id.*) It was conservatively assumed that the cloud remained at ground level and no credit was taken for the inherent buoyancy of the natural gas cloud. The unconfined gas-air mixture was assumed to detonate at the approximate cloud centroid, a point 1460 feet downwind of the source, and the resultant blast overpressures and ground accelerations were calculated for the nearest proposed safety-related structures. This analysis indicated that the consequences of the gas cloud explosion would be within the acceptable design limits. (Staff Report, pp. 8-9; Testimony of Betterton, p. 13 [fol. Tr. 433]). The Board concurs with the Applicant's and Staff's analyses and conclusions.

126. In addition to the analysis of a postulated drilling accident, the Applicant contacted various authorities in government and industry and reviewed the available reports on well blowouts. These discussions and reports did not produce any indications of potential damage occurring beyond about 1,600 feet from the well. (*Id.*, p. 9).

127. Liquid petroleum gas is stored underground in Matagorda County in the Markham salt dome which is 16 miles from the proposed site. At this distance, the underground storage of liquid petroleum gas presents no hazard to the proposed South Texas Project site which is designed to withstand the probable maximum residual impact from an accident at the storage facilities. (Staff Report, p. 9). Two other salt domes are located in the county, the closest of which is 10 miles from the proposed site. However, no liquid petroleum gas is stored in either of these salt domes. (*Id.*) Extensive underground exploration of Matagorda County indicates that there is little likelihood of the existence of other salt domes in the vicinity of the site.

128. A small airport with a grass runway located 9.5 miles from the proposed site is the closest airport to the proposed site. A low level military airway (OB-19) passes over the South Texas Project site. The Applicant states that flight route OB-19 was a special purpose training route which was last used in 1971 and that there are no current plans for its reactivation. (Testimony of Betterton, p. 15 [fol. Tr. 433]). Furthermore, the U. S. Air Force has stated in a letter to the Applicants that OB-19 will be modified to ensure a minimum clearance distance of five miles from the site. (Staff Report, pp. 9-10).

129. No significant nearby transportation, military and industrial activities have been identified which have the potential for affecting the safe operation of a nuclear plant at the proposed South Texas Project site. Therefore, from the

standpoint of these considerations, the Board has concluded that the South Texas Project site is suitable for reactors of the type and size proposed.

Meteorology

130. The proposed South Texas Project site is located in a region where atmospheric conditions are more favorable than in most other areas of the country. A description of meteorological conditions at the site, including the climatology of the region, local meteorological conditions, and expected severe weather, is presented in Section 2.6 of the Commission's Final Environmental Statement for the South Texas Project Units 1 and 2 issued in March 1975. (Staff Exh. 1, Sec. 2.6). In the evaluation of atmospheric dispersion conditions at the proposed site, the Staff used joint frequency distributions of wind speed and direction by atmospheric stability class (based on vertical temperature difference) from one full year of onsite data (July 20, 1973 through July 20, 1974). The joint frequency was based on winds measured at the 33-foot and 195-foot levels. The data recovery rate for the year of data provided by the Applicant was greater than 90 percent. (Staff Report, p. 10).

131. The Staff report presented an evaluation of short-term accidental releases from buildings and vents, assuming a ground-level release with a building wake factor, c_A , of 1320 square meters, and using the accumulated onsite data and the diffusion model in Regulatory Guide 1.4. The Staff report compared the short-term (0-2 hours) relative concentration (X/Q) values calculated for the proposed South Texas Project site with similar values calculated for over 40 other sites. This comparison indicates that the dispersion conditions at this site will be better than those occurring at about 90 percent of the other sites previously approved. (*Id.*, p. 11). The Board concurs in this assessment.

132. The occurrence of severe weather conditions at the proposed site, including tornadoes, is similar to other sites in this area of the country. The Applicants have selected a design basis tornado, consistent with the recommended tornado model presented in Regulatory Guide 1.76, which is adequately conservative for that area of the country. (*Id.*)

133. We have concluded that with regard to the expected atmospheric dispersion conditions and the occurrence of severe weather conditions, including tornadoes, the site is acceptable for reactors of the size and type proposed.

Hydrology

134. The proposed site is located in the lower Colorado River basin. Plant grade will be at elevation 28 feet mean sea level (MSL). Accesses to safety related facilities will be at or above 28 feet mean sea level. All safety-related facilities subject to the estimated probable maximum flood (PMF) levels for the area are to be protected by waterproof doors. Cooling water for normal operation will be provided by a 7,000 acre cooling reservoir impounded by earth

and soil-cement embankments, which are not seismic Category I, with several dividing dikes to enhance cooling of heated effluents. (*Id.*, p. 12).

135. The Board inquired about the Parties' evaluations of the flood potential. The Applicant has studied several possible postulated events for the probable maximum flood and has concluded that the worst case would be that of a postulated instantaneous failure of a large section of the cooling reservoir embankment. The Staff has reviewed these events which include failures of dams on the Colorado River (Tr. 447) which was an area into which this Board had inquired. Two cases of embankment failure were considered, one for the main facility structures and the second for the emergency cooling pond. In the first case, a 2000-foot section of the embankment facing the plant was postulated to fail, producing an instantaneous water level between the proposed Units 1 and 2 of 47.7 feet mean sea level. The maximum runoff on the face of the buildings is estimated to be 50.3 feet mean sea level resulting from the postulated failure of a 4000-foot embankment. (Staff Report, p. 13).

136. The second case was that of a postulated 1300 foot embankment failure facing the emergency cooling pond. This postulated failure would cause an instantaneous water level of 53 feet mean sea level, overtopping a part of the emergency cooling pond embankment, but only for a short time. (*Id.*) Hydrologic loading of structures is based on the flood analysis. In either case, we have concluded that the analysis is conservative, and safety-related features of the plant would not be compromised. (Staff Report, p. 13). Further, on the basis of the evaluations performed (Tr. 447), the Board is satisfied that flooding caused by dam failures on the Colorado River do not present a siting constraint.

137. Since a large cooling reservoir will be provided, low water levels in the Colorado River from drought or storm setdown present no safety-related hazards.

138. Groundwater aquifers in the site vicinity are included in the thick and widespread composite of deltaic sediments of the lower Gulf Coastal Plain. These deposits extend to depths of as much as 2,600 feet or more in this area and have been designated as the Gulf Coast Aquifer. They are composed of discontinuous interfingering beds of clay, silt, sand and gravel. The groundwater consists of a shallow aquifer which occurs above depths ranging from 90 to 150 feet in the site area and a deep aquifer which lies below depths of 200 to 300 feet in the site area. These two aquifers are separated by a thick aquiclude which is composed predominately of clay materials, usually 150 feet thick. (*Id.*, p. 14).

139. Groundwater usage during facility operation is estimated by the Applicant at 560 gallons per minute. Wells will draw on the high quality deep aquifer zone and will be at least 4,000 feet from the proposed facility site. Facility dewatering during construction will draw only on the little used shallow aquifer zone. (*Id.*)

140. Groundwater usage in the region surrounding the proposed site is almost totally from the deep aquifer zone. This aquifer is confined by artesian pressure under a thick aquiclude of impermeable clay, so there is virtually no potential for contamination from an accidental spill. Because of its low quality, only minor amounts of water from the shallow aquifer zone are used. Flow is to the south from the facility site in the direction of the Colorado River and Matagorda Bay. Seepage from the large cooling reservoir is not expected to alter the groundwater levels and flow patterns. (*Id.*, p. 15).

141. Since the radioactive waste treatment system storage tanks (the maximum concentration of their contents will be limited by the technical specifications) will be housed in seismic Category I structures, accidental releases of radioactive waste from this system will be very unlikely. However, if an accidental liquid spill from the radioactive waste treatment system were to occur in or around the proposed facility, conditions are unlikely for transport of contamination in the shallow aquifer. This is because of the low permeability of the soil and the artesian pressure which has a level that reaches two to fifteen feet below plant grade.

142. The Staff and the Applicant estimated very conservatively, and the Board concurs that it would take more than 2,000 years for contamination to move one mile toward the Colorado River in the shallow aquifer zone for a postulated spill at the plant site. If the contaminant got into the cooling reservoir, travel time might be much shorter, possibly reaching the area of the Colorado River in 100 to 200 years. The contaminant would, however, be diluted by the large volume of the reservoir and, therefore, decay time considerations are insignificant. (*Id.*, pp. 15-16).

143. Subsurface hydrostatic loadings are calculated with the conservative assumption that the groundwater levels are at plant grade even though they range from two to fifteen feet below plant grade. The Board considers that the effects of the cooling reservoir on the groundwater level will be relatively small.

144. On the basis of our evaluation of the hydrological conditions to be expected at the proposed site, we have concluded that groundwater travel time, dilution and dispersion factors available in the event of a postulated radioactive liquid spill are not generally different than other sites that have been approved such as the North Anna Power Station. Therefore, the Board has concluded that, with regard to hydrological conditions, the proposed site is acceptable for reactors of the type and size proposed for the South Texas Project site.

Geology, Seismology and Foundation Engineering

145. The proposed South Texas Project Site is located immediately adjacent to the Colorado River in Matagorda County, approximately 12 miles southwest of Bay City, Texas, within the essentially featureless West Gulf Coastal Plain section of the Coastal Plain physiographic province. The Gulf of Mexico is nearly

15 miles southeast of the proposed facilities. A Pleistocene deltaic sequence of interbedded, lenticular clays, silty clays and sands and gravels with clay interbeds in excess of 2,600 feet thick underlies the critical structures area. (Staff Report, p. 17). The uppermost formation, the Beaumont, consists predominantly of stiff to hard clay with some silty clay layers as well as silty sand and some fine to medium sand. Information indicates at least 750 feet of the Beaumont has been penetrated by site-related borings. Thickness of the Beaumont underlying the site has not been established, but based on the Staff and Applicant's evaluations of regional geological studies, it is probably in excess of 1,400 feet. Estimates vary, but the depth to pre-Mesozoic basement rock may exceed 45,000 feet in the site area. (Staff Report, p. 17). There are no known geologic hazards such as surfaces or near surface faulting, landsliding or ground failure attributable to subsidence or collapse brought about by man's activities at the proposed South Texas Project site or region presenting a risk to the proposed nuclear power facilities. (*Id.*)

146. Surface and subsurface investigations conducted by the Applicants included drilling, electric logging, trenching, geophysical investigations, visual and remote sensing techniques including side-looking airborne radar imagery, Earth Resources and Technology Satellite photography, aerial photography and infrared scanning, as well as extensive laboratory and field testing. (*Id.*, pp. 17-18). Subsurface investigations, specifically seismic reflection surveys and induction electric logs, have been utilized by the Applicant and reviewed by the Staff in order to define the nature of geologic structure. These investigations have provided data for a distance of at least two miles in each direction beyond the site boundaries. The Applicants indicate nine seismic reflection lines have been made within the site boundaries, of which four are within the critical plant structure area. (*Id.*)

147. Geophysical data generated as a result of exploratory gas and oil investigations were obtained to a depth of approximately 16,000 feet beneath the site. These investigations, coupled with paleontological evidence, have not identified any geologic structure within at least 6,000 feet of ground surface, thus indicating lack of definable movement within the past 12,000,000 years. As such, any faults which may be interpreted to exist below the 6,000-foot depth would not be considered as capable under the Commission's criteria, 10 CFR Part 100, Appendix A, and would present no safety hazard to the site. (*Id.*, p. 18). The Applicants are currently investigating the thick shale sequences below the 6,000-foot seismic reflector and have stated that the results of these confirmatory investigations will be reported in the Safety Evaluation Report. (*Id.*)

148. Subsidence due to fluid extraction, both petroleum and groundwater, has been observed within the Texas Gulf Coastal Plain. Fluid extraction has reportedly contributed to or resulted in differential surface displacement but apparently only in association with pre-existing faults projecting to the surface.

(*Id.*, p. 19). The lack of discernible structure within at least the upper 6,000 feet of the ground surface at the site would appear to preclude any hazard from differential surface displacement. Regional, essentially uniform subsidence affecting the site is anticipated from future groundwater extraction. Uniform stratigraphic conditions, coupled with the lack of discernible layers within the underlying utilized aquifer, appear to us to rule out the possibility of significant detrimental differential movement due to groundwater extraction. (*Id.*)

149. We have concluded that the investigations performed by the Staff and the Applicant demonstrate that there is little likelihood of intolerable differential subsidence occurring at the site. However, general subsidence will occur. (*Id.*) The Board requires a monitoring program conducted at regular intervals necessary to document subsidence in the South Texas Project site area. The Applicant has committed to install an instrumentation system designed to monitor the groundwater environment and potential subsidence at the proposed South Texas Project site. (*Id.*) The Board agrees with the Staff that such a system should be installed. The Staff will evaluate and assess the details of the Applicant's proposed system and will report the results of their review in the Safety Evaluation Report. (*Id.*, pp. 19-20).

150. The Applicant has committed (Applicant Exh. 5, Section 2.5.4.10.3) to install such monitoring equipment prior to the commencement of construction. As requested by the Staff, the Board agrees that it is proper that such equipment and program be reviewed and approved by the Staff prior to installation. (Tr. 445). Furthermore, the overall subsidence monitoring program, in order to be fully evaluated by the Staff and reflected in its Safety Evaluation Report (*Id.*) should be provided to the Staff in time to assure installation prior to commencement of construction of Category I structures.

151. Subsidence hazards attributed to the withdrawal of petroleum are highly unlikely within the site boundaries. Extensive subsurface investigations, both geophysical and test holes, conducted by the Applicants and previously by numerous oil exploration firms within the site boundaries have not found conditions, either stratigraphic or structural, favorable for the accumulation of commercially attractive hydrocarbon deposits. (*Id.*, p. 20).

152. Based upon the Staff's and Applicant's studies and the exploration history at the proposed site, the Board believes that hydrocarbon production within the site boundary would be highly unlikely. In any event, the Applicants have obtained all the mineral rights within the approximately 1,800 acre exclusion area. However, the Staff report states that petroleum production at great depth (in excess of 11,000 feet) cannot be totally discounted in the immediate site area. (Staff Report, pp. 20-21). The report states further that, due to the extreme depth, apparent limited size of the potentially producing field, reduced permeability and porosity of any potential hydrocarbon yielding strata, the Staff does not consider subsidence due to fluid or gas extraction from considerable depths to constitute a potential hazard at the proposed South

Texas Project site. (*Id.*) The Board agrees with this assessment of the impacts of petroleum production on the site.

153. In the unlikely event oil were to be extracted in the site vicinity from considerable depth, the instrumentation system to be installed by the Applicant will be capable of detecting small movements resulting from the removal of oil or other materials so that appropriate considerations of remedial measures can be given. (Staff Report, p. 21).

154. Numerous linears, with two predominant strike directions, northeast and northwest, have been identified within and extending beyond the site boundaries. (*Id.*) The Applicant has shown that two linears are located in the eastern portion of the South Texas Project site. These linears have been thoroughly investigated by the Applicant and the Staff has concluded that those passing through the critical facility structure areas do not represent a hazard to the proposed South Texas Project site. (*Id.*) The investigations conducted by the Applicant include detailed airphoto studies (conventional as well as remote sensing techniques), studies of soil and surface geologic maps, comparison of the linears with the surface projections of postulated deep faults, comparison of the photolinears with geomorphic features, and trenching coupled with geologic mapping both at the site and along the Colorado River. (*Id.*, pp. 21-22). These studies revealed no evidence of structural control of the linears in the South Texas Project site area. The cause of linears is not known. While some have structural control (at least in the Houston area) over part of their extent, state-of-the-art investigations have been utilized by the Applicant showing no apparent relationship between discernible subsurface geologic structure and photolinears in the proposed South Texas site area. (Staff Report, p. 22). The Board concludes there are no geologic considerations that would preclude the acceptability of the site for reactors of the type and size proposed for the South Texas project.

155. The proposed South Texas Project is located in the Gulf Coastal Plain Tectonic Province. In terms of historical earthquakes, the Gulf Coastal Plain is one of the least active areas of the United States. The South Texas region in which the proposed site is located is even less active than most areas of the Gulf Coastal Plain. (*Id.*) The reported earthquake activity nearest to the site was of intensity IV, Modified Mercalli (MM), and occurred at a distance of over 80 miles from the proposed South Texas Project site. The largest earthquakes in the Gulf Coastal Plain, excluding the northern Mississippi Embayment, occurred more than 180 miles from the site at Rusk, Texas, in 1891; near Wortham, Texas, in 1932; at Donaldsonville, Louisiana, in 1930; and near Paris, Texas, in 1882. (*Id.*, pp. 22-23). The earthquake near Paris, Texas, occurred near the juncture of the Ouachita and Wichita tectonic belts and was apparently related to those structures. The event at Rusk occurred near the Mt. Enterprise Fault System. The Wortham earthquake occurred near the Mexia-Talco Fault System. Based on the sparse damage reports and the limited areas over which the

earthquakes were felt, it appears that the Rusk earthquake, the Donaldsonville earthquake, and the Wortham earthquake were comparable in size. (*Id.*) The observed phenomena indicate that all of these earthquakes were of shallow focus and relatively short duration. The reported intensities for these earthquakes were MM VII for the Rusk event, MM V to VII for the Wortham event, and MM V to VI for the Donaldsonville event. (*Id.*) No capable faults have been identified which could affect the seismicity of the South Texas Project site.

156. The seismicity studies and geologic investigations do not indicate any structures which would cause future earthquake activity to be localized in the site vicinity. In evaluating the maximum earthquake potential in the site area, the Staff and Applicant assumed that an earthquake similar to those at Rusk, Donaldsonville, or Wortham could occur at the site. The safe shutdown earthquake is based on this event.

157. On the basis of the investigations and studies conducted by the Staff and Applicant, the Board concludes that with regard to seismological considerations, the South Texas Project site is suitable for the location of reactors of the type and size proposed.

158. The soils of the STP site are composed of discontinuous lenses of silts, sands and clays of varying consistency, typical of low-lying deltaic deposits. Some thirteen significant strata of importance to foundations (within the uppermost 300 feet of sediments) have been identified during the Applicant's site exploration program. (Staff Report, p. 24). The seismic Category I emergency cooling pond will have a water level of 25 feet mean sea level and will be formed by excavating an eight-foot deep hole to elevation 17 feet mean sea level in the alluvium. A 13-foot high dividing dike (crest elevation 38 feet mean sea level) will bisect the pond and a nine-foot high dike surrounding the emergency cooling pond dike (crest elevation 34 feet mean sea level) will retain wave runoff within the pond. (*Id.*) To assure that an adequate supply of water will be available for emergency shutdown, we require periodic monitoring of leakage from the emergency cooling pond. Permeability of the site soils are generally low so that the proposed emergency cooling pond is feasible. (*Id.*)

159. The containment buildings and fuel handling buildings will be founded on a 10-foot-thick silty sand lens about 60 feet below plant grade. The Staff Report states that because the near surface soils are unsuitable for founding other facility structures, a pit type excavation will be dug for these structures and the soils will be excavated and replaced with structural backfill. (Staff Report, p. 24). Therefore, these structures which will be at various elevations will be founded on competent backfill.

160. Borrow material suitable for the construction of the extensive dike system is generally plentiful in the plant area. Select material for filters, drainage blankets, and structural backfill are apparently unavailable near the South Texas Project site. (*Id.*, p. 25).

161. The foundation soils which will support the seismic Category I dikes and the main cooling reservoir dikes are composed of interbedded silts, sands and slickensided clays. These clays are rather brittle and peak strengths are reached at low strains and residual strengths are much less than peaks. As set forth in Findings 145 through 147 above, the Board has found, based on the Staff's and Applicant's investigations, that no capable structures have been identified which could affect the seismicity of the STP site, or the integrity of the dikes. The Board notes, however, that the effective strength of the interbedded silts and sand lenses may be somewhat reduced immediately following a seismic disturbance. The Applicant and Staff have investigated classic liquefaction of the site soils, and have determined that these conditions are unlikely to be developed during a postulated safe shutdown earthquake. There has not been an assessment of the post-earthquake stability of safety-related earthwork associated with the emergency cooling pond. However, the Staff believes stability can be demonstrated for the site soils involved using well-known principles of soil mechanics and classic stability analysis methods. (Staff Report, p. 25). The Board agrees with this assessment.

162. The Staff Report indicates that the most difficult aspect of foundations for the South Texas Project involves the long-term settlement of facility structures. These settlements vary from building to building, depending on load and foundation design, but are expected to range to about one-half foot. Unless appropriate plans are made for connecting piping and conduits, severe distress to these components may be induced as long-term settlement and tilting of buildings occur. (*Id.*, p. 26). According to the Applicant, buried pipes will be designed to withstand only half of the soil strain caused by the postulated earthquake. For settlement and buried piping, it is our judgment that more explicit and conservative criteria are needed and that a construction permit cannot be issued until such criteria are developed and applied. The Board believes, however, that properly conservative criteria can be applied effectively for construction in areas characterized by the soils at the proposed South Texas Project facilities. The Applicant plans to install rebound and settlement measuring devices which will aid in interpreting total and differential settlement of buildings within the plant complex. The Board stresses, however, that such a system must be installed prior to commencement of actual construction of seismic Category I structures, including excavation and grading as the Applicant has agreed. (Applicant Exh. 5, Section 2.5.4.10.3). Accordingly, the Board expects prompt submittal of the program to the Staff for its evaluation and approval.

163. The Board has concluded that the soil and foundation conditions at the South Texas Project site are suitable for the proposed facility structures. The Board has also concluded that the proposed preliminary foundation and earthwork designs are acceptable. With the provision that conservative design criteria, responsible construction planning and control measures, and confirma-

tory measurements of foundation and emergency cooling pond performance are carried out, the Board has concluded that there are no inherent foundation hazards associated with the proposed South Texas Project site which would preclude the use of this site for plant facilities and reactors of the type and size proposed.

164. On the basis of our review of the STP site parameters, the Board concludes that in all respects the proposed site is a suitable location for the two nuclear power reactor units and associated facilities of the type and size proposed from the standpoint of radiological health and safety considerations under the Atomic Energy Act of 1954, as amended, and the rules and regulations promulgated by the Commission pursuant thereto.

V. PROPOSED FINDINGS OF FACT

165. Any proposed findings of fact submitted by the Parties hereto, which are not incorporated directly or inferentially into this Partial Initial Decision, are herewith rejected as being unsupported in fact or law or as being unnecessary to the rendering of this Partial Decision.

VI. CONCLUSIONS OF LAW

The Board has given careful consideration to all of the documentary and oral evidence presented by the Parties. Based upon our review of the entire record in this proceeding and foregoing findings, and in accordance with 10 CFR Part 51 of the Commission's regulations, the Board has concluded as follows:

- (a) The environmental review conducted by the Staff pursuant to the National Environment Policy Act of 1969 has been adequate;
- (b) The requirements of Section 102(2)(c) and (d) of the National Environmental Policy Act of 1969, and 10 CFR Part 51, have been complied with in this proceeding;
- (c) This Board has independently considered the final balance among conflicting environmental factors contained in the record in the proceeding and determines that the appropriate action to be taken (if this Board, after hearing the evidence in the radiological health and safety phase of this proceeding, should make affirmative findings on issues 1, 2, and 3, and a negative finding on issue 4 set forth in the Notice of Hearing) is issuance of construction permits for the proposed South Texas Project facility, subject to the following conditions for the protection of the environment recommended by the Staff (FES, pp. iv, v) as corrected by Staff Exhibit 3, and as supplemented and clarified by the direct testimony of the Staff in this proceeding (Tr: 223, 224, 225, 359, 360) and committed to by the Applicant (Tr: 142, 143);

a. The Applicant shall take the necessary mitigating actions including those summarized in Sect. 4.5 of the Final Environmental Statement, during construction of the plant and associated transmission lines to avoid unnecessary adverse environmental impacts from construction activities as clarified on page 1 of Staff Exh. 3 and further clarified by testimony of Staff witness, James A. Long III (Tr. 223-225).

b. In addition to the preoperational monitoring programs described in Sect. 6.1 of the Environmental Report, with amendments, the Staff recommendations included in Sect. 6.1 of the FES shall be followed. These monitoring programs shall include the following special studies:

(1) A study program, as outlined in Sects. 5.5.2.1.1 and 6.1.3.2, will be implemented to obtain data necessary to assess the potential significance of the loss of ichthyoplankton and crustacean larvae through entrainment.

(2) A study program, as outlined in Section 6.1.3.2 shall be implemented to obtain the data necessary to assess the value of Little Robbins Slough as a nursery. Construction activities shall be limited so as not to reduce the watershed area by more than approximately 1% (about 80 acres) to maintain the freshwater inflow to the slough until after December 1, 1975. After December 1, 1975, construction activities shall be performed so as to minimize watershed removal until completion of the study program.

c. The turbine building shall be designed to insure liquid releases are continuously monitored as specified in 10 CFR Part 50, Appendix A, Criterion No. 64.

d. Before engaging in a construction activity not evaluated by the Commission, the Applicant will prepare and record an environmental evaluation of such activity. When the evaluation indicates that such activity may result in a significant adverse environmental impact that was not evaluated, or that is significantly greater than that evaluated in the Final Environmental Statement, the Applicant shall provide a written evaluation of such activities and obtain prior approval of the Director of Reactor Licensing for the activities.

e. The Applicant shall establish a control program which shall include written procedures and instructions to control all construction activities as prescribed herein and shall provide for periodic management audits to determine the adequacy of implementation of environmental conditions. The Applicant shall maintain sufficient records to furnish evidence of compliance with all the environmental conditions herein.

f. If unexpected harmful effects of evidence of irreversible damage are detected during facility construction, the Applicant shall provide to the Staff an acceptable analysis of the problem and a plan of action to eliminate or significantly reduce the harmful effects or damage.

(d) Based upon available information and review to date, there is reasonable assurance that the STP site is a suitable location for nuclear power reactors of the general size and type proposed from the standpoint of radiological health and safety considerations under the Atomic Energy Act of 1954, as amended, and the rules and regulations promulgated by the Commission pursuant thereto.

(e) In sum, the Board concludes that the action to be taken at this time is the issuance of this Partial Initial Decision covering all environmental and site suitability issues subject to the conditions recited herein, recognizing that such action would permit the Director, Division of Reactor Licensing, to issue the limited work authorization requested by the Applicant.

ORDER

Based upon the Board's Findings and Conclusions, **IT IS ORDERED** that this Partial Initial Decision (as it may be subsequently modified) shall constitute a portion of the Initial Decision to be issued upon completion of the radiological health and safety phase of this proceeding.

IT IS FURTHER ORDERED, in accordance with Sections 2.754, 2.760, 2.762 and 2.764(a) of the Commission's Rules of Practice, 10 CFR Part 2, that this Partial Initial Decision shall be effective immediately and shall constitute the final action of the Commission forty-five (45) days after the date of issuance thereof, subject to any review pursuant to the Rules of Practice. Exceptions of this Partial Initial Decision and supporting briefs may be filed by any party within seven (7) days after the service of this Partial Initial Decision. Within fifteen (15) days thereafter (twenty [20] days in case of the Staff), any other Party may file a brief in support of, or in opposition to, the exception.

**THE ATOMIC SAFETY AND
LICENSING BOARD**

Cadet H. Hand, Jr., Member

Frederick J. Shon, Member

Elizabeth S. Bowers, Chairman

Issued this 8th day of August, 1975
at Bethesda, Maryland.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

LBP-75-47

ATOMIC SAFETY AND LICENSING BOARD

Samuel W. Jensch, Chairman
George C. Anderson, Member
Lester Kornblith, Jr., Member

In the Matter of
UNION ELECTRIC COMPANY
(Callaway Plant, Units 1 and 2)
Construction Permit

Docket Nos. STN 50-483
STN 50-486
August 8, 1975

Upon application for construction permits for the Callaway Plant Units 1 and 2, Licensing Board issues a partial initial decision on environmental and site suitability aspects of the facility, making factual determinations requisite for the issuance of LWAs and imposing certain conditions.

APPEARANCES

Gerald Charnoff, Esq., Thomas A. Baxter, Esq., Joseph E. Birk, Esq., Charles E. Bremer, Esq., on behalf of Union Electric Company, Applicant

Dennis J. Tuchler, Esq., David J. Letvin, Esq., on behalf of Coalition for the Environment, and Utility Consumers Council of Missouri, Joint Intervenors

Dr. Vern R. Starks, on his own behalf, Intervenor

Leland B. Curtis, Esq., Michael K. McCabe, Esq., David L. Smith, Esq., Thomas Hughes, Esq., and W. R. England III, Esq., on behalf of the Missouri Public Service Commission

Lawrence Brenner, Esq., Stuart A. Treby, Esq., Geoffrey P. Gitner, Esq., Gregory Lewis, Esq., on behalf of the Regulatory Staff of the Nuclear Regulatory Commission

PARTIAL INITIAL DECISION—ENVIRONMENTAL AND SITE SUITABILITY DETERMINATIONS

I. BACKGROUND

1. This proceeding involves the request by Union Electric Company of Saint Louis, Missouri, for a Limited Work Authorization (LWA)¹ pursuant to Section 50.10(e)(1) of 10 CFR of the Commission's Rules and Regulations. This section authorizes the Director of Nuclear Reactor Regulation to issue to an applicant for a construction permit an LWA, which encompasses general site preparation activity, after an Atomic Safety and Licensing Board has held a public hearing and made findings required by the National Environmental Policy Act, and further found that there is reasonable assurance that the site for a proposed nuclear power facility is a suitable location for a nuclear power reactor of the general size and type proposed from the standpoint of radiological health and safety considerations.

2. The hearing on other aspects of the application for a construction permit will be convened when the Staff Safety Evaluation is available.

3. Union Electric Company filed its application for a construction permit pursuant to the Atomic Energy Act, as amended. The application seeks authority to construct two pressurized water reactors, generally designated as Callaway Plant, Units 1 and 2, which would be located in Callaway County, Missouri, at a location approximately 80 miles westerly from Saint Louis. In accordance with procedures specified by the Rules of Practice, a Notice of Hearing was issued on August 30, 1974, petitions to intervene were filed, contentions were asserted and determined, and the parties were designated.² At a special prehearing conference, a stipulation was presented that more precisely delineated the scope of the contentions and the issues. Initial evidentiary hearings commenced in April 1975, and reopened evidentiary hearings were held on July 1 and 2, 1975.

¹ The original request for an LWA was filed on September 13, 1974. During the course of evidentiary hearings on that request, and on April 21, 1975, Union Electric Company filed a revision to that request reflecting a more detailed scope of the work and updated costs. The revision stated, among other things ". . . we believe that an LWA could be granted by July 1, 1975." On that date, the Atomic Safety and Licensing Board reopened the hearings to procure additional data on site suitability.

² The parties to the proceeding include Union Electric Company, as Applicant; the Regulatory Staff of the Commission; Coalition for the Environment, St. Louis Region and the Utility Consumers Council of Missouri, as Joint Intervenors; and the Public Service Commission of Missouri, as Intervenor. Dr. Vern R. Starks had been permitted to become an intervenor, but he later withdrew all of his contentions.

4. This partial initial decision considers only the environmental issues specified by 10 CFR 51 and the site suitability issues specified by 10 CFR 50.10(e)(2). An initial decision on the remaining radiological health and safety issues, and this Board's ultimate decision on issuance of the construction permits, will be issued after concluding public hearings on the remaining radiological health and safety aspects of the application.

II. COMPLIANCE WITH NATIONAL ENVIRONMENTAL POLICY ACT OF 1969 AND FEDERAL WATER POLLUTION CONTROL ACT

A. ENVIRONMENTAL REPORT AND ENVIRONMENTAL STATEMENTS

5. As required by 10 CFR Part 51, the Applicant submitted with its application an Environmental Report (ER) dated May 30, 1974, both of which were received in evidence.³ The Staff's Final Environmental Statement (FES) was also received in evidence. The FES was prepared in accordance with the Commission's guidelines and is inclusive of all the required factors. The Staff concluded on the basis of its analysis and evaluation that after weighing the environmental, economic, technical and other benefits of the Callaway Plant against its environmental and other costs, the appropriate action is the issuance of construction permits subject to certain conditions to protect the environment. The Board finds that the Staff review has appropriately considered the information supplied by the Applicant in the ER and that the Staff review reflected in the FES, as supplemented, has been adequate and that the requirements of NEPA and 10 CFR Part 51 have been complied with in this proceeding. Except to the extent set forth herein, the Board accepts the facts set forth in the FES and concurs in the Staff's conclusions.

6. The State of Missouri, through its Department of Natural Resources, issued to Applicant on March 26, 1975, a certification of the proposed discharges from the Callaway Plant pursuant to Section 401 of the Federal Water Pollution Control Act, as amended. In the certification, the State imposed the following conditions which, pursuant to Section 401(d) of the FWPCA, shall become a condition of any construction permits issued by the Commission:

- a. The disposal of the sludge from the water treatment plant providing make up water in the cooling system as well as sludges from the potable water supply at the plant shall be in accordance with effluent guidance

³A list of Exhibits appears as Appendix A. [Appendix A is omitted from this publication but is available at the Commission's Public Document Room, Washington, D. C.] The PSAR was also available for consideration and reference during the proceeding.

limitation documents being developed by the Environmental Protection Agency and in the same manner as approved for all other public or private water treatment plants using the Missouri River as a raw water source. Detailed plans for the potable water supply system shall be submitted to the Public Water Supply Section, Division of Environmental Quality, for review.

b. Monitoring of the plant discharge shall be conducted in whatever manner is necessary to assure safety of downstream water users.

The Board finds that this certificate satisfies the requirements of Section 401 of the FWPCA.

B. IMPACTS OF CONSTRUCTION

7. The environmental impacts of construction considered by the Staff include the areas of land usage, historical, archaeological, scenic and cultural resources, transmission line construction, water supply, wildlife habitat, effects on aquatic biota, road construction, and highway traffic. On the basis of its review, the Staff has concluded that the following conditions should be imposed on any construction permit issued in order to protect the environment:

(1) The Applicant shall take the necessary mitigating actions, including those summarized in Section 4.6 of the Environmental Statement, during construction of the Plant and associated transmission lines to avoid unnecessary adverse environmental impacts from construction activities.

(2) The Applicant shall establish a control program which shall include written procedures and instructions to control all construction activities as prescribed herein and shall provide for periodic management audits to determine the adequacy of implementation of environmental conditions. The Applicant shall maintain sufficient records to furnish evidence of compliance with all the environmental conditions herein.

(3) Before engaging in a construction activity not evaluated by the Commission, the Applicant will prepare and record an environmental evaluation of such activity. When the evaluation indicates that such activity may result in a significant adverse environmental impact that was not evaluated, or that is significantly greater than that evaluated in the Environmental Statement, the Applicant shall provide a written evaluation of such activities and obtain prior approval of the Director of Reactor Licensing for the activities.

(4) If unexpected harmful effects or evidences of serious damage are detected during facility construction, the Applicant shall provide to the Staff an acceptable analysis of the problem and a plan of action to eliminate or significantly reduce the harmful effects or damage.

(5) The Applicant shall conduct his proposed monitoring programs, as summarized in Section 6 of the Environmental Statement, including the

modifications proposed by the Staff (Subsec. 6.1.1, 6.1.2 and 6.1.4.1).

(6) The Applicant shall conduct a program to assess the significance of Logan Creek as a fish spawning and nursery area, the extent of damage to the creek and its biota which may ensue from the construction of crossings for pipelines, and the need for protective measures to ameliorate adverse impacts. Prior to starting pipeline construction, the Applicant shall submit the impact assessment and plan for construction of the crossings to the NRC Staff for review and approval (Subsec. 4.3.2.1, 4.4.1, and 6.1.4).

8. The Board finds that the unavoidable environmental impacts of construction of the Callaway facilities have been adequately described and evaluated and such impacts are acceptable from the standpoint of a cost-benefit analysis in view of the above mentioned conditions.

C. IMPACTS OF OPERATION

9. Heat from the plant will be dissipated by natural-draft cooling towers. Makeup to replace losses from evaporation and blowdown will be supplied by 5.5 mile pipeline from an intake structure on the Missouri River. Blowdown water will be discharged to the river through a similar pipeline. The principal impacts of this system will be impingement and entrainment of organisms and the effects on biota of high temperature water and chemical releases discharged to the river.

10. The Staff has reviewed these impacts and found them to be small. These effects during operation will be further measured by the required monitoring programs. The Staff has also evaluated the visible plumes and other effects from the cooling towers on the local environment, the effects from operation, maintenance and repair of transmission lines, and the environmental effects of the uranium fuel cycle and of transportation of fuel and radioactive wastes.

11. The radiological impact of the plant on the environment has also been evaluated by the Staff. Certain aspects of the radiological effects on man are discussed below in connection with Contention I-2(f). In the original evaluation of radiological effects set forth in Section 5.2 of the FES, the Staff concluded that the effects on biota other than man would not be detectable, that effluents and direct radiation from the plant would be an extremely small contributor to the radiation dose that persons living in the area normally receive from natural background radiation, and that the releases of radioactive material in liquid and gaseous effluents would be as low as practicable. Subsequent to this evaluation, the new Appendix I was issued by the Commission and the Staff performed a new evaluation to determine the upper bounds of the potential releases from the

plant and the radiation exposures to individuals and to the general population.⁴ The FES is hereby modified to include the new evaluation. This new evaluation, although it indicated the possibility for higher releases and exposures than previously set forth, did not alter the Staff's earlier conclusions. The Staff plans a further evaluation, using new models devised pursuant to Appendix I rather than the "worst-case" type evaluation recently made, before the completion of hearings in this proceeding.

12. The Board has considered the Staff's evaluation of the impacts of plant operation on the environment and finds that the release of radioactive materials will be as low as practicable and that the other effects of operation will be acceptable.

D. MONITORING PROGRAMS

13. The Staff has reviewed Applicant's proposed preoperational and operational effluent and environmental measurement and monitoring programs for the monitoring of chemical, thermal and radiological effluents, and for aquatic, terrestrial and radiological effects and has proposed certain modifications thereto (see condition (5), paragraph 7, *supra*). Subject to the modifications recommended by the Staff, the Board finds that the preoperational monitoring programs appear to be adequate.

E. ENVIRONMENTAL EFFECTS OF POSTULATED ACCIDENTS

14. The probability and spectrum of accidents that could occur at the Callaway facility including associated fission product releases have been analyzed as to potential environmental effects by the Applicant and the Staff. Table 7.2 in the FES shows the estimated radiological consequences of postulated accidents. Such accidents would result in an exposure, for an individual assumed to be at the site boundary, less than that resulting from exposure for one year at the level of maximum permissible concentrations permitted by 10 CFR Part 20. When considered along with the probability of occurrence of such accidents, the annual potential radiation exposure of the population from all the postulated accidents is less than exposure to natural background radiation and is well within variations in the natural background radiation. The Board concludes that the environmental risks due to postulated radiological accidents are exceedingly small.

⁴This new evaluation is set forth in four affidavits offered at the hearing session on July 2, 1975. The Staff's motion of July 1, 1975 for admission of these affidavits and corresponding changes in the FES is, with the agreement of the other parties, granted. The affidavits are hereby identified as Exhibits 26 through 29 and accepted into evidence. Copies are furnished herewith to the Office of the Secretary.

15. The potential environmental effects of accidents during the transportation of radioactive materials to and from the plant are considered by the Board in its resolution of Contention I-9.

F. ALTERNATIVE SITES AND DESIGN FEATURES

16. A number of alternative sites were investigated by the Applicant and found to be environmentally acceptable. Primary factors considered in evaluating acceptability were water supply, existing land uses, population distribution, topography and seismology. Of the several sites, the Applicant selected Callaway as having a considerable advantage over the others from a cost-effectiveness standpoint and the Staff concurred in this selection. Therefore, the Board after a consideration of these data finds that appropriate consideration has been given to alternative sites and the Callaway site represents a cost-effective choice which will be environmentally acceptable and will have a minimum impact upon the surrounding community.

17. Alternatives to the Callaway Plant's proposed natural draft cooling towers were also considered by the Staff and Applicant. Alternatives considered were an open-cycle system, predominantly closed cycle systems including mechanical draft wet cooling towers, cooling ponds and spray canals, wet-dry mechanical draft cooling towers, and dry cooling towers. In view of the overall advantages and disadvantages of all these alternatives, the Staff concluded that the proposed natural draft cooling towers represent the best alternative and the Board concurs in this conclusion.

18. Alternatives to the Applicant's proposed cooling system intake and discharge system were also reviewed by the Staff. Applicant's proposed system was selected on the basis of monetary and environmental considerations and was considered acceptable by the Staff. The Board concurs in this selection.

19. The Staff and Applicant also evaluated alternatives to the Applicant's proposed single port pipe discharge system. On the basis of its review, the Staff concluded that minimal effects on the aquatic ecosystem could be anticipated from the proposed method while alternatives evaluated would probably have adverse effects on the terrestrial system in terms of land removed from productive usage. Therefore, the Board finds that the proposed discharge system is preferable to any available alternatives.

20. The biocide treatment method for facility discharge proposed by the Applicant is treatment with chlorine. Alternatives which were considered were use of sodium hypochlorite or a mechanical cleaning system. Treatment with sodium hypochlorite would provide the same residual chlorine level at the discharge as does treatment with chlorine gas and would also add about 4.3 tons per day of sodium ions to the receiving waters and is therefore a less desirable alternative. Mechanical cleaning would require some chlorination because it

would not encompass the whole cooling system. Effects upon the aquatic ecosystem of chlorine discharges proposed by the Applicant were considered and it was concluded losses of organisms would be slight. Moreover, the ecosystem would quickly recover because of its natural regenerative powers. The Board finds that either alternative would be acceptable from a biological impact viewpoint.

21. Alternatives to the construction of the plant, including use of alternative fuels, are considered in connection with Contentions I-3 and I-4.

G. NEED FOR POWER

22. While a more extensive consideration of need for power is presented in connection with Contention I-1, the Board has concluded that Applicant's data adequately supports the need for power.

H. COST-BENEFIT BALANCE

23. The Board has weighed the environmental, economic, technical, and other benefits of construction of the proposed plant against environmental and other costs upon the basis of the evidence of record and has arrived at an overall cost-benefit balance. The Board finds that the principal environmental and other costs are as follows:

a. Disturbance during construction of approximately 600 acres of land, of which less than 300 acres will be occupied by the operating plant, and road and rail access.

b. Commitment of approximately 1140 acres of land associated with the transmission line routes.

c. An adverse impact in the local area from highway congestion during the period of peak construction employment.

d. A minor adverse effect upon nearby residents from noise, dust, and odor during construction.

e. Minor adverse effects from siltation and erosion during construction.

f. Temporary loss of approximately 14 percent of the benthic invertebrate population during dredging operations in the rectangular area defined by the river width and the length of the area to be dredged for shoreline structures.

g. Consumptive use of about 67 cfs of Missouri River water due to cooling tower evaporation.

h. Minor loss of fish and organisms from impingement and entrainment.

i. Minor impact from solids deposition by the cooling tower drift.

j. The capital and operating costs of the plant.

24. The Board finds that the principal benefit of the plant is the generation of approximately 16 billion kilowatt hours of electricity per year.

25. The Board finds that, based upon the entire record regarding need for power and the available alternatives to the plant, construction of the Callaway Plant for operation on the schedule proposed by the Applicant is required to meet the need for electric power and that the plant, as designed and selected from available alternatives, represents the optimum selection based on overall economic and environmental considerations. The Board further finds that the environmental and economic benefits from the construction and operation of the plant are greater than the environmental and economic costs which will necessarily be incurred. Therefore, the Board finds that the balance between the benefits and costs involved favors the issuance of construction permits for the Callaway Plant.

III. SITE SUITABILITY

26. In order to determine whether issuance of an LWA is appropriate, the Board has, in accordance with 10 CFR 50.10(e)(2)(ii), reviewed the site proposed for the Callaway Plant to determine whether, based upon available information and review to date, there is reasonable assurance that the proposed site is a suitable location for a nuclear power reactor of the general size and type proposed from the standpoint of radiological health and safety considerations under the Atomic Energy Act and the Rules and Regulations promulgated by the Commission pursuant thereto. The Board's review has been guided by the reactor site criteria given in the Commission's regulations on site suitability as related to radiological health and safety (10 CFR Part 100). The factors considered are the population density and land use characteristics in the site environs, potential influence of nearby industrial, military or transport facilities and the physical characteristics of the site including meteorological, hydrological, geological and seismological characteristics of the site. Each of these factors has been considered in detail by qualified experts in the technical disciplines involved. These experts performed independent studies and calculations and made visits to the proposed site.

27. The proposed facility will be located in Callaway County in central Missouri approximately ten miles southeast of Fulton, Missouri, and 80 miles west of Saint Louis, Missouri. The facility consists of two pressurized water reactors of a size, type and design similar to that reviewed and approved for other nuclear power plants now in operation or under construction. Each unit of the Callaway Plant will have a nuclear steam supply system utilizing a pressurized water reactor designed for a thermal output of 3425 megawatts and

a net electrical output of 1120 megawatts. The Staff's site evaluation has been conducted for a thermal rating of 3579 megawatts which is the ultimate thermal power achievable by each unit.

28. The exclusion area consists of the land surrounding the planned location of the plant structures out to a radius of 0.75 mile (1200 meters) measured from the mid-point between the two reactor buildings. With the exception of a traversing state highway and two traversing local county roads, the Applicant owns all of the land within the proposed exclusion area, including the mineral rights, and, therefore, has authority to determine all activities within the exclusion area as required by 10 CFR Part 100.

29. The Applicant has proposed a low population zone radius of 2.5 miles. The 1970 population in this area was 116 and the Applicant projects a decline to 60 residents by 1986. No unusual characteristics have been identified with respect to the low population zone which would prevent development of appropriate emergency response procedures. The nearest population center containing more than about 25,000 residents is Jefferson City, Missouri, with a 1970 population of 32,407 persons, located 25 miles west southwest of the site. The distance to the population center is in excess of the minimum distance of one and one-third times the low population zone radius required by 10 CFR Part 100.

30. Since the specified minimum exclusion distance of 0.75 mile and the low population zone distance of 2.5 miles are comparable in size with the values for previously licensed plants, there is reasonable assurance that adequately engineered safety features can be provided to meet the exposure guidelines specified in 10 CFR Part 100 for reactors of the general size and type proposed for the Callaway site. For this reason, and taking into account the size of the low population zone, the Board finds that there is a reasonable probability that appropriate protective measures can be taken in behalf of the population within the low population zone in the event of an emergency.

31. Nearby transportation facilities include State Highway CC, a two-lane black top road which presently runs through the proposed exclusion area. This highway will be relocated so that it will lie about 500 feet outside of the proposed exclusion area. Two local county roads which also traverse the exclusion area will be relocated. Since these two roads will continue to traverse the exclusion area after relocation, the Applicant has made arrangements with the Callaway County Court to control traffic on these roads in case of an emergency as required by 10 CFR Part 100.

32. Other major transportation facilities which the Board believes are significant are State Highway 94, which is located 3.7 miles south of the site in the Missouri River floodplain, a line of the Missouri-Kansas-Texas Railroad also located on the floodplain 3.5 miles south of the site which is the only railroad within five miles of the site, and the Missouri River, about five miles south of the site. The river is a waterway for the transportation of commercial cargoes by

barges. In view of the distance of these transportation facilities from the proposed site, the Board finds that they will not affect the acceptability of the site.

33. There are no airports or military facilities within ten miles of the site. The nearest airport with a hard surface runway is Fulton Memorial Airport, 13 miles west-northwest of the site. Although there are several air routes in the vicinity of the site, based on previous analyses of approved sites having commercial air routes in their vicinity, the Board believes that the air routes near the Callaway site are not significant with respect to plant safety. Therefore, the Board finds that the proposed facility need not be designed nor operated with special provisions to protect the facility against effects of an aircraft crash.

34. The nearest industrial facilities to the proposed site are two manufacturing plants and a fossil-fueled power plant on the Missouri River about six miles south of the site. There are no gas pipelines, tank storage facilities, nor other local service stations within five miles of the site. In view of the distance of these facilities from the proposed plant, the Board concludes that the effect of an industrial accident or an inadvertent chemical release need not be considered in the design of the proposed plant.

35. General meteorological conditions at the site are described in Section 2.6 of the FES. The Staff conducted an independent evaluation of atmospheric dispersion conditions, using joint frequency distributions of wind, speed, and direction by atmospheric stability class from one full year of onsite data. The Staff performed an evaluation of short-term accidental releases from buildings and vents assuming a ground level release with a building wake factor of 1325 square meters using the onsite data and the diffusion model described in Regulatory Guide 1.4. A comparison by the Staff with similar values for over 40 other sites indicates that dispersion conditions at Callaway are better than average. Severe weather conditions, including tornadoes, occur at the Callaway site in a pattern similar to that for other sites in this area of the country. The Applicant has selected a design basis tornado consistent with the recommended tornado model presented in Regulatory Guide 1.76, which is adequately conservative. Therefore, the Board finds that with regard to the expected atmospheric dispersion conditions and the occurrence of severe weather conditions, including tornadoes, the proposed site is acceptable for reactors of the general size and type as that proposed for Callaway.

36. The proposed plant grade for safety-related structures will be 840 feet MSL, which is 315 feet above the Missouri River floodplain elevation near the site. The site will not be subject to local flooding from intense on-site precipitation because of its location on a topographic divide and because of Applicant's proposed site grading plan and storm water drainage systems. The Staff has independently evaluated the Applicant's Probable Maximum Flood. The evaluation indicated a peak discharge of 2.42 million cfs, which would result in a river level of 559 feet MSL, 281 feet below plant grade level. The potential

for site flooding from postulated seismically induced dam failures has been evaluated and has yielded a water elevation which approximates that of the Probable Maximum Flood. It is concluded that the site safety-related plant buildings and systems will not be subject to flooding from any source.

37. While the intake and discharge systems, including the pipelines, will not be seismic Category I safety-related systems, emergency water can be provided from the ultimate heat sink, which will consist of the seismic Category I mechanical draft cooling towers utilizing makeup water from an onsite retention pond. Water buildup in the ultimate heat sink retention pond due to a Probable Maximum Precipitation would not cause flooding of the site structures. Applicant has used the one-day, 30-year average low flow on the Missouri River as the low flow design basis for the makeup water intake structure. It is concluded that an adequate safety-related water supply will be available at the proposed site.

38. The hydrological consequences of a postulated radioactive liquid release from the plant have been evaluated, including potential flow paths, travel times and dilution factors. It is concluded that groundwater travel time and dilution factors available in the event of a postulated radioactive spill are generally better than at similar sites that have been licensed. The proposed site is suitable for reactors of the general size and type proposed from the standpoint of hydrological conditions.

39. The proposed Callaway site is on the boundary between the Ozark Plateau Physiographic Province to the south and the Dissected Till Plains Subdivision of the Central Lowland Physiographic Province to the north. Tectonically, this is within the Central Stable Region on the north flank of the Ozark Uplift. The Precambrian basement at a depth of 2000 feet beneath the site, is comprised of metamorphic and igneous rocks. Overlying the basement and dipping gently toward the north away from the Ozark Uplift are stratified sandstones, shales, limestones, dolomites and conglomerates, ranging in age from Cambrian to Pennsylvanian. The uppermost bedrock at the site is 25 to 40 feet of Graydon Chert conglomerate believed to be Pennsylvanian in age. Overlying the Graydon Chert at the site are 35 feet of glacial drift and post glacial alluvium. Category I structures will be founded on 2 to 10 feet of compacted, crushed rock structural backfill over the Graydon Chert conglomerate, which has high strength and is capable of supporting the plant structures.

40. The Applicant has performed detailed subsurface investigations at the proposed site including 165 core borings. These borings revealed the presence of buried karst topography in the limestone beneath the site. However, no large open karst features (cavities) were found under the site. The borings show that the solution features found are filled with secondary materials which were deposited during the Paleozoic era. The Applicant performed other investigations in search of large open cavities under the plant site including seismic refraction surveys and geophysical explorations, falling head and pressure tests

and geological surface mapping. None of these revealed the presence of such large open cavities. Intervenors had propounded a contention alleging potential adverse effects of buried karst topography upon the suitability of the Callaway site. However, this contention was withdrawn by stipulation. A representative of the Division of Research and Technical Information of the Missouri Department of Natural Resources indicated, prior to completion of the site investigation, concern about possible open karst features under the site and so indicated in testimony at a hearing before the Missouri Public Service Commission. Information from subsequent borings resolved these concerns and he has testified that there are no longer reservations about the site. Based upon the evaluation of the results of the Applicant's and Staff's investigations, the Board concludes that subsidence or collapse due to the presence of buried karst features at the proposed site is an extremely remote possibility.

41. For purposes of determination of the Safe Shutdown Earthquake, the Applicant divided the region into three tectonic provinces; the Central Missouri region (within which the site is located), the Eastern Ozark region, and the New Madrid region. Both Applicant and Staff agree that there are no known geologic structures that could localize earthquakes in the Callaway site vicinity or cause surface displacement at the site. The Applicant has identified only three earthquake epicenters within 50 miles of the site (none of these closer than 40 miles) since the beginning of the 19th century. None of these shocks exceeded MMI VI. The Applicant and Staff agree, in view of the low seismicity of the area near the reactor site, that the New Madrid seismic zone is controlling in establishing both the operating basis and the safe shutdown earthquakes for this site.

42. A series of three earthquakes in the New Madrid, Missouri, area in 1811 and 1812 are considered to be the largest on record in the central and eastern United States. The magnitudes of these earthquakes were estimated to be 7.1, 7.2, and 7.4 on the Richter scale. If the energy of these is summed, it is equivalent to a single quake of about magnitude 7.5. Although larger earthquakes have occurred in the western United States (the 1906 San Francisco earthquake and the 1964 Anchorage quake were about 8.25), the amplification of the shaking through the sedimentary layers overlying the basement rock resulted in the intensity at New Madrid being probably the largest to have occurred anywhere in the country. There is some disagreement among the experts as to whether this intensity was MMI XI or XII. The parties agree that, for purposes of establishing the Safe Shutdown Earthquake, a New Madrid type earthquake at the nearest approach of the New Madrid seismic zone should be assumed. There is some disagreement as to whether this point lies 150 or 175 miles from the proposed site. These two disagreements are of minor practical significance, however, as the relevant question is the intensity at the reactor site, which is controlled by the attenuation of the seismic waves over the intervening distance.

43. The Applicant has extensively evaluated the postulated effects of the Safe Shutdown Earthquake on the site. Its seismological consultant reviewed the historical records of the 1811-1812 earthquake and concluded initially that the intensity at Saint Louis was VII-VIII and at the proposed site probably VI-VII. Information more recently made available to him leads him to believe that his original estimate may have been too high. His recent evaluation based on empirical attenuation data he has developed also led him to predict an intensity of MMI VII at the proposed site. This, in turn, led him to predict a maximum sustained horizontal acceleration of 0.04 g on hard rock at the site. Applicant's consulting engineers, using a more conservative empirical relationship, arrived at a bedrock acceleration of 0.11 g and, allowing for amplification of the motion by the intervening soil layers, an acceleration at the foundation level of 0.15 g. The Applicant plans to use a design value of 0.20 g which, it asserts, is equivalent to an intensity of VIII at the foundation level.

44. The Staff has also considered this matter and states that with a postulated New Madrid earthquake of MMI XII occurring at 150 miles from the reactor site, the resultant intensity at the site would be VII-VIII. Without stating whether it agrees with the Applicant's estimated acceleration values,⁵ the Staff concludes that reactors of the general type and size proposed can be designed to withstand the motions and forces associated with an intensity VIII event and conclude that, from a seismic point of view, the site is suitable.

45. The Board inquired extensively into geological matters because of a concern as to whether it was clearly established that the New Madrid fault zone was tectonically dissociated from the site. The Board also inquired into the possible significance of the so-called "Hayes Lineament". The latter is discussed in paragraphs 48 and 49, *infra*.

46. The faults in the New Madrid area generally trend north-northeast. Between that area and the Callaway site about 200 miles to the northwest are a number of fairly short discontinuous faults trending northwest and extending to about 50 miles from the site (PSAR Figure 2.5-10, included in Exhibit 22). The Board's first inquiry was into the basis for the mapping of certain of these faults as unconnected, since a long continuous fault extending from New Madrid to a point near the reactor site could be indicative of a connection between the two locations. Initial responses focussed on the use of water-well digging data to map the underlying Roubidoux formation to show that there was no continuity between the short faults shown on the map.

47. Exhaustive inquiries were made at the hearings into the methods of procurement and validity of the data procured from drillings for water wells for rural residential and farm use. Certain well diggers, without any statutory

⁵ In view of the importance of the acceleration value as a parameter of the plant design, the Board will require a Staff position on an appropriate value prior to authorization of a construction permit.

responsibility or regulatory requirements to do so, voluntarily provide the Missouri State Geologist's office with labelled samples of surface soil and substrata rock assertedly taken every five feet. These samples are evaluated and analyzed by professional geologists in the Missouri Division of Research and Technical Information and the results are placed in an open file of "edited logs". It is from these logs that Applicant's consulting engineers obtained the data used for the Roubidoux mapping. Several representatives of the State testified about their records and procedures (Transcript of July 1, 1975) and some shortcomings of the data were identified. These involved primarily the adequacy of sampling by the well diggers, either as a result of unknown competence, inexperience or carelessness, and the accuracy in identifying the depths from which the samples were taken. Despite the possible sources of errors, the Applicant's witnesses and the State representatives steadfastly maintained that the data were adequate for the purposes for which they were used (Tr 1794, 1893, 1929, 2070 and Exhibit 23, page 5). One State geological department representative testified that the data from the water well drilling are "... so reliable that it is used by ... as the first tool ... by every company, individual consultant, university graduate student, who comes into the building; he wants to see the log file first" (Tr 2015). When questioned as to the subsequent tools, he testified that "the next step is their interpretation of our interpretation", followed, if a substantial building is to be built, by further investigation. He agreed that they would not rely solely on water well digging data (Tr 2017-2018). The Applicant identified the other data that were used in its evaluation of the structural geology of the area (Exhibit 24, pages 6-13).

48. Among other resources, the Applicant used available ERTS⁶ imagery to determine if features appeared that were not previously known to exist. Applicant's geologist, experienced in the interpretation of remote sensing data, found nothing in the pattern of ERTS lineaments which revealed any unique characteristics of the site which had not been otherwise disclosed by the other studies. The Board requested further information on this study, which was provided in Exhibit 22 and examined during the hearing on April 30, 1975. Included in that exhibit was the following statement:

Hayes (1962) proposed a series of lineaments crossing the state of Missouri with northwest to southeast and northeast to southwest trends. The existence of these lineaments was based principally upon aligned gravity and magnetic contours coupled with structural contours on the Precambrian surface and other prominent structural features. One of Hayes' proposed lineaments passes close to the site in a northeasterly direction, roughly coinciding with the course of the Missouri River. No such major lineament is evident in the ERTS imagery.

⁶ Earth Resources Technology Satellite.

There are no known faults or folds which can be correlated with Hayes' proposed lineament, or with any of the lineaments identified near the site. This conclusion has been substantiated by detailed structural mapping of the bedrock units utilizing water well drilling data on file with the Office of the Missouri State Geologist, as shown on Figure 2.5-11.2 of the Site Addendum to the PSAR.

49. As a result of the Board's interest in the lineament close to the site, the former Missouri State Geologist (Hayes) appeared as a witness (Tr 2027-2072). He defined a lineament as follows:

At the time the map was drawn and this work was being done on these lineaments, the term was used as a line or string of events or something like this, which would indicate a linear or linear arrangement pattern or something like that. It is used in its broad sense because now lineaments are referred to by studying aerophotos, some lunar. People are more definitive now than in the late '50s when the work was done. It is a linear arrangement of geologic factors or phenomena.

Q. The fact that there is a linear arrangement does not suggest that it is a fault lineament?

A. To me a linear arrangement can be anything, unless it is so defined as a fault lineament or stream drainage lineament or so forth. (Tr 2029-2030)

He identified two lineaments in the general area of the site. One trends northwest and passes about twenty miles from the site. This he referred to in Exhibit 25 as "an example of a fault controlled lineament", although he later testified that he did not know that it is fault-controlled "all the way". The second, and closer, lineament is the one referred to in the quotation from Exhibit 22 in paragraph 48, *supra*, and is a northeast trending lineament passing about ten miles from the Callaway site. He indicated that he thought it "highly unlikely" that this lineament was fault-controlled (Tr 2032). He further stated that if it did represent a basement fault, it had occurred in late Precambrian or early Cambrian time (about 500 million years ago), had been healed or sealed, and had not experienced movement since (Tr 2058-2059).

50. The Applicant's seismological consultant, a professor of geophysics at St. Louis University, was also called as a witness by the Applicant. In addition to his testimony, discussed above, regarding the derivation of the Safe Shutdown Earthquake acceleration, he testified that even if either of Hayes' lineaments described above represented an active fault, an earthquake occurring along the lineament would have less of an impact on the reactor site than the postulated New Madrid earthquake (Tr 2120). He also discussed further, from a seismicity point of view, why the New Madrid area was considered to be seismically dissociated from the site.

51. In view of the sparsity of subsurface data from large excavations in the

vicinity of the site, and recognizing the possible deficiencies of the water-well data, the Board will require a condition in the LWA (and, if the timing of the work so requires, in the construction permit) that the Applicant carry out a vigorously conducted geological mapping of the excavations and recommends that the Staff examine the excavations to determine if the subsurface structure correlates with the interpretations made from the nearby water well data and the onsite core borings, and more importantly, to determine if any unexpected geological features are revealed. The Board is aware that this appears recently to have become standard Staff procedure, but believes that in this case a specific condition is warranted because of the importance of competent geological data to enhance seismological evaluation of the site.

52. On the basis of the discussions above and the entire record, the Board finds that, subject to the condition in the previous paragraph, based upon the available information and review to date, there is reasonable assurance within the scope of LWA considerations that the proposed site is a suitable location for nuclear power reactors of the general size and type proposed from the standpoint of radiological health and safety considerations under the Act and the Rules and Regulations promulgated by the Commission pursuant thereto, bearing in mind that the Applicant recognizes that all LWA work is at its own risk that the final determination in this proceeding may reject all or part of the work undertaken.

IV. MATTERS IN CONTROVERSY

53. There are seven contentions, many of which have several parts. For convenience, the Board has in some instances divided the discussion of a single contention into several parts. Contention I-2(g) will be considered with Contention I-7.

A. CONTENTIONS I-1(a) AND I-1(b)—NEED FOR POWER

I-1. The Applicant's and the Staff's assessment of need for the proposed facilities is inadequate and overstates the projected peak demand to be met in 1982 and 1984 in that those projections fail:

a) to state the methods used for projecting growth, and all the assumptions used in such methods by the Applicant, including the lack of

(i) detailed growth information which separates weather sensitive and base load projections,

(ii) detailed information on planned purchases and sales of power to and from the Applicant's service area.

b) to take into account price elasticity of demand for electricity and thereby overstate future demand because the average price of electricity per kilowatt-hour will increase, resulting in decrease in demand from that predicted by Applicant.

54. The Applicant Union Electric Company and its two subsidiaries, Missouri Edison Company and Missouri Power and Light Company, serve a 19,000 square mile area located principally in eastern Missouri and southwestern Illinois. The 1973 population of this service area was approximately 2.5 million persons. Union Electric Company's generating capacity to serve this area has expanded from 2718 MW in 1964 to 6200 MW in 1973, and the Applicant has predicted that the system will require an additional 4900 MW including the Callaway units by 1984.⁷

55. To project the need for the Callaway facility, the Applicant began by adjusting actual historical peak loads to a standard temperature measure. Adjusted peak loads were then separated into base and weather sensitive load components. These two components were projected separately and then recombined into a total forecast peak load. In order to forecast base load, the Applicant used a regression equation with time and Gross National Product as variables, as the gross product for St. Louis has generally grown at a rate comparable to that of Gross National Product. On the basis of this regression equation, the Applicant predicted a rate of growth for base load of approximately 5.5 percent annually through 1984. Weather sensitive load growth was projected to occur at an average annual rate of 4.5 percent between 1975 and 1984 (higher during the earlier years and lower later). This projection was based primarily on an anticipated increase in saturation of air-conditioning within the Applicant's service area from the present level of 80 percent to 93.5 percent in 1984.

56. On the basis of these computations, and including a small allowance for new uses of electricity and substitution of electricity for other fuels, the Applicant forecast the growth of the total system peak load to increase at a compound annual rate of approximately 5.5 percent between 1974 and 1984. By comparison, the Applicant has historically experienced an annual growth in peak demand of 7.3 percent. The difference in the rate of increase in peak demand from the historical trend parallels the projected concurrent decrease in the rate of economic expansion in the area.

57. An assessment of the need for power was also performed for the Applicant by an economic research organization. This assessment forecasted kilowatt-hour sales to Applicant's residential, commercial, and industrial

⁷ Although the Applicant has scheduled the two units for commercial operation in October 1981 and April 1983, it does not consider them to represent firm capacity until 1982 and 1984, respectively, in order to allow for the normal start-up maturation period.

customers through 1985, using econometric models and analysis. The analysis included explicit consideration of the prices of electricity and of competitive fossil fuels, personal income, gross national product, climatic conditions, housing and demographic characteristics, air-conditioning saturation, and saturation of appliances subject to competition from other fuels. The report of this study (Exhibit 16) includes, for each of the three customer classes, a review of available studies of growth made by others, a detailed description of the methodology used in analyzing each sector, and the results of the analyses for each customer class. The forecasts are that the average annual growth in sales for Applicant for the period 1974 to 1985 will fall within a range of 4.5 to 6.1 percent. Applicant's predicted growth rate is within this range.

58. The Applicant's forecast was evaluated on behalf of the Staff by an electrical engineer and an economist of the Federal Power Commission. The economic evaluation was based on information contained in the *1972 OBERS Projections*,⁸ a comprehensive economic planning document which provides historic and projected economic and demographic data for the St. Louis Standard Metropolitan Statistical Area. This information provides a data base for extrapolating changes in economic activity within the Applicant's service area. The variables examined by the FPC representative indicated that the Applicant's estimate that growth in demand will decrease from the historic rate of 7.3 percent to 5.5 percent and this parallels the projected concurrent decrease in the rate of economic expansion in the Applicant's service area. He found that these anticipated lower rates of increase in demand were conservatively incorporated into Union Electric's projections; and that the Applicant's scaling back of the estimated rate of growth may be more severe than the slowing in the rate of expansion of the economy alone warrants.

59. Joint Intervenors' witness on this contention, in his written testimony, criticized a number of aspects of the Applicant's load forecast, but it appears that this was written before he had examined the report by the Applicant's economic consultant, which was only available shortly before the evidentiary hearings commenced. The witness contended that the Applicant's consultant, in developing his econometric model had enumerated certain factors as important but had not carried forward those factors logically in the equation that was used. Applicant's consultant explained that he had applied his judgment in deter-

⁸ This report is a delineation of regional economic activity in the United States. It was prepared and published by the U. S. Water Resources Council under the direction of the Bureau of Economic Analysis of the U. S. Department of Commerce and the Economic Research Service of the U. S. Department of Agriculture. It is intended as a planning tool to make a contribution to planning decisions and was prepared in response to a need for basic economic information by public agencies engaged in comprehensive planning for the use, management and development of the Nation's resources. *1972 OBERS Projections*, Regional Economic Activity in the U. S.; Series E Population; U. S. Water Resources Council, April 1974; Volume 1, page 1.

mining which factors should be carried into the equations and how they should be handled. He further pointed out that some of the Intervenor's criticisms of his judgment in the use of variables was based on the Joint Intervenor's witnesses' knowledge of these factors on a national basis rather than on the basis of their application to the Applicant's service area. The Intervenor's witness supported the need to apply judgment in forecasting. He said that in forecasting future electricity prices, he would first look to the Applicant's own forecasts, applying his judgment as to their reasonableness. In the proposed findings submitted, the Applicant contends that, as an extension of this, the Applicant's overall judgment with respect to projected demand for electricity should be given considerable weight, particularly in view of the accuracy of past forecasts. The Board agrees that the use of judgment is necessary, but is unable, on the basis of the record before it, to place a precise value on the judgment exercised by the Applicant:

60. Joint Intervenor's witness did not present an alternative forecast of Applicant's load growth, but he did present in general terms his own econometric model. He testified that although he was not proposing use of his model, he had calculated the projected growth rate as an exercise and had come out with approximately 3 percent per year. He stated that he did not ascribe credence to the result, however, and gave as his best estimate a growth rate of 4.5 percent per year.

61. In summary, the following growth rates have been forecast: Applicant's company witness—5.5 percent; Applicant's economic consultant—4.5 to 6.1 percent; FPC representative—5.5 percent or more; and Joint Intervenor's witness—4.5 percent. These contrast with the historical growth rate of 7.3 percent. The effects of changes in the rate within this range are discussed in paragraph 65 below.

62. The need for capacity reserve margins within the Applicant's service area is also important in the Applicant's assessment of the need for the Callaway Units. Applicant is a member of two regional power groups: the Illinois-Missouri Power Pool and the Mid-America Interpool Network (MAIN). The reserve requirement formula adopted by the Illinois-Missouri Pool requires Applicant to maintain a system reserve margin of 15 percent. Using the Applicant's forecasts, reserve margin in 1982 without Unit 1 would be only 334 MW or about 4 percent (with Unit 1, it would be about 19 percent). This would be unacceptably low. Similarly, if Unit 1 is available on schedule and Unit 2 is delayed one year, the reserve margin in 1984 would be less than 6 percent—again unacceptably low.

63. The Applicant and Staff considered the possibility of purchases and sales of electric power to and from the Applicant's system as it could affect the need for the Callaway facilities. The two regional power groups of which the Applicant is a member cannot be relied upon to meet the long term need for power in the Applicant's service area. The Federal Power Commission

recommends that Union Electric, Illinois-Missouri, and MAIN each maintain a reserve margin of at least 15 percent. Without benefit of the capacity represented by the Callaway facilities, the reserve margin for the Illinois-Missouri Power Pool will be 11.0 percent of system peak load in 1983. Lack of the same generating capacity will reduce the reserve margin for MAIN system to 12.6 percent of system peak load in 1983. The Applicant's system forms a large part of Illinois-Missouri and it cannot count heavily on using this pool to supply it power if its own capacity is insufficient. Although the MAIN pool is large compared to the Applicant's system, its planned reserves are only adequate to meet the MAIN reserve criteria. Additionally, members of these pools are projecting rates of expansion which are comparable to the Applicant's and are not planning excess capacity that would be available for purchase by the Applicant. Thus, the Board finds that the Applicant could not rely on purchase of power to meet the need for power in its service area.

64. The Joint Intervenors presented as a witness Dr. Barry Commoner who asserted that demand could be substantially reduced if the Applicant used the funds otherwise to be spent on the plant to provide more efficient air-conditioners to customers as free replacements for existing units. He asserted that use of the \$764 per kilowatt that would otherwise be spent on the plant could purchase enough air-conditioning to avoid the construction expenditure. Under questioning by the Board, he was unable to explain where the Applicant would get the money to repay the \$764 absent the revenues from the plant that would not be built. He asserted, as another example of energy conservation, that substantial amounts of energy in fabrication of materials could be saved if 100 pounds of aluminum in an automobile were replaced by an equal volume of steel. When asked if the fabrication energy saved was not much less than the energy in fuel used in driving the heavier car during its normal lifetime, he was unable to give a satisfactory answer. Dr. Commoner agreed to supply the Board with several documents to substantiate his testimony, but has not yet done so. One of the documents he agreed to supply was, however, found and supplied by the Applicant (Exhibit 20). An inspection of it did not reveal any substantiation for Dr. Commoner's assertions. Without disparaging Dr. Commoner's competence as a biologist, the Board finds that his presentation on other matters does not constitute reliable, probative and substantial evidence.

65. If the growth rate of demand is as forecast by the Applicant, the reserve margin in 1982, as previously pointed out, is about 19 percent. If Unit 1 is delayed one year, the margin in 1982 would drop to 4 percent. If the growth rate is only 4.5 percent, the lower end of the spectrum discussed in paragraph 61, the 1982 margin would be about 14 percent without Unit 1. Although this would probably be acceptable as an emergency situation, it provides no substantial justification for this Board to consider deferral of the plant. If on the other hand, the growth rate were 6.1 percent per year, at the upper limit of the spectrum, the reserve margin in 1982 would again be about 14

percent (barely adequate) with Unit 1 in service and zero without the unit. In view of these data, the other information set forth above and the entire record, the Board finds that the Applicant's load forecast is reasonable, the plant is needed on the proposed schedule and the Intervenor's have presented no evidence that would support their assertion that the need for power has been overstated to the degree that the plant should not be constructed on the schedule proposed.

B. CONTENTIONS I-1(c)—I-1(e)—NEED FOR POWER

I-1. The Applicant's and the Staff's assessment of need for the proposed facilities is inadequate and overstates the projected peak demand to be met in 1982 and 1984 in that those projections fail:

(c) to consider the possibility of restructuring the current rate structure to provide an increasing block rate for increased use of electricity.

(d) to consider the possibility of reducing peak demand through development of a peak-demand charge and assistance in development of peak shifting strategy for commercial and industrial customers.

(e) to consider the potential of expanding usage of interruptible load in that only 43 MW out of 9407 MW is currently being so utilized. Customers may well appreciate the option of having their operation interrupted for a few hours during the summer peak day rather than supporting the Applicant's huge capital investment through higher rates all year long. A promotion of this option should be considered.

66. At the outset the Board notes that Joint Intervenor's adduced no evidence either through direct testimony or cross-examination upon any of these contentions and thus failed to meet their burden of going forward with some affirmative showing with respect to these contentions as required by *Midland*.⁹ Despite this, the Board, in the interest of assuring a complete record, has examined the evidence regarding these matters. The Board finds that Applicant and the Staff have considered the potential effects of changes in utility rate structure, load shedding, load staggering, and interruptible load contracts. The Board concludes that the evidence fails to establish that such measures are practical to the extent that they would eliminate or substantially defer the need for the plant.

⁹ *Consumers Power Company* (Midland Plant, Units 1 and 2), Commission Memorandum and Order, CLI-74-5, RAI-74-1, 19 at 32 (January 24, 1974).

C. CONTENTIONS I-2(a)—I-2(e)—COST ESTIMATES

I-2. The Applicant's analysis of costs related to the plant is inadequate and tends to underestimate severely the costs of the facilities through:

(a) assumption of an unreasonably low interest rate for Applicant's debt service on construction costs, *i.e.*, 7 percent. (ER 8.2.1.1)

(b) underestimate of the effect of inflation on operating costs (fuel, labor, materials and service). The Applicant's unrealistic estimates are: 5 percent per annum for fuel cycle costs; 5.5 percent per annum for plant and labor costs, and 7 percent per annum for materials and service costs. (ER 8.2.1.2)

(c) underestimate of the cost of fuel over the life of the plant in that Applicant has underestimated changes in uranium, enrichment, fabrication and reprocessing costs.

(d) underestimate of increases in fuel and other operational costs because of the need to store waste fuel awaiting the availability of adequate reprocessing facilities. This cost should include deferred realization of the value of recovered uranium and plutonium at a discount of at least 8 percent.

(e) overevaluating the average availability factor of the reactors in operation. For the first eight months of 1974, average availability factor was only 68.1 percent where "availability" is defined as the time the generator was in operation divided by the total time during the period. This is a slippage from the 1972 figure of 73 percent and the 1973 figure of 70 percent. The "capacity factor" of nuclear plants (which includes consideration of operating capacity as well as time on line) was only 56.6 percent through August 1974 compared to 58 percent in 1973. Thus, there is no basis for the assumed 80 percent factor applied in the cost benefit analysis.

67. The Applicant capitalizes the interest and dividends on funds invested in construction work in progress as a part of the construction cost. Since the interest payments are deductible, the net cost of money is the interest and dividend payments minus the tax savings. One method of estimating this cost is to use the average capital ratios at the end of each of the years during construction, the interest and dividend rates projected for issues marketed during construction and the return on common equity authorized by the Public Service Commission of Missouri. Using this method, Applicant calculated a rate of 7.33 percent. While this verifies Applicant's use of a 7 percent rate, it tends to overstate the actual rate because approximately 25 percent of the construction funds are derived from embedded funds, not the most recent financing. The Staff calculates approximately the same rate as the Applicant and adds additional conservatism to the final cost benefit analysis by using a value therein of 10 percent. Intervenors adduced no evidence to the contrary on this

contention. The Board finds that the Applicant's assumed cost of debt service is reasonable for use in the cost analysis of the plant, and further that the Staff's conservative use of 10 percent lends further support to a finding that the cost of debt service has not been underestimated in the cost-benefit analysis.

68. The effects of inflation have been taken into account by the Applicant's fuel consultants, who developed the Applicant's estimates of fuel costs, for all goods and services required by the Callaway Plant's nuclear fuel cycle. Where the goods and services are under contract, the escalation rate is keyed to specific formulas based on certain Bureau of Labor Statistics indices. These indices may be correlated with the projected change in the GNP deflator in order to project the escalation rate. Where the goods and services are not under contract, Applicant's consultant used a model for the specific industry, including costs for required investment in new facilities, labor and materials, and projected prices based on an appropriate return on investment. The effect of inflation on operating and maintenance costs is not likely to be a major factor in the cost comparison of nuclear and fossil generating plants, since the general movement of the price level will influence those costs for both nuclear and fossil plants. In fact, there would be a differential effect on the nuclear-coal comparison as a result of an increased rate of inflation which would penalize the coal alternative, since over 50 percent of the cost of energy production from a coal plant is subject to escalation after completion of plant construction, whereas less than 25 percent is subject to escalation for a nuclear plant. No evidence to the contrary was adduced by Joint Intervenors. The Board finds that Applicant's escalation rates for operating costs are reasonable.

69. With respect to cost of fuel over the life of the plant, Joint Intervenors' witness on this subject originally prepared testimony challenging the reliability of the Applicant's estimates. On the basis of information supplied to him by the Applicant on the morning of his appearance, he withdrew that portion of his testimony and agreed to accept the Applicant's estimate of nuclear fuel costs (Tr 1481-1482). Applicant has a contract for a 21-year supply of uranium for the plant, with firm prices for the first twelve years. Applicant has a contract for enrichment services with the Energy Research and Development Administration which covers the full life of the plant, at prices limited by statute to reflect full cost recovery. Applicant has a contract at firm prices for the fabrication of both uranium and plutonium recycle fuel for 21 years. Costs of these services for the remainder of the plant life, and for spent fuel reprocessing, were estimated using the industry models described above in paragraph 68. Applicant's contracts for the major components of the fuel cycle greatly reduce the likelihood that changes in uranium, enrichment, fabrication and reprocessing costs could undermine Applicant's estimate of the cost of fuel over the life of the plant. Its consultant has projected a 1982 fuel cost of 2.47 mills per KWH and a levelized fuel cost of 3.4 mills per KWH for the first twenty years of operation. The consultant also assessed these costs under a pessimistic set of assumptions. These

assumptions would increase the levelized 20-year fuel cost by 0.7 mills per KWH. The Board finds that Applicant has reasonably projected fuel cycle costs for the plant.

70. Fuel and other operational costs will not increase significantly in the unlikely event that a spent-fuel reprocessing facility is not available. A reprocessing facility is likely to be available by the early 1980's even though the Applicant will not require spent fuel reprocessing until mid-1983 at the earliest. In the event that a reprocessing plant is not operating by 1983, there will be enough storage capacity at Callaway to store irradiated fuel elements for the first five years of plant operation. Therefore, if reprocessing were delayed until 1988, storage costs would not be significantly affected since temporary storage is available at the plant. It is true that the present value of the uranium and plutonium credit would be less since it would begin to accrue at a later date, and this would increase the present value of fuel costs. However, reprocessing costs would also be delayed by five years which would reduce the present value of fuel costs. The net effect would be an increase in fuel costs of only 0.1 mill per KWH. The Board finds Contention I-2(d) to be without merit.

71. Contention I-2(e) asserts that the Applicant has underestimated the costs of the nuclear facility because the cost-benefit analysis assumed an 80 percent capacity factor. It is difficult at this time to estimate the actual life-long availability and capacity factors of large nuclear plants because of inadequate operating experience. In 1974, 57 percent of the nuclear units were in only their first or second year of operation. Since power plant capacity factors improved considerably after the first few years of operation, the past operating performance undoubtedly understates what can be expected over the lifetime of a nuclear plant. Nevertheless, the Staff, in light of their conclusion that an 80 percent capacity factor is an optimistic estimate based on past operating experience, performed a cost analysis using more conservative capacity factors. The average capacity factor for all nuclear plants over the period 1964-1973 was 64 percent. In 1974 the average capacity factor was 57.2 percent. For fossil plants, the average capacity factors over the 1964-1973 period was 65 percent for units in the 400-600 MW range and 59 percent for units larger than 600 MW. The Staff's analysis shows that a nuclear plant with a capacity factor of 57.2 percent (the 1974 average) has a cost advantage over an equivalent sized fossil plant (two 1150 MW units per plant) with a 65 percent capacity factor. (This analysis is conservative in that the 65 percent capacity factor is representative of smaller (less than 600 MW) fossil units—the four such units required would have a 15 percent higher capital cost than two of the larger units.) The Board finds that the Staff's conservative use of capacity factor experience in its cost analysis responds to Intervenors' concern and makes it unnecessary for the Board to inquire into the appropriateness of an 80 percent capacity factor assumption.

D. CONTENTION I-2(f)—RADIOLOGICAL EFFECTS ON MAN

I-2. The Applicant's analysis of costs related to the plant is inadequate and tends to underestimate severely the costs of the facilities through:

(f) failure to account for costs relative to the environmental impact of the plant which will be imposed upon those persons who live or own property near the plant. At allowed rates of radiation release, there will be a measurable impact on public health, safety and welfare and on the environment, which ought to be included in a cost-benefit analysis even though they will not be direct costs to the plants.

72. As stated in paragraph 11, *supra*, the Staff has reevaluated the potential releases from the plant pursuant to the new Appendix I and the consequent "man-rem" doses. These calculations, which are based on the exposure of the entire population of the United States, show an upper-bound value of about 180 man-rems (Exhibit 28), including about 40 man-rems of total body exposure and about 140 man-rems of thyroid exposure. Based on the generally accepted value of 100 cancers per million man-rems of whole body exposure,¹⁰ the plant could cause up to 0.004 cancers per year, or perhaps one chance in eight of a single cancer during the life of the plant. The thyroid dose would add a roughly comparable amount. In the view of the Board, this potential exposure and consequent cancer incidence is so small compared to the exposure to natural radiation (about 27,000,000 man-rems per year nationally, 45,000 within a 50-mile radius and 1200 within a 10-mile radius) that no meaningful human cost can be realistically calculated. Using the value of Applicant's witness of \$300,000 per cancer death and assuming that half of all cancers are fatal (except thyroid cancers, which seldom are) and further assuming that all exposure is to people within fifty miles, the Board calculates a per capita cost of about one-sixth of a cent per year. Using the Commission's interim value of \$1,000 per man-rem (including thyroid exposure), the corresponding value would be about fifty cents per year. The Board concludes that these values are not of such significance as to be substantial.

73. Intervenor's witness who testified on this contention, had received zoological and medical training leading to an MD degree, but is basically a pathologist with a Ph. D. in Comparative Pathology and is currently a Professor of Pathology and Oncology at the University of Kansas School of Medicine. His nuclear background is limited primarily to some animal experiments in which he has used radiation as a tool. His prepared testimony contained numerous significant mathematical errors. He demonstrated lack of understanding of the physical situation by basing his calculation of radiation exposure of the public

¹⁰ Although in a somewhat different context, both Applicant's witness and Intervenor's witness agreed with this value.

on the assumption of a uniform radiation level within a 50-mile radius around the plant of 170 millirems and lack of familiarity with radiation protection programs by admitting that he was not aware of the intent of the Commission's "as low as practicable" regulations and understood the Commission's 170 millirem dose limit to include background and medical radiation. In the Board's view, the witness did not provide reliable, probative and substantial evidence in this proceeding.

74. The Board finds that the overwhelming weight of the evidence shows that for the range of radiation doses given in the environmental statement for Callaway, as amended by the new Appendix I evaluation, the risk to the population is so close to zero, regardless of the assumptions utilized, as to be incalculable with regard to potential cost to the exposed population.

E. CONTENTION I-2(g)—CLASS 9 ACCIDENT COSTS

I-2. The Applicant's analysis of costs related to the plant is inadequate and tends to underestimate severely the costs of the facilities through:

(g) failure to account for costs imposed by shutdown for the purpose of assessment and reappraisal of design and equipment modification for a period of about six months in the event of a Class 9 Loss of Coolant-failure of ECCS core melt accident in any other operating nuclear power plant, discounted by the probability of such an accident occurring in any year during the operational life of the plant.

75. The Staff's testimony on the probability of a major LOCA coupled with essentially complete failure of the ECCS shows it is very low. If such a hypothetical core meltdown were to occur at another nuclear power plant during the proposed 40-year lifetime of the Callaway Plant, it would not necessarily require the Callaway facility to be shut down. To date, there has been no incident at any nuclear power facility that has required similar facilities to be shut down for six months. The only generic shutdown to date resulted in all BWRs undergoing an inspection period of two weeks.

76. The Staff and Applicant estimated the possible cost in dollars of a shutdown on the basis of the probability of such an occurrence. The Staff based its estimate on the possible cost of the generating capacity of the proposed facility of one million dollars per day, for 180 days, and then discounted the total cost by the likelihood of the occurrence (10^{-4} per year). This resulted in an annual cost of \$14,000. The Applicant's estimate for such an event is an additional cost of 0.045 mill per KWH (equivalent to about three quarters of a million dollars per year). The Board's estimate is much closer to the Staff's value than to that of the Applicant. The Joint Intervenors did not present evidence on this contention. In addition to the two values set forth above, the Staff suggested a worst-case value of twice their calculated value and the Applicant

presented a worst-case estimate of 1.18 mills per KWH. These calculations emphasize the high degree of speculation involved, but in any event the additional costs are small compared to the differences between nuclear power costs and costs of power from alternative fuels. Similarly, the additional costs are sufficiently small as not to reasonably require consideration in the environmental cost-benefit analysis.

F. CONTENTIONS I-3(a) AND I-3(g)—THE COAL ALTERNATIVE-CAPITAL COSTS

I-3. Joint Intervenors contend that the Applicant's cost analysis of the alternative of a coal-fired plant to the proposed facility is not adequate in that sufficient detail has not been provided to explain or justify the comparison of

(a) capital costs

(g) costs associated with SO₂ removal system (comparison of low sulfur and high sulfur coal).

77. Both Applicant and Staff have conducted cost estimates of the alternative coal-fired plant and the Callaway Plant. The Applicant has estimated costs based on a plant currently under construction using two 575 MW coal-fired units and estimated costs for SO₂ removal equipment and on the current estimates for Callaway. The Staff has based its estimate on its computer program CONCEPT. The Staff's nuclear estimate is \$1.741 billion compared to the Applicant's estimate of \$1.758 billion—a difference of one percent. For a plant using two 1150 MW units with SO₂ removal equipment and burning high sulfur coal, the Staff's estimate is \$1.421 billion. The Staff anticipates that if the computer program were run for a plant using four 575 MW units, the cost would be \$1.634 billion, or 15 percent more than the plant using two larger units. The Applicant's estimate for a four-unit plant is \$1.574 billion—about 4 percent less than the Staff's four-unit estimate. The Staff's calculation of added cost of SO₂ scrubbers is \$248 million compared to the Applicant's estimate of \$230 million. The Board finds that the Applicant's estimates, as verified by the Staff, are adequate.

G. CONTENTIONS I-3(b) AND I-3(c)—THE COAL ALTERNATIVE-FUEL COSTS AND AVAILABILITY

I-3. Joint Intervenors contend that the Applicant's cost analysis of the alternative of a coal-fired plant to the proposed facility is not adequate in that sufficient detail has not been provided to explain or justify the comparison of

- (b) fuel costs
- (c) relative availability of fuels.

78. As noted in paragraph 69, *supra*, all parties have agreed, and the Board has found, that the Applicant has reasonably projected the nuclear fuel cycle costs for the plant.

79. The Applicant estimated the cost of high-sulfur coal based on prices quoted by five different coal companies to supply coal for Rush Island Units 3 and 4. These prices quoted in 1974 ranged from 74.8 cents to 81.6 cents per million BTU. The Applicant used a price of 80 cents per million BTU escalated at 7 percent per year to arrive at a 1982 cost of \$1.30 per million BTU. In the case of low-sulfur coal, the Applicant investigated a possible source of western coal which delivered would have cost \$1.20 per million BTU in 1974, about 50 percent more than the cost of high-sulfur coal. The Staff concluded that Applicant's estimates of 1974 costs of coal were reasonable, based upon independent sources. Therefore, the Staff used the Applicant's cost estimates for the 1974 price of coal. The Staff projections from the present rate, however, used an escalation rate of 8 percent, resulting in a higher cost estimate for coal in 1982 than the Applicant's. In addition, the Federal Energy Office's *Utility Oil Savings Study* reported coal costs higher than those used by the Staff or Applicant. Joint Intervenor's fuel witness cited an economics journal article projecting a 1985 price of \$22.84 per ton (or about \$1.00 per million BTU). Although Intervenor's witness relied on this price, he conceded that it was a national average which did not include transportation costs as did Applicant's, and further he could not explain how the article arrived at this price as he was not familiar with the methodology used. However, the coal price escalations forecast in the article substantiates the figure of 7 percent used by the Applicant. In the light of the agreement of Joint Intervenor's witness with the methodology used by Applicant to select a 1974 base cost of coal, it appears that Intervenor's evidence generally supports Applicant's estimates. Upon consideration of all the evidence submitted by the parties, the Board finds Applicant's coal cost estimates to be reasonable.

80. There are ample coal reserves, although there will be environmental restrictions on their use, *e.g.*, coal above 0.7 percent sulfur content cannot be used without SO₂ removal equipment. With regard to the supply of uranium fuel, the Applicant has a contract for a 21-year supply. In addition, estimates made by the Energy Research and Development Administration project that uranium resources will be available.

H. CONTENTION I-3(d)—THE COAL ALTERNATIVE- OPERATING AND MAINTENANCE COSTS

I-3. Joint Intervenors contend that the Applicant's cost analysis of the alternative of a coal-fired plant to the proposed facility is not adequate in that sufficient detail has not been provided to explain or justify the comparison of

(d) operating and maintenance costs.

81. The annual operating and maintenance expenses (which do not include fuel) generally include supervision and engineering, operating and maintenance labor, replacement materials, and general supplies. The Applicant estimated the operating and maintenance costs for a nuclear plant at 1.0 mills per KWH, and for a coal-fired plant at 1.2 mills per KWH (without including any costs for SO₂ removal equipment). The Staff reviewed Applicant's estimates by examining the operating costs of larger modern nuclear and coal-fired plants. Historically, the operating and maintenance costs of nuclear and coal-fired plants have not been substantially different. The Staff concludes that, on the average, a nuclear plant operated at a 60 percent capacity factor has an operating cost of about 1.0 mill/KWH, while a coal-fired plant has an operating cost of about 0.9 mill/KWH. Reports by the Commission and the Federal Power Commission show differences of 0.6 to 1.44 mills per KWH in favor of a nuclear plant when compared to a coal-fired plant with an SO₂ removal system. The Staff's analysis used operating and maintenance costs of 1.0 mill/KWH for a nuclear plant, 1.0 mill/KWH for a low-sulfur coal plant, and 1.5 mills/KWH for a coal plant with SO₂ removal equipment. Intervenors adduced no evidence to the contrary on this contention. The Board finds the values for operating and maintenance costs used by the Applicant and Staff to be reasonable.

I. CONTENTIONS I-3(e) AND (f)—THE COAL ALTERNATIVE-INSURANCE AND TAX COSTS

I-3. Joint Intervenors contend that the Applicant's cost analysis of the alternative of a coal-fired plant to the proposed facility is not adequate in that sufficient detail has not been provided to explain or justify the comparison of

(e) property and liability insurance costs

(f) tax costs to the Applicant.

82. The annual cost of property and liability insurance is higher for a nuclear plant than for a coal-fired plant. Applicant estimated these costs at \$1.5 million for an 1150 MW nuclear plant and \$0.4 million for two 575 MW coal-fired plants. These costs have been included in estimating generating costs for both nuclear and fossil plants.

83. The only tax that will vary significantly between coal-fired and nuclear plants is the property tax. Property taxes are higher for a nuclear plant because of the greater initial capital investment. The property tax, based upon an effective tax rate of 2 percent, is included in Applicant's fixed charge rate, and consequently, is factored into the total generating costs. The Board finds, then, that insurance and tax costs have been adequately considered in Applicant's cost analysis of alternatives.

J. CONTENTION I-3(h)—THE COAL ALTERNATIVE-DEPENDABILITY

I-3. Joint Intervenors contend that the Applicant's cost analysis of the alternative of a coal-fired plant to the proposed facility is not adequate in that sufficient detail has not been provided to explain or justify the comparison of

(h) plant dependability between coal-fired and nuclear-powered plants.

The Applicant compares a nuclear plant to two small coal-burning plants without adequate consideration of plant capacity factors from previous experience; i.e., small fossil fuel plants are more dependable than an 1150 MWe nuclear plant.

84. The Board's findings on Contention I-2(e) (paragraph 73, *supra*) show that comparison of a nuclear plant (two 1150 MW units) at a 57.2 percent capacity factor (the 1974 average) with a coal plant of equivalent size at a 65 percent capacity factor (the average for "small", e.g., under 600 MW, coal-fired units), which results in a cost advantage for nuclear plants, is a proper analysis. The Board finds that this analysis is conservative in that it ignores the increase in capital costs of four small coal units of 575 MW as compared to the two large coal units of 1150 MW.

85. Based on the Board's findings on Contention I-2(a) through (e) and on Contention I-3(a) through (h), the Board finds that the costs estimated for the nuclear plant (Contention I-2) are reasonable and proper and therefore appropriate for use in the cost-benefit analysis, and further that costs used in the analysis of the coal alternative (Contention I-3) are also reasonable to support the Staff's conclusion that the Callaway Plant is the preferred alternative.

K. CONTENTION I-4—ENERGY ALTERNATIVES

I-4. The Applicant's Environmental Report and the Staff's Environmental Statement fail to discuss in adequate detail the following alternatives to the proposed Callaway facility, omitting the cost-benefit analysis along with the assumptions used in such analysis.

- (a) solar heating and cooling on existing and new structures (as an alternative that helps maintain system capacity by reducing demand).
- (b) use of fuel cells as peaking and/or base load facilities.
- (c) combustion of waste trash to generate electricity.

86. Both Staff and Applicant have considered use of solar heating and cooling. It is generally agreed that the technology has been developed to the point where it is feasible to use solar energy for space and domestic water heating. It will likely become widely used when development reaches the stage of economic competitiveness. It has been estimated that this might occur around 1985-1990. The feasibility of solar cooling appears to be even farther off. However, even if solar heating were to become widespread in the near future, its influence on the Applicant's need for power would be small, because the present electric space heating saturation in Applicant's service area is only 6 percent and electric water heating saturation is only 16 percent. The space heating load, of course, occurs in winter, whereas the peak load occurs in summer.

87. Joint Intervenor's witness, Dr. Commoner, estimated that approximately 50 percent of the heating, hot water, and air-conditioning energy demand for the Applicant's service area could be met through solar energy. Dr. Commoner conceded that presently solar air-conditioning is not commercially available and that the feasibility of its use in the future is speculative. He also conceded that, prior to commercial acceptance, the cost of a solar heating system would have to decrease, and that cost will decline only if large-scale commercial production becomes available. Dr. Commoner also stated that his projection was not based on a specific study of the Applicant's service area, but rather on generic studies based on national projections of possible implementations of solar systems. Dr. Commoner did not make any studies on projections on the amount of total heating, hot water and air-conditioning use for 1983-1985, and conceded that solar system use will depend on consumer acceptance. The Board finds that solar energy may be a viable energy alternative for future use. However, at present there are major technological and economic barriers to its use on a mass scale and one can only guess as to acceptance by the consumer. Further, no evidence was proffered by the Joint Intervenor's showing at what time large scale use could be made of solar energy. Without more concrete data, the Board can only hypothesize on what might exist in the future. The National Environmental Policy Act requires only reasonable predictions and not remote speculation. There was no evidence adduced to indicate that either the Staff's or Applicant's evaluation of solar energy as an alternative to the Callaway facility was inadequate.

88. The use of fuel cells for the generation of large amounts of energy over sustained periods of time has not been satisfactorily demonstrated to date. There are no fuel cells now in existence that will meet the Applicant's needs. Major development is needed on major components of such a system. There is

presently a development program being conducted by the Pratt & Whitney Corporation to develop a 26 MWe fuel cell. The current schedule for that program calls for a 1.8 MWe demonstration unit to be completed in 1977. However, even if this program is successful, these cells will be a substitute for peaking units, not base load units, and the fuel cells would not be economically competitive. It is estimated that the fuel cost will be between 25 and 30 mills per KWH for fuel cells compared to 2.5 mills per KWH for nuclear. The Board finds that the use of fuel cells is not at present a reasonable alternative to the Callaway Plant.

89. Combustion of waste trash is a viable alternative to burning fossil fuels for electric power generation. Instead of using the stored energy in coal or oil, the stored energy in waste trash is utilized. The degree to which this can be done is limited primarily by the availability of trash and by its low heat equivalent. Union Electric has under way the installation of facilities to burn solid waste in power plants. This system will be fully operational by mid-1977. However, all the solid waste generated in its service area will provide only about 5 percent of the energy needed to meet the Applicant's service demand. There are also certain environmental costs associated with such a system. Combustion of trash produces many of the same gaseous products as coal. The waste ash generated and requiring disposal is more than for coal. The Board finds that the contribution of this energy source to power generation in the Applicant's service area will be so limited that it will not have an effect on the need for the 2300 MWe installed capacity represented by the Callaway facility.

L. CONTENTION I-7—CLASS 9 ACCIDENTS

I-7. The analysis of the environmental impact for the proposed facility by the Staff and Applicant is inadequate because Class 9 Loss of Coolant-failure of ECCS core melt accidents are dismissed without detailed discussion, in spite of the probabilities for such an incident being approximately one in 17,000 per reactor year (WASH-1400).

90. The Applicant, the Staff, and the Joint Intervenors have taken different approaches to this contention. The Applicant has argued that the contention fails on the basis that the Appeal Board has repeatedly held¹¹ that, absent a showing of a reasonable probability of a Class 9 accident in a particular case, neither NEPA nor the Commission's regulations require consideration of the environmental effects of Class 9 accidents, and that the Intervenors have not made such a special showing. The Board, in general, finds this argument

¹¹See citations shown in Applicant's Proposed Findings of Fact at page 33, and particularly *Shoreham*, ALAB-156.

acceptable, except that, as stated in its Prehearing Conference Order of February 19, 1975, the Board has some question as to whether the particular WASH-1400 accident described in the contention (that core-melt accident having a probability of about one in 17,000 years) accurately identifies a Class 9 accident. Although the accident meets the strict definition of a Class 9 accident—one which involves sequences of postulated successive failures more severe than those postulated for the design basis for protection systems and engineered safety features and for site evaluation purposes¹²—it does not meet the implicit, and generally understood, definition of having more severe consequences than Class 8 accidents. Indeed, an examination of WASH-1400 shows that the consequences postulated therein are comparable to those postulated for a large Class 8 accident in the FES.

91. The Staff's position was to ignore the fact that Class 9 accidents need not be considered and calculate *a priori* the probability of a Class 9 accident in the Callaway facility and then to discuss some of the aspects of the applicability of WASH-1400 to this facility. The Staff also called attention of the Board to the Commission's Interim General Statement of Policy (39 FR 30,964) which states, in essence, that it is inappropriate to use this draft study as a basis for licensing decisions.

92. The Staff's estimate of the probability of a large loss of coolant accident is about one in ten thousand, essentially the same as WASH-1400. Its estimate of the probability of failure of the ECCS to function when needed is in the range of one in a thousand to one in ten thousand. On the basis of this analysis, the Staff concludes that the probability of this Class 9 accident (major LOCA with failure of ECCS) is less than one in ten million per reactor year. The Staff further identified certain qualitative factors which form part of the basis for these estimates. These include the conservative standards used for plant design, the protective devices and systems used, the safety reviews conducted by the Nuclear Regulatory Commission, and the results of operating experience.

93. The Staff, in its review of the draft WASH-1400, has identified a number of aspects of the study with which it does not agree and states that the plant used as a basis for the study incorporated features that were significant contributors to the probability calculations in the study, but which are not present in the Callaway facility. In addition, it pointed out that the plant used as a model was one of the first licensed PWRs and that, since it was built, there have been major changes in technology, design criteria and analysis methods. Finally, the Staff indicated that WASH-1400 itself cautions against using the data therein for consideration of reactors beyond the first 100 constructed because of such changes.¹³

¹²Regulatory Guide 4.2, page 4.2-27.

¹³See, generally, the written and oral testimony of Staff's witness at Tr 1141-1165.

94. Joint Intervenors presented a professor of aeronautical engineering at Washington University as their witness, who analyzed the data in the probability distribution for acute fatalities per reactor year shown in Figure 5.3 of WASH-1400 and, using these data and several assumptions of his own, predicted that 400 fatalities could be expected to occur over the next 40 years from the operation of 100 reactors. On this basis, he asserted that the FES should include an intensive examination of a loss of coolant-ECCS core meltdown accident.

95. The WASH-1400 predictions of the same occurrence lead to a conclusion that the number of fatalities is 1.6. The factors accounting for the difference are: (1) a factor of slightly over two by which the witness' integration of the probability curve was in error (he agreed with this correction); (2) his assumption that the WASH-1400 probabilities were low by a factor of 10; and (3) an assumption that the fatalities would be ten times higher than predicted because evacuation would not be effective. The witness agreed, however, that using the figures in WASH-1400, the correct calculation was about 2 acute fatalities in 40 years for 100 operating reactors.

96. WASH-1400 itself indicates that its values may not be exactly correct. The values represent the "median values" calculated and may, in fact, be either high or low. In some instances specific ranges are given; for instance, without evacuation the number of fatalities may be twice that given. However, the basis for estimating environmental effects of nuclear facilities has normally been to use the most likely values or best estimates, and this is what WASH-1400 purports to have done. On the other hand, Joint Intervenors' witness has used what he considers to be the "worst case". Using WASH-1400, one would get a worst case figure of about 20 fatalities compared to the witness' value of 200. He finally testified that the Board should consider 2 fatalities as the proper WASH-1400 estimate for determining this contention. In sum, he did not challenge the probabilities utilized in WASH-1400 and he significantly miscalculated the consequences resulting from such accidents.

97. The Board finds that Joint Intervenors have not shown that there is a reasonable probability of the occurrence of a Class 9 Loss of Coolant-failure of ECCS core melt accident at the Callaway Plant and that, there being no demonstration that the Staff's probability estimates are in error, the Staff's analysis of the environmental impact of such an accident is adequate.

M. CONTENTION I-8—SABOTAGE DURING TRANSPORTATION

I-8. The Staff's and Applicant's environmental impact analyses do not adequately consider the radiological hazards of criminal acts and sabotage in relation to:

- (a) shipment from the Callaway plant of radioactive wastes

(b) any storage during shipment of radioactive wastes from the Callaway plant.

98. As noted below in the Board's finding on Contention I-9, the environmental impact of the transportation of radioactive materials to and from the Callaway Plant, under normal and accident conditions, has been properly analyzed pursuant to 10 CFR Section 51.20(g). However, the environmental effects of criminal acts and sabotage during transportation of radioactive wastes are beyond the scope of Section 51.20(g) and are subject to consideration in individual reactor licensing proceedings. Accordingly, the focus of the Board's inquiry on Contention I-8 is whether the environmental effects of criminal acts and sabotage would be significantly different from the environmental effects of transportation accidents which are included in the impact analysis (FES Table 7.3) pursuant to Section 51.20(g).

99. The packaging design standards in 10 CFR Part 71 (NRC Regulations) and 49 CFR Part 173 (DOT Regulations), which containers for shipment of waste must meet, specify test requirements and criteria which assure that if the package is to contain a significant amount of radioactivity, it must be capable of withstanding a sequence of severe package damage tests. The Staff's witness testified that containers designed to meet these standards would likely withstand anticipated acts of sabotage involving explosives or rifle fire. Since the materials will be solids, they would be difficult to disperse in the environment and the consequences of a release due to sabotage would not be significantly different from those of other transportation accidents already evaluated.

100. In addition to the wastes discussed above, spent fuel will be shipped in approved casks, which can weigh from about 25 to over 100 tons and must be designed to withstand a severe accident test sequence. Because of their bulk and weight, overhead cranes must be used to remove their covers and this must be done remotely, usually under water, because of the high radiation levels when the casks are opened. In summary, the Staff concluded that dispersion of radioactive wastes by criminal acts of sabotage is inefficient, costly, dangerous to the perpetrator, and requires a high degree of technical and scientific knowledge, and is therefore unlikely, and that many materials such as explosives and chemical agents are more readily available to a criminal and more effective than nuclear wastes. There has been no recorded case of a criminal act or sabotage directed toward release of or diversion of any shipment of radioactive waste. The Board concurs with this Staff conclusion. The Board further finds that in the unlikely event of a criminal act or sabotage, the probable consequences will not differ significantly from releases in transportation accidents which have been evaluated in WASH-1238 and incorporated in Table S-4 of Section 51.20(g) and ultimately in Table 7.3 of the Callaway Final Environmental Statement. With respect to the radiological hazards from a release of radioactive materials in shipment or in storage during shipment, once the radioactive material is released

from its container, the consequences of the release can be assessed regardless of the initiating event unless that event involves some action to modify the nature or form of the radioactive material itself. The findings above make it clear that such an hypothesis, *e.g.*, one involving the unlikelihood of modification of the material in addition to the unlikelihood of a criminal act which releases the material in the first instance, is too speculative to require further elaboration.

N. CONTENTION I-9—TRANSPORTATION ACCIDENTS

I-9. Protection against transportation accidents involving transportation of spent fuel from the Callaway Plant to unspecified reprocessing sites has not been considered or treated adequately by the Applicant. No details are given for safe transfer of spent fuel from the site, or for tentative routes and emergency procedures. For example, there have been several derailments in the vicinity of Hermann, Missouri, through which train shipments of spent fuel are likely to move. These derailments have resulted from the poor condition of the roadbeds, but the Applicant has not indicated whether or not it will assure the safe condition of such roadbeds if they are involved in transportation of spent fuel from the Callaway plant.

101. The Staff's analysis of the environmental impact of the transportation of radioactive materials to and from nuclear power plants is presented in WASH-1238, "Environmental Survey of Transportation of Radioactive Materials to and from Nuclear Power Plants" (December 1972) (Exhibit 3). According to the Staff witness under whose direction WASH-1238 was prepared, in addition to containing estimates of the potential exposure to transport workers and the general public under normal conditions of transport, WASH-1238 includes an analysis of the probabilities of occurrence and the potential consequences of accidents in transportation. WASH-1238 is the primary data base for the Commission's recent rulemaking decision which promulgated regulation 10 CFR Section 51.20(g), effective February 5, 1975 (40 FR 1005, January 6, 1975), which includes Summary Table S-4, entitled "Environmental Impact of Transportation of Fuel and Waste to and from One Light-Water-Cooled Nuclear Power Reactor". Section 51.20(g) requires that those individual nuclear power reactors which fall within the scope of the rule use the values set forth in Table S-4 for the contribution of the environmental effects of such transportation to the environmental costs of licensing the reactor. As the proposed Callaway Plant is within the scope of the rule, the Staff, pursuant to Section 51.20(g), set forth the Table S-4 values in the FES as the assessment of the environmental effects of transportation of radioactive materials under both normal (FES Table 5.10) and accident (FES Table 7.3) conditions.

102. Contention I-9 alleges that transportation accidents involving transportation of spent fuel from the Callaway Plant to unspecified reprocessing

sites has not been considered adequately. The Board finds that the environmental impact of transportation accidents involving transportation of irradiated ("spent") fuel from the Callaway Plant is considered in Table 7.3 of the FES in full compliance with the Commission's rulemaking decision promulgated as 10 CFR Section 51.20(g) and Table S-4 therein. Therefore, Contention I-9 can only be considered in this individual licensing adjudication proceeding if the application of Section 51.20(g) is waived or excepted pursuant to 10 CFR Section 2.758, which provides that the prerequisite for waiver or exception of the application of a regulation is a determination by this Board that a *prima facie* showing has been made that special circumstances, with respect to the subject matter of the particular proceeding, are such that application of the regulation (or any provision thereof) would not serve the purposes for which the regulation was adopted. Contention I-9 includes an allegation that the roadbeds in the vicinity of Hermann, Missouri are in poor condition and have therefore resulted in several derailments. The admission of Contention I-9 in the proceeding afforded Joint Intervenors an opportunity to make a *prima facie* showing that the condition of the roadbeds is such that there is a special circumstance within the meaning of Section 2.758, and therefore, Section 51.20(g) should not be applied in this proceeding. Joint Intervenors have not done so. The witness for Joint Intervenors testified that he did not know of any special circumstances at Hermann that would affect either the probability of a railroad accident or the effects of any kind of accident involving a spent fuel cask. The Staff, on the other hand, testified that the track in question was recently inspected by the Federal Railway Administration and found to be in good condition. In view of the above, the Board finds that there is no *prima facie* showing that the proposed Callaway facility involves any special circumstances within the meaning of Section 2.758. Accordingly, the Board finds that compliance with Section 51.20(g) of the Commission's regulations demonstrates full and proper consideration of the environmental impact of transportation accidents involving transportation of spent fuel from the Callaway Plant.

103. Although Contention I-9 need not be considered further in view of the finding above, the Board admitted Joint Intervenors' testimony on this issue and the Staff's rebuttal and, accordingly, considers it appropriate to summarize that testimony and the Board's finding here.

104. Joint Intervenors' witness on this contention was a professor of physics at the University of Michigan. The central point in his testimony was the postulated release of cesium to the environment from a water-filled spent fuel cask following an accidental loss of cooling water. He identified what he termed the "key estimate" in the WASH-1238 analysis—that only 0.01 percent of the cesium in the spent fuel is available for release. He estimated that the amount would be 20 percent—a factor of 2000 higher—which would materially alter the accident analysis. Upon cross-examination, he stated that he was not an

expert in the area of diffusion of cesium, and was relying on other acknowledged experts such as George Parker, whose views he regarded as being quite important and "pretty definitive". The testimony of Mr. George W. Parker was thereafter submitted by the Staff in response to Joint Intervenors' testimony. The Board finds itself in full agreement with the acknowledgment of Mr. Parker's expert qualifications in this area. Mr. Parker has been at the Oak Ridge National Laboratory since 1943, where he is currently in charge of fission product release tests under contract to ERDA, and before that was with the Manhattan Project. Mr. Parker is a research radio-chemist who has worked in many phases of nuclear chemical research related to synthetic elements, fission products, reactor fuels, and fuel-reprocessing. His most extensive research has been in the area of fission product chemical behavior as related to power reactor safety and he has an impressive list of publications in this subject area. Indeed, Mr. Parker is the senior author of three publications which are relied on in the testimony of Joint Intervenors' witness.

105. Mr. Parker testified that while Joint Intervenors' testimony might be said to adequately describe the expected behavior of cesium metal in an inert environment, it does not describe accurately the expected properties of cesium as it exists in spent fuel from a light water reactor. Mr. Parker's analysis makes use of the much more relevant results of actual fuel rod creep-rupture tests, reported on by Mr. Parker for Oak Ridge National Laboratory and admitted into evidence in this proceeding (Exhibit 4). In these tests, irradiated (3000-7000 MWD/T) reactor fuel rods of commercial (both PWR and BWR) design were heated until rupture occurred, at temperatures between 1500 and 2000°F. The fraction of the cesium released was only 0.001 to 0.01 percent. In relating these results to a hypothetical cask accident containing fully irradiated fuel, allowance for the effect of additional burnup would result in minor corrections, whereas the fact that they were heated well above the temperature predicted for fuel rods in transit in shipping casks makes the results significantly more conservative. Mr. Parker concluded that the tests are definitive and show that cesium does not diffuse from ruptured fuel rods at a significant rate at the temperature in question, and that 0.01 percent is an upper limit available for release in an extremely severe hypothetical shipping cask accident as releases below this amount could be expected depending upon the nature of the cask failure. Mr. Parker's testimony, in addition to the main points discussed above, comprehensively detailed erroneous aspects of Joint Intervenors' analysis to further illustrate to this Board why Joint Intervenors' conclusion is unsupported.

106. In summary, the Board finds that the testimony and conclusions of Joint Intervenors' witness are unsupported and not representative, as shown by Mr. Parker's testimony, of realistic spent fuel cask conditions and therefore irrelevant to the question at hand. The Board, for the reasons discussed above, finds that even upon consideration of all the testimony on Contention I-9, the

environmental effects of accidents has been properly considered in Table S-4 as supported by WASH-1238.

V. PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW OF PARTIES

107. In accordance with the Administrative Procedure Act and the Rules of Practice of the Commission, the following specific rulings are made regarding the proposed findings of fact and conclusions of law submitted by the parties.¹⁴ By accepting certain of the proposed findings, the Board does not necessarily agree with the implied conclusion but only that the stated facts are established by the evidence of record.

108. The Board accepts the proposed findings of fact and conclusions of law submitted by the Applicant and the Staff as substantially correct, except as modified in the foregoing Board findings. Certain of the proposed findings of fact, although accepted as substantially correct, have not been incorporated herein on the basis that they are not necessary to this decision.

109. With respect to the proposed findings of fact submitted by Joint Intervenors, the Board notes preliminarily that the Joint Intervenors limit their proposed findings to the contentions that, in their view, should be decided in their favor, ignoring those that they felt had by now been established in favor of the Applicant and Staff.¹⁵ The Applicant, in its reply to the Joint Intervenors' proposed findings, proposed that the Board criticize this position of Joint Intervenors on the basis that Joint Intervenors were not fulfilling the obligations incumbent upon them. The Board declines to do so, and, on the contrary, commends the Joint Intervenors on their efforts to narrow the area of dispute with respect to proposed findings of fact and conclusions of law.

110. Joint Intervenors' proposed findings 3 through 24, 33 through 35, and 37 basically recite some of the facts to be found in the evidence of record. The Board accepts these as substantially correct, but does not agree that they reflect all the facts relevant to the conclusions of the Board on the matters discussed therein. Proposed findings 2, 28 and 30 are accepted as accurate recitations of the statements of certain of the contentions. Finding 25 is rejected because it presents a conclusion contrary to that reached by the Board in paragraph 65, *supra*, the reasons for which are fully set forth in the Initial Decision. Proposed findings 26, 27, 29, 36, and 38 are rejected as not supported by reliable,

¹⁴ Missouri Public Service Commission did not submit proposed findings of fact and conclusions of law.

¹⁵ See undated "Response to Applicant's Reply to Proposed Partial Findings of Fact by Joint Intervenors".

probative, and substantial evidence. Proposed finding 31 is rejected because the Board has not taken judicial notice of WASH-1400. Proposed finding 32 is rejected because it incorrectly represents witness' view as being that of WASH-1400. Proposed finding 37 is rejected, in part, because it deals with a subject not necessary to this decision.

VI. CONCLUSIONS OF LAW

111. The Board has considered all documentary and oral evidence presented by the parties. Based upon a review of the entire record in this proceeding and the foregoing findings and, in accordance with 10 CFR Part 51 of the Commission's regulations, the Board has concluded as follows:

(a) The environmental review conducted by the Staff pursuant to the National Environmental Policy Act of 1969 has been adequate;

(b) The requirements of Section 102(2)(C) and (D) of the National Environmental Policy Act of 1969 and 10 CFR Part 51 have been complied with in this proceeding;

(c) Having given independent consideration to the final balance among conflicting factors set forth in the record of this proceeding with a view to determination of the appropriate action to be taken and having weighed the environmental, economic, technical and other benefits against the environmental, economic and other costs and having, in accordance with 10 CFR Part 51, considered available alternatives, construction permits for the Callaway Plant Units 1 and 2 should be issued subject to the following conditions:

(1) The Applicant shall take the necessary mitigating actions, including those summarized in Section 4.6 of the Environmental Statement, during construction of the Plant and associated transmission lines to avoid unnecessary adverse environmental impacts from construction activities.

(2) The Applicant shall establish a control program which shall include written procedures and instructions to control all construction activities as prescribed herein and shall provide for periodic management audits to determine the adequacy of implementation of environmental conditions. The Applicant shall maintain sufficient records to furnish evidence of compliance with all the environmental conditions herein.

(3) Before engaging in a construction activity not evaluated by the Commission, the Applicant will prepare and record an environmental evaluation of such activity. When the evaluation indicates that such activity may result in a significant adverse environmental impact that was not evaluated, or that is significantly greater than that evaluated in the

Environmental Statement, the Applicant shall provide a written evaluation of such activities and obtain prior approval of the Director of Reactor Licensing for the activities.

(4) If unexpected harmful effects or evidences of serious damage are detected during facility construction, the Applicant shall provide to the Staff an acceptable analysis of the problem and a plan of action to eliminate or significantly reduce the harmful effects or damage.

(5) The Applicant shall conduct his proposed monitoring programs, as summarized in Section 6 of the Environmental Statement, including the modifications proposed by the Staff (Subsec. 6.1.1, 6.1.2 and 6.1.4.1).

(6) The Applicant shall conduct a program to assess the significance of Logan Creek as a fish spawning and nursery area, the extent of damage to the creek and its biota which may ensue from the construction of crossings for pipelines, and the need for protective measures to ameliorate adverse impacts. Prior to starting pipeline construction, the Applicant shall submit the impact assessment and plan for construction of the crossings to the NRC Staff for review and approval (Subsec. 4.3.2.1, 4.4.1, and 6.1.4).

(d) Based upon the available information and review to date, and subject to the condition that the Applicant shall geologically map in detail all major excavations and notify the Regulatory Staff when the mapping is being done in order that the Regulatory Staff may make arrangements to examine the excavations, and further, that the Applicant shall include the maps in the Final Safety Analysis Report, there is reasonable assurance that the proposed site is a suitable site for reactors of the general size and type as those proposed for Callaway from the standpoint of radiological health and safety considerations under the Atomic Energy Act of 1954, as amended, and the Rules and Regulations promulgated by the Commission pursuant thereto.

(e) Having made all of the findings required by 10 CFR Section 51.52, the Board hereby determines that the Director of Nuclear Reactor Regulation may authorize the Applicant in the captioned proceeding to engage in construction activities for the Callaway facility in accordance with the aforementioned conditions and all other applicable Commission Rules and Regulations.

VII. ORDER

WHEREFORE, IT IS ORDERED, in accordance with the Atomic Energy Act, as amended, and the Rules and Regulations of the Nuclear Regulatory Commission, particularly Sections 2.760, 2.761a, 2.762, and 2.764(a), that this Initial Decision shall be effective immediately and shall constitute the final action of the Commission thirty days after the date of issuance hereof, subject

to any review pursuant to the above referenced rules. Exceptions to this Initial Decision must be filed within seven days after service of the decision. A brief in support of the exceptions must be filed within fifteen days thereafter (twenty days in the case of the NRC Staff). Within fifteen days of the filing and service of the brief by the Appellant (twenty days in the case of the NRC Staff), any other party may file a brief in support of, or in opposition to, the exceptions.

ATOMIC SAFETY AND LICENSING BOARD

George C. Anderson

Lester Kornblith, Jr.

Samuel W. Jensch, Chairman

Issued:

August 8, 1975

Bethesda, Maryland

(Appendix A is omitted from this publication but is available at the Commission's Public Document Room, Washington, D. C.)

SEPARATE STATEMENT OF SAMUEL W. JENSCH:

I wish to emphasize-in addition, and as critical, to the statements in the decision, not merely as an enhancement of a seismological evaluation, the necessity of competently prepared complete geological data, derived from a standardized procedure accepted by responsible geologists, is illustrated by the analysis of the 1971 San Fernando earthquake which did extensive damage and caused several deaths. It is well recognized that if there had been competent geologic data from the now damaged San Fernando area, the seismologists would have been able to determine the seismicity which was there. See *San Fernando, California, Earthquake of February 9, 1971: A Preliminary report published jointly by the U. S. Geological Survey and the National Oceanic and Atmospheric Administration*; U. S. Geological Survey Professional Paper 733 (1971).

Samuel W. Jensch

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

LBP-75-48

ATOMIC SAFETY AND LICENSING BOARD

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

In the Matter of
**ALLIED-GENERAL NUCLEAR
SERVICES, et al.**

(Barnwell Nuclear Fuel Plant
Separations Facility)

Docket No. 50-332-NEPA
50-332-OL

August 13, 1975

Licensing Board denies without prejudice intervenors' motion for financial assistance as premature, and finds no compelling reason for the request to be certified to the Commission.

MEMORANDUM AND ORDER

By motion dated August 7, 1975, Joint Intervenors Environmentalists, Inc., South Carolina Environmental Action, Inc., and Piedmont Organic Movement petitioned this Atomic Safety and Licensing Board for an award of financial assistance or, in the alternative, for an order certifying the question to the Commission for prompt determination. The motion seeks reimbursement for legal fees and costs expended to date and assurance of continued financial assistance in the future. The motion is supported by an affidavit of Ruth S. Thomas, President of Environmentalists, Inc., and a member and authorized representative of the other two joint intervenors.

The affidavit recites that the intervenors have made "substantial and worthwhile contributions" to the hearing process; that they can, upon information and belief, "make further significant contributions" by continuing their participation in this proceeding, and that without their participation, "there will be no full adjudicatory review" of the Staff's conclusions. The affidavit goes on to recite that the intervenors have expended an excess of \$8,000 in these proceedings to date and have incurred an obligation to their

attorney of \$1,800. Further, the affidavit recites the intervenor groups have current assets in an amount less than \$200. The affidavit concludes that the intervenors' ability to participate effectively in this proceeding (as well as in any forthcoming proceeding in connection with the generic environmental statement on mixed-oxide fuels) is dependent upon their being able to obtain reimbursement from the Government for their financial expenditures in connection with these proceedings.

As legal authority for their motion, petitioners cite the ruling of the U. S District Court for the Western District of Michigan in *West Michigan Environmental Action Council, Inc., v. AEC* (Slip Opinion, dated June 19, 1974, Docket No. G58-73) in which the court observed that the Commission has the power to grant assistance. Intervenors also refer to the Commission's ruling in *Consumers Power Company, et al.*, CLI-74-42, RAI-74-11, 820 (Memorandum and Order, November 20, 1974), in which the Commission indicated that it was "tentatively inclined to the conclusion" that it had the authority to grant assistance. (RAI-74-11, 823) Intervenors point out that, although the Commission in the *Consumers Power* matter indicated that it would consider the question of financial assistance for intervenors in a rulemaking proceeding, no specific rules covering such requests have been promulgated.

In the Commission's above-cited Memorandum and Order, the Commission had before it a request for financial assistance in three cases. As in the instant motion, these requests asked for advance approval of financial assistance for future participation. Noting that payment in advance would "reverse the procedure long followed by the courts in awarding costs and, in narrow classes of cases, attorney's fees" (RAI-74-11, 825), the Commission denied the petitions as premature. Since the issuance of the Commission's November 1974 Memorandum and Order, the Appeal Board has on two occasions passed upon requests for financial assistance. Both these requests were made after the participation in question had taken place. In both instances the Appeal Board denied the motion without prejudice to its renewal before the Licensing Board if and when the Commission authorizes such assistance. See *Florida Power and Light Company* (St. Lucie Nuclear Power Plant, Unit 2) ALAB-280, NRCI-75/7, 3 (Memorandum and Order, July 10, 1975) and *Niagara Mohawk Power Corporation* (Nine Mile Point Nuclear Station, Unit 2) ALAB-264, NRCI-75/4R, 347, 373 (1975).

The instant motion alleges no circumstances which would dictate that a different result be reached here. Therefore, intervenors' motion for financial assistance is hereby *denied* without prejudice, however, to its being reasserted should the Commission rule that such assistance is appropriate. In so holding, the Board takes no position on the question of whether the Commission has authority to render such assistance, or, assuming that it does have the authority, that the intervenors herein are entitled to such assistance.

In view of the Commission and Appeal Board rulings on similar petitions for financial assistance, there appears to be no compelling reason why the instant petition should be certified to the Commission for its determination. Accordingly, the request for certification is *denied*.

The Board wishes to draw intervenors' attention to a notice issued by the Commission on July 29, 1975, which announced the availability of the study on financial assistance which the Commission indicated it was procuring in its November 1974 Memorandum and Order. This notice indicates that a separate *Federal Register* notice will be issued setting forth the schedule and procedures which will apply to the forthcoming rulemaking proceeding. See 40 *FR* 32797, August 4, 1975. A copy is attached hereto. [The copy is omitted from this publication but is available at the Commission's Public Document Room, Washington, D. C.]

It is so ORDERED.

FOR THE ATOMIC SAFETY
AND LICENSING BOARD

Robert M. Lazo, Chairman

Dated at Bethesda, Maryland
this 13th day of August, 1975.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

LBP-75-49

ATOMIC SAFETY AND LICENSING BOARD

Douglas V. Rigler, Chairman
John H. Brebbia, Member
John M. Frysiak, Member

In the Matter of

The Toledo Edison Company and
The Cleveland Electric Illuminating
Company
(Davis-Besse Nuclear Power Station,
Units 1, 2 and 3)

Docket Nos. 50-346A
50-500A
50-501A

The Cleveland Electric Illuminating
Company, et al.
(Perry Nuclear Power Plant,
Units 1 and 2)

Docket Nos. 50-440A
50-441A
August 27, 1975

Upon motion by the Department of Justice for certification to the Appeal Board of the Special Master's determination relating to claims of privilege, Licensing Board finds: (1) that responsibility for review, if any, of the Master's recommendations and decision is that of the Licensing Board in the initial instance; (2) that the parties voluntarily made an agreement or stipulation that the decision of the Master would be binding and did not bring to the Board's attention prior to the Master's decision any claim of ambiguity in that agreement; (3) that, viewed as a stipulation by all parties as to the procedure to be followed in the proceeding, the appointment of the Special Master appears to conform to the procedures authorized by 10 CFR §2.753 and is not a delegation of the Board's authority in conflict with Chapter 0106, Section 034 of the AEC Manual; and (4) that if the Licensing Board or the Appeal Board were to find that further review were not precluded by the Licensing Board's prior order, fairness and due process would dictate that such review not be undertaken here, since the right of review should apply to all challenged decisions of the Master, and several parties have already turned over documents (thereby frustrating the effectiveness of any such review) in reliance on the finality of the Master's decisions, in spite of their concern over the correctness of the Master's decision.

Motion denied.

RULES OF PRACTICE: DISCOVERY

The responsibility for initial discovery rulings is that of the Licensing Board, not of the Appeal Board.

RULES OF PRACTICE: APPELLATE REVIEW

A party may not be stripped of any right of appeal or review over its objection. However, it may voluntarily enter into a stipulation or agreement relating to discovery in which it waives or relinquishes certain rights otherwise available.

RULES OF PRACTICE: STIPULATION

Enforcement of agreements or stipulations entered into by parties is not based upon the legal correctness of the agreements or stipulations, but rather upon the principle that a party making a bargain on the basis of a reasonable *quid pro quo* ought to fulfill its obligation.

RULING OF THE BOARD ON REQUEST FOR CERTIFICATION BY THE DEPARTMENT OF JUSTICE OF AN APPEAL OF THE SPECIAL MASTER'S FINDINGS OF PRIVILEGE

By Motion of July 8, 1975, the Department of Justice (Justice) requested the Board to certify to the Atomic Safety and Licensing Appeal Board an appeal of the Special Master's findings relating to claims of privilege. A narrative summary of the events leading to this request is set forth in this Board's July 21, 1975 Ruling in which a similar request for certification filed by the City of Cleveland (City) was denied. On July 28, 1975, the City filed a Notice of Appeals and Exceptions before the Appeal Board. By Order of August 14, 1975, the Appeal Board required parties filing answering briefs to the City's Notice of Appeals to direct their attention to certain issues including the threshold question of whether certification should be directed on the question of the validity of the role played by the Special Master in this case.

As we consider Justice's parallel Motion for Certification, we have before us the Appeal Board Order of August 14, 1975 and we may take into account the question raised by the Appeal Board as to whether in light of AEC Manual, Chapter 0106, Section 034, restricting the delegation of authority by Safety and Licensing Boards "an inquiry into legitimacy of the role played by the Special Master is warranted."

I. THE LICENSING BOARD'S RESPONSIBILITY

We agree that the responsibility for ruling on discovery requests is that of the Board. In our Memorandum and Opinion of July 21, 1975 denying the City's Request for Appeal, we indicated that one reason for rejecting any claim of ambiguity in the parties' agreement memorialized in the Board's Order of December 10, 1974 was that it was the Licensing Board's responsibility rather than that of the Appeal Board to make initial discovery rulings. The procedural regularity of prior Licensing Board review seemed sufficiently obvious as to negate the City's assertion that its intent in December 1974 was to apply directly to the Appeal Board for review of the Master's recommendation.* As stated in our Ruling of July 21, 1975:

There is nothing so unique about a claim of privilege as to require that the ordinary procedures be abandoned. Thus, no error would have attached to review by the Board of the privileged documents. That being so, an unusual appellate procedure designed to bypass the Board would be unnecessary. This undercuts the City's claim that opportunity for appellate review to the exclusion of this Board was a logical though unspoken condition of the December 10 Order.

Thus, as we decide whether to grant Justice's Motion for Certification, we adhere to the proposition that responsibility for review, if any, of the Master's recommendations and decision properly is that of the Safety and Licensing Board in the initial instance.†

II. THE PARTIES' DECEMBER 1974 STIPULATION

Although this Board is satisfied that the responsibility for review of the Master's decision properly should be lodged with it in the first instance, and although as indicated in our prior ruling, we are unable to express any opinion as to the correctness of the Master's ruling since we have made no independent review of the documents, we continue to believe that these factors are not central to the resolution of the controversy. We are presented with a situation where the present Board must construe the plain and to us ambiguous terms of

*City of Cleveland's Motion for Certification of July 8, 1975 p. 10. The City opined that since an appeal of the Special Master's report to the Board would require Board review of the documents "and thereby compromise the Board's position," the City agreed that there was to be no review by the Board of the Special Master's decision. The City's Motion continued: "There was never an agreement, and none was ever intended, to give up the right of review by an Appeals Board and ultimately by the courts."

†This issue is incorporated in the third question the parties to the appeal were asked to address by the Appeal Board in its Order of August 14, 1975.

an Order resulting from a telephone conference call conducted among the parties and the prior Chairman of the Board. In the interval between the entry of that Order and the release by the Master of his written decision, no party brought to the attention of the present Board any claim of ambiguity, latent or otherwise, in that Order. Our reading of that Order has convinced us that the parties voluntarily made an agreement or stipulation that the decision of the Master would be binding.

As we stated in our July 21, 1975 Opinion relating to the City's Request for Certification, we do not question that no party may be stripped of any right of appeal or review over its objection. That is not to say, however, that a party may not voluntarily enter into a stipulation or agreement relating to discovery in which it waives or relinquishes certain rights otherwise available in return for concessions and considerations made by other parties to the agreement. At the time referral of "privileged" documents to a Special Master was proposed, the advantages were conceived to be (1) an opportunity for prompt and independent review of a considerable volume of documents, (2) the assurance that members of the Board would not be exposed to documents which ultimately were rejected from discovery through application of privilege,* and (3) finality. All of these advantages were evident to the parties at the time of the December 1974 agreement. Conversely, the Board believes certain disadvantages were apparent, one of which was relinquishment of the right of review in the event of dissatisfaction with the Master's decision. In any contest over the discoverability of any documents, there must be a winner and a loser, and this fact was well known to the parties at the time they entered into an agreement which provided for a final resolution of the issue.

As a result of the Appeal Board's August 14 Order, we recognize a concern that an Atomic Safety and Licensing Board not subdelegate its authority in contradiction to the language of the AEC Manual. However, 10 CFR Section 2.753 of the Commission's Rules seems applicable to the present situation. Section 2.753 provides that the parties may stipulate in writing at any stage of a proceeding certain relevant facts and that such stipulations may be received in evidence. The Rule continues:

The parties may also stipulate as to the procedure to be followed in the proceeding. Such stipulations may, on motion of all parties, be recognized by the presiding officer to govern the conduct of the proceeding.

Viewed as a stipulation as to the procedure to be followed, the appointment of the Special Master in December 1974 appears to conform to the procedures authorized by this Rule. The Board's Order of December 10, 1974 may be considered as a stipulation, on the motion of all parties, recognized by the

*We reiterate that this may be considered desirable but in no sense mandatory. In any judicial proceeding, it often is necessary to examine documents ultimately rejected in order to determine if they are properly subject to discovery.

presiding officer—i.e., incorporated in the December 10 Order—to govern the conduct of the proceeding. As such, we see no conflict between the procedure employed and the referenced language in the AEC Manual.

An analogy to the resolution of other discovery matters in this proceeding and other proceedings may be helpful. Not infrequently, motions to produce documents and interrogatories of broad scale, both in terms of the number of documents sought and the duration of events for which discovery is sought, are served upon the parties. The scale of these discovery requests frequently leads to the filing of objections; and a decision as to the proper scope of discovery plainly is within the authority of the Licensing Board. Notwithstanding the authority of the Licensing Board to rule upon these objections, however, it is customary for the parties to attempt to resolve these controversies by discussions among themselves. In the instant proceedings, the Board has directed the parties to conduct such discussions before requesting argument to the Board with respect to any unresolved discovery issues. It is our observation that this practice, adhered to both in judicial and administrative proceedings, is of substantial benefit in reducing the amount of time necessary to conclude prehearing discovery.

To the extent that parties make agreements or stipulations among themselves which have the effect of eliminating objections or amending the scope of discovery requests, the Board, in most instances, is prepared to take into account and, if necessary, to enforce these agreements. The basis of this enforcement would not rest upon the legal correctness of the concessions made during the parties' negotiations, but rather upon the principle that one making a bargain ought to fulfill his obligation, particularly where there appears to have been a reasonable *quid pro quo* associated with the agreement. The situation described above is not substantially different from the controversy relating to privileged documents now before this Board.

III. FAIRNESS AND DUE PROCESS

There is yet another troublesome aspect involved in overcoming the agreement of the parties to be bound by the decision of the Master to which we have not addressed ourselves. That issue is one of fairness and of according due process to the parties who have adhered strictly to the terms of the December 10, 1974 agreement and Order. In response to the Master's decision, at least some parties have turned over documents despite their professed concern that the Master erred in reaching his conclusions. Prior to turnover, these parties indicated that they felt bound by the decision of the Master and that they were

aware that their agreement to be bound relinquished voluntarily any rights for further appeal.*

If this Board or the Appeal Board were to find the Board's December 10 Order not to preclude possibility of further review, that review properly should apply to *all* challenged decisions of the Master. Such a review would be frustrated, however, since those parties who have complied with the Master's decision effectively would be deprived of the opportunity to safeguard or withhold documents which they contend never should have come into the possession of other parties to these proceedings.

IV. CONCLUSION

As has become evident, we feel compelled to reject the Request for Certification of Justice. In doing so, we adhere to the opinion expressed in our Memorandum and Order of July 21, 1975, denying certification to the City, that the result is mandated by the language of the Board's December 10, 1974 Order which we continue to regard as unequivocal and unambiguous. We regard the enforcement of this agreement, which the Order recites was entered into by agreement of all of the parties, as being within the provision of Rule 2.753 which permits stipulation as to procedures to be finalized by recognition of the presiding officer. The Rule reads broadly in terms of the subject matter permitting, as it does, stipulations as to "any relevant fact." To us this encompasses stipulations affecting documents subject to claim of privilege.

Our decision with respect to the intent and meaning of the December 10, 1974 Order is dispositive. Assuming, however, that we are in error as to the enforceability of the consensual stipulations, we would not deny that this Board is the logical and appropriate review forum with respect to the Master's decision. We are unable to express any opinion with respect to the merits of the Master's decision for the reasons stated above.

Although we decline to certify the privilege question, we serve copies of this Memorandum and Order upon the Appeal Board because of the relationship of this decision to the issues already set for briefing by the Appeal Board in its August 14, 1975 Order. We do so in order that the Appeal Board be fully apprised of our thinking and in order to compress to the minimum the time necessary for the Appeal Board to reach its decision. We note for the record that without objection from any party, we recently have revised the schedule in these

*Once again, we emphasize that we do not hold that rights of appeal did not exist; we say instead that the parties gave up those rights in order to secure what they must have seen as compensating advantages. (In judicial proceedings, by further analogy, a party may waive, by formal consent, its right to a jury trial.)

proceedings to provide for commencement of hearings on or about October 30, 1975.

**ATOMIC SAFETY AND
LICENSING BOARD**

John H. Brebbia, Member

John M. Frysiak, Member

Douglas V. Rigler, Chairman

**Dated at Bethesda, Maryland
this 27th day of August 1975.**

1. The first part of the document is a list of names and titles, including the names of the authors and the titles of their works. This list is organized in a structured manner, likely serving as a table of contents or a reference list.

2. The second part of the document contains a series of numbered entries, each corresponding to a name or title from the list above. These entries provide detailed information, possibly including dates, locations, or specific details related to the individuals or works mentioned.

3. The third part of the document is a short, concluding paragraph or a signature block, which may contain the name of the author or the date of the document's completion.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

CLI-75-12

COMMISSIONERS:

William A. Anders, Chairman
Edward A. Mason
Victor Gilinsky
Richard T. Kennedy

In the Matter of

ALABAMA POWER COMPANY

Alan R. Barton Nuclear Plant
(Units 1, 2, 3 and 4)

Docket Nos. 50-524A
50-525A
50-526A
50-527A

Joseph M. Farley Nuclear
Plant (Units 1 and 2)

Docket Nos. 50-348A
50-364A
September 5, 1975

Upon motion to consolidate *Barton 1, 2, 3, and 4* antitrust proceeding with ongoing *Farley 1 and 2* proceeding, the Commission finds consolidation generally appropriate in circumstances where parties in two proceedings are the same and no new issues are raised, but it authorizes and directs the Licensing Board to determine whether consolidation would cause unreasonable delay in the *Farley* hearing, and delegates final decision-making authority on consolidation to the Board. The Commission dismisses as moot applicant's objection that the motion was premature.

ORDER

The Alabama Electric Cooperative has moved for consolidation of the ongoing *Farley* antitrust proceeding with the *Barton* antitrust proceeding. The motion is supported by the Municipal Electric Association and NRC staff. The parties are identical in both proceedings and no new antitrust issues are raised in the *Barton* application.

The applicant has objected principally on the ground that the motion was premature, having been filed prior to publication of notice of an antitrust proceeding involving the Barton units. Such notice has since been provided (40 F.R. 26078, June 20, 1975), rendering the objection moot.

In view of the strong arguments presented by the intervenors and NRC staff in favor of consolidation, the Commission believes that consolidation is appropriate. The only additional factor to be considered is whether consolidation of the two proceedings would cause unreasonable delay in the Farley hearing, which is well under way. Because the Licensing Board is in a position to better assess the potential for delay, the Commission delegates its final decision-making authority on this question to the Atomic Safety and Licensing Board now conducting the Farley hearing to order such consolidation as it deems required.

Accordingly, pursuant to 10 CFR 2.716, that Board is hereby authorized and directed to determine whether consolidation will cause unreasonable delay in the Farley hearing and is hereby delegated authority to grant or deny the motion to consolidate based upon such determination.

It is so ORDERED.

By the Commission
William A. Anders, Chairman
dissenting.

SAMUEL J. CHILK
Secretary of the Commission

Dated at Washington, D. C.
this 5th day of September 1975.

Chairman Anders expressed the following dissenting view:

Though this issue presents a "close call", I am unable to agree that the responsibility for decision regarding consolidation of the proceedings in this case should be delegated to the Atomic Safety and Licensing Board. Our rules—10 CFR 2.716—place the power of consolidation in the Commission itself. Here, one of the proceedings has already consumed twenty-four days of hearing in examination (chiefly applicant's cross-examination) of the first witness, and the motion is contested. In these circumstances, I believe the Commission itself should be the one to decide this motion.

I express no opinion on the merits of the request for consolidation of these particular cases except to say that we should be particularly sensitive to any possibilities for increasing the efficiency of the regulatory process while still

maintaining its effectiveness. My colleagues share that concern. I believe that the question of consolidation can be better decided after hearing from the parties concerning the potential which a consolidation order entered at this time might have for further delaying the Farley proceeding. The Licensing Board, in implementing today's decision will undoubtedly solicit that information. My only disagreement with my fellow Commissioners arises from my belief that, under the current rules of practice, the Commission could more effectively decide the motion itself.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

CLI-75-13

In the Matter of
CONSOLIDATED EDISON COMPANY
OF NEW YORK, INC.

Docket No. 50-247
September 22, 1975

(Indian Point Station,
Unit No. 2)

Upon motion (by intervenor in completed operating license proceeding) for an order directing the Licensee to serve upon petitioner's attorneys copies of all papers filed with the Commission in relation to the plant, the Commission rules that neither a license condition requiring service upon the petitioner of certain papers nor Commission regulations entitle petitioner, by reason of its status as a party to the completed proceeding, to service of "all" papers thereafter filed with the Commission relating to the plant. The Commission also finds that petitioner was entitled to receive the report which prompted its motion; but that since the report was subsequently made available to petitioner, the matter was moot.

Motion denied.

MEMORANDUM AND ORDER

The Hudson River Fishermen's Association (HRFA) has filed a motion for an order directing the Licensee "to serve copies of all papers filed with the Commission in relation to Indian Point Unit No. 2" upon HRFA's attorneys.¹

¹ The motion is properly before us, pursuant to 10 CFR 2.730 of our regulations, which provides in pertinent part:

- (a) All motions shall be addressed to the Commission or, when a proceeding is pending before a presiding officer, to the presiding officer

....

When the motion was filed, there was no pending proceeding involving Indian Point Unit No. 2. Subsequently, we instituted a show cause proceeding dealing exclusively with seismic issues touching all three plants at the Indian Point site. NRCI-75/8 173 (August 4, 1975). Since the instant motion is unrelated to the show cause issue, we dispose of it here rather than refer it to the presiding officer in that proceeding.

For the reasons stated below, we find that HRFA is not entitled to service of all papers filed with the Commission relating to Indian Point Unit No. 2, and we therefore deny the motion.

HRFA states that the motion was prompted by the Licensee's alleged failure to serve HRFA or any other party to the Indian Point Unit No. 2 operating license proceeding with a copy of the Licensee's recent application for an amendment to that license. The application requests a two-year deferral of the deadline set in the license for installation of a closed-cycle cooling system² and is supported by a lengthy "Environmental Report," dated June 1975.

One of the conditions imposed upon the Unit 2 operating license provides that:

In addition to the reporting requirements otherwise imposed by this license, the applicant is directed to file with the Commission and serve on the parties reports, under oath or affirmation, of its analysis of data collected during interim operation which bear on the environmental effects of once-through cooling on the aquatic biota of the Hudson River. Such reports shall be made publicly available. The first such report shall be made as soon as is feasible after the end of the 1974 striped bass spawning season, and thereafter as significant new data become available. [*Consolidated Edison Co. of New York* (Indian Point Station, Unit No. 2), ALAB-188, 7 AEC 323, 408-409 (1974).]

Although HRFA participated as an intervenor in the Unit 2 operating license proceeding, nothing in the foregoing license condition or in our regulations entitles HRFA, by reason of its status as a party to that licensing proceeding which ended over a year ago, to service of all papers thereafter filed with the Commission relating to Unit 2.³ Accordingly, to the extent that HRFA's motion is so framed, it is denied.

On the other hand, the license condition clearly requires the Licensee to serve HRFA with copies of reports bearing on the environmental effects of once-through cooling on the aquatic biota of the Hudson River. The report which prompted HRFA's motion is clearly of that character. However, since the Licensee subsequently served the report, to the extent that HRFA requests service of papers to which it is entitled under the license condition, the matter is at this juncture moot.

We note that the Licensee has stated that it will serve on HRFA any papers filed in the future relating to the pending amendment application. Based upon

²HRFA claims that it first learned of the application when the NRC Staff called, inviting HRFA to attend a meeting to discuss the application.

³Papers filed with the Commission in the recently instituted show cause proceeding, for example (see note 1, *supra*), need not be served on HRFA unless it becomes a party to that proceeding.

this representation, we are confident that the Licensee will give a more generous reading to the terms of the condition than it has in this instance.

It is so ORDERED.

For the Commission

SAMUEL J. CHILK
Secretary of the Commission

Dated at Washington, D. C.
this 22nd day of September, 1975.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ALAB-287

ATOMIC SAFETY AND LICENSING APPEAL BOARD

John B. Farmakides, Chairman
Dr. John H. Buck, Member
Dr. Lawrence R. Quarles, Member

In the Matter of

Docket No. 50-286

**CONSOLIDATED EDISON COMPANY
OF NEW YORK, INC.**

(Indian Point Station,
Unit No. 3)

Mr. Harry H. Voigt, Washington, D. C., (Messrs. Arvin E. Upton, Eugene R. Fidell, and Patrick K. O'Hare with him on briefs) for the applicant, Consolidated Edison Company of New York, Inc.

Ms. Sarah Chasis, New York, New York, for the intervenors, Hudson River Fishermen's Association and Save Our Stripers.

Mr. Carmine J. Clemente, Albany, New York, for the New York State Atomic Energy Council.

Mr. Paul S. Shemin, Assistant Attorney General, New York, New York, for the Attorney General of the State of New York.

Mr. Anthony Z. Roisman, Washington, D. C., filed a brief *amicus curiae* for Citizens Committee for Protection of the Environment.

Mr. Joseph Gallo (Messrs. Frederic S. Gray and Thomas M. Bruen on the brief), for the Nuclear Regulatory Commission staff.

Upon referral by licensing board of parties' environmental stipulation, and upon exceptions to certain portions of licensing board's decision approving stipulation and authorizing the issuance of an operating license subject to

specified conditions (LBP-75-31), Appeal Board (1) interprets the stipulation and, as so interpreted, approves it; (2) grants applicant's exceptions concerning two of the licensing board's statements with respect to the stipulation; and (3) dismisses as moot applicant's exceptions relating to the authority under which the operating license is to issue, and to the seismic condition placed on its operating license authorization.

NEPA: SCOPE OF INFORMATION REQUIRED FOR LICENSING

An environmental review (including issuance of an FES and consideration at a hearing) may occur even though better information is likely to become available at a later time. See: *Shoreham*, ALAB-156, 6 AEC 831;836-38 (1973).

RULES OF PRACTICE: APPELLATE PROCEDURE

Since a licensing board's construction of a stipulation it is approving could have a bearing on the future interpretation of such stipulation, an appeal to correct an asserted error in such construction is warranted under the *Davis-Besse* rule (ALAB-157), 6 AEC 858 (1973)).

RULES OF PRACTICE: STANDARD OF PROOF

The quantum of proof which must be adduced under the Rules of Practice to determine whether a party has sustained its burden of proof on contested environmental issues is a "preponderance of the evidence."

TECHNICAL ISSUES DISCUSSED: Cooling Systems.

DECISION

September 3, 1975

I

Before us for review is the Licensing Board's June 12, 1975 "Memorandum and Order Approving Stipulation for Settlement Proposed by Parties and Decision Respecting Concerns Related to the Authorization of a Full-Term, Full-Power Operating License." LBP-75-31, NRCI-75/6 593 (hereinafter referred to as "decision"). It relates to the Indian Point Nuclear Generating Station, Unit No. 3, one of three reactors located at a site on the east bank of the Hudson River in the Village of Buchanan, New York, about 24 miles north of the boundary of New York City.

The decision (a) approved a stipulation among the parties settling all of the contested issues of an environmental nature and agreeing to the issuance of a

full-power, full-term operating license for Indian Point 3 without further hearing provided certain conditions were included in the license; (b) discussed and resolved four safety-related issues on the Board's own initiative;¹ and (c) based on the findings and approval of the stipulation, authorized—subject to certain specified conditions—the issuance of an operating license for Indian Point 3. The decision also transmitted the stipulation to us for approval because, by its express terms, the stipulation is not final and binding on the parties until after approval by both the Licensing Board and this Appeal Board.

As to three of the questions discussed by the Board—i.e., quality assurance, plant security, and financial qualifications of the applicant—it concluded that no serious safety issues were present and that no evidentiary hearing was required. NRCI-75/6 at 601.

The fourth safety question—the adequacy of the plant's seismic design—stemmed from a report by the Geological Survey, New York State Museum and Science Service, in April of 1974. NRCI-75/6 at 602. It was raised as an issue by the New York State Atomic Energy Council (Council) during the course of an evidentiary hearing on April 1, 1975. However, by letter to the Board dated April 16, 1975, the Council indicated that the issue could be "more fruitfully addressed in . . . a generic forum" at which the seismic considerations applicable to all three Indian Point Reactors could be considered and that it would "request the Nuclear Regulatory Commission to order such a hearing."²

Therefore, the Council did not seek further review of the seismic issue in the *Indian Point 3* proceeding. While the Licensing Board in its decision acceded to the Council's request that the issue not be further considered in this proceeding, it nevertheless stated that the issue was one "of major importance" which could have been decided by the Board on its own initiative. NRCI-75/6 at 603. It declined to do so because the matter was pending before the Commission, and it did not wish "to prejudge the matter for the Commission". *Id.* It did, however, condition the operating-license authorization on "the determination by the Commission respecting the pending seismic contentions." *Id.* at 605.

The applicant has filed four exceptions to the Licensing Board's decision. The issue raised by the first exception was mooted when the Licensing Board corrected its decision by issuing an "Amendatory Order" on July 9, 1975.³ Of

¹The questions were raised under the authority granted boards in operating-license proceedings to consider "serious safety or environmental" issues, as spelled out by the Commission earlier in this proceeding. CLI-74-28, RAI-74-77 (July 16, 1974).

²The Council filed such a request on April 21, 1975, and it was subsequently granted by the Commission. CLI-75-8, NRCI-75/8 173 (August 4, 1975). See further discussion, *infra*, p. 388.

³The applicant took exception to a statement in the decision (as it was first issued) that applicant had requested a license pursuant to amended Section 103 of the Atomic Energy Act of 1954, and argued that the amended and substituted application for license filed on April 16, 1973 requested such license under Section 104 of the Act. The Licensing Board agreed and changed Section 103 to read Section 104(b).

the other three exceptions, one concerns the seismic condition placed on the operating license authorization, and the other two relate to specific environmental findings made by the Board in its discussion of the stipulation. We will first consider the stipulation and the exceptions related thereto, and then the seismic matter.

II

A. The construction permit for Indian Point Unit 3, issued by the Atomic Energy Commission prior to the time when it was obliged by NEPA to consider a plant's environmental impact, contemplated the use of "once-through" cooling. Because of the possible long-term impact of such a system on fish (principally striped bass) in the Hudson River, the staff in its draft environmental statement for the operating license proceeding had recommended that once-through cooling be permitted only to May 1, 1978 and that a form of closed-cycle cooling be required thereafter. The stipulation, which was incorporated into, and influences some of the recommendations of, the staff's final environmental statement (FES), basically permits once-through cooling until September 15, 1980.⁴ Thereafter it requires closed-cycle cooling.

In approving the stipulation, the Licensing Board noted the intent of the parties that the settlement be consistent with the terms we imposed with regard to Indian Point Unit No. 2.⁵ Each of the parties appearing before us during oral argument, convened by this Board on July 9, 1975, confirmed that such was its intent in agreeing to settle the issues raised in this proceeding. Given the similarities of the two reactors, and the issues raised thereto, we believe that the terms and conditions we imposed with regard to Indian Point Unit 2 appropriately should also govern the operation of Unit 3.

With that in mind, and subject to our understanding that it provides an opportunity to the staff as well as the applicant to seek amendment of the license as to once-through vs. closed-cycle cooling should this be later found appropriate in light of our comments and guidance below, we hereby approve the stipulation referred to us.

B. As stated by the parties, the stipulation is based upon our holding in ALAB-188 (as well as our earlier ruling in ALAB-174, 7 AEC 55 (1974)). In this connection, it should be noted that the Licensing Board here misunderstood our

⁴ Under specified circumstances, and subject to specified procedures, the September 15, 1980 date for termination of once-through cooling may be advanced or extended. Inasmuch as the plant did not operate between May 15 and July 31, 1975, the September 15, 1980 date was automatically extended one year, under the terms of the stipulation.

⁵ See ALAB-188, 7 AEC 323 (1974).

holding in ALAB-188. The Board characterized ALAB-188 as "extend[ing] the time for operation with a once-through cooling system . . . and accepting the substance of the decision of the [Indian Point 2] Licensing Board." NRCI-75/6 at 697. The Licensing Board for Indian Point 2 had approved closed-cycle cooling as the permanent cooling system for that reactor. LBP-73-33, 6 AEC 751, 773-75 (1973). It should be apparent, however, that we have never sanctioned the use of closed-cycle cooling at the Indian Point site. In ALAB-188 we viewed—and we still view—the cooling system question as open, and we required that there be a full NEPA review of that question.⁶ As we specifically held:

there are certain serious deficiencies in the staff's technical justifications for certain of its positions which bear directly upon the timing for, and the decision on, the permanent cooling system. Even if these deficiencies stood alone, we conclude that they are so fundamental as to require a fresh look at certain of the staff's positions and reconsideration of the portions of the Final Environmental Statement to which they relate. (emphasis in original).⁷

The staff realized that a new cooling system review for Indian Point Unit 2 was required by ALAB-188. At one point it was considering asking for reconsideration of that decision. See ALAB-198, 7 AEC 475 (1974). Later, however, it filed a "Statement"⁸ which advised us that, as called for by ALAB-188, the staff had taken a "fresh look" at its position, that it still regarded its previous position as valid, but that

... the merits of this position can better be explored . . . within the framework of the upcoming evidentiary proceeding in Indian Point Unit 3 rather than through the mechanism of a petition for reconsideration . . .

In accordance with the above commitment, the staff's FES for Unit 3 should have reflected the new review for Indian Point Unit 2 called for by ALAB-188. In fact, the Licensing Board found the Unit 3 FES to have satisfied the standards we had spelled out for such Indian Point 2 review. NRCI-75/6 at 598. However, we cannot agree with this finding.

⁶We characterized the scope of such NEPA review as follows: "AEC[NRC] review of the applicant's environmental report and all other relevant reports; the preparation of a draft environmental statement; circulation of that statement to other interested agencies for comment; the preparation of a final environmental statement; and the completion of all other regulatory reviews and approvals which may be required for the cooling system." ALAB-188, 7 AEC at 391.

⁷ALAB-188, 7 AEC at 407. Throughout both ALAB-188 and ALAB-174, we referred on numerous occasions to such deficiencies. See e.g., ALAB-188, 7 AEC at 325, 391, 406; ALAB-174, 7 AEC at 58-61.

⁸"AEC Regulatory Staff Statement as to a Petition for Reconsideration of ALAB-188", Docket No. 50-247, June 14, 1974.

For the "fresh look" we called for required a new review of the environmental effects of both once-through and closed-cycle cooling. And, as all the parties have conceded, the Unit 3 FES did not take into account the new studies prepared by the applicant on the effects of various types of closed-cycle cooling.

In sum, ALAB-188 did not decide that, on balance, a closed-cycle cooling system for Indian Point 2 is preferable to an open-cycle system. Rather, it determined that the record evidence was not adequate to make such a finding, that a further determination on this subject should be made, but that in the interim (and subject to appropriate safeguards) operation with once-through cooling would not produce unacceptable environmental results.

In so holding, we recognized that an environmental review (including issuance of an FES and consideration of a hearing) may occur even though better information is likely to become available at a later time. *Long Island Lighting Co. (Shoreham Nuclear Power Station)*, ALAB-156, 6 AEC 831, 836:38 (1973). Nothing we have said either here or in ALAB-188 derogates from that principle. In ALAB-188 we did not say that data necessary to make an adequate review did not exist, but rather that the evidence presented on the record did not support the closed-cycle finding. Since this fact necessitated a reconsideration of the issue either on the basis of existing data, if any, or on the basis of new data, particularly those forthcoming from the applicant's programs, we deferred the ultimate decision pending the results of these programs. Reliable evidence supported the findings that the short-term effects of operation of the Indian Point 2 reactor with once-through cooling would cause no unacceptable harm. Moreover, such operation would not preclude the later conversion to closed-cycle cooling, if necessary. In those circumstances, the better course was to await the presentation of new information prior to making a final determination on a permanent cooling system. In our view, this course of action represents a rational approach to the balancing required by the *Calvert Cliffs* decision.⁹

Another aspect of ALAB-188 requires discussion. ALAB-188 anticipated not only that the parties would have an opportunity to initiate a hearing on the question of closed-cycle vs. open-cycle cooling, but also that interested members of the public could do so. In contrast, the stipulation provides only that a party may request a hearing if an amendment to the license is requested, and does not explicitly address the question of an opportunity for a member of the public to request a hearing. Nevertheless, for the reasons developed later in this opinion, we do not believe this limitation precludes our approval of the stipulation.

With respect to the rights of the parties, paragraph 2(c) of the stipulation would permit the applicant, if it believed "that the empirical data collected

⁹ *Calvert Cliffs' Coordinating Committee, Inc. v. AEC*, 449 F.2d 1109, 1113, 1123 (D.C.Cir. 1971).

during [the] interim operation [justified] an extension of the interim operation period, or other relief," to apply for an amendment to the license. The parties have agreed to support any request for a hearing made by another party.¹⁰ All parties agree that, under these provisions, the applicant could request a modification of the license to provide for permanent once-through cooling. We concur.

We likewise construe the stipulation as permitting the NRC staff the opportunity to seek to reopen the open-cycle vs. closed-cycle question.¹¹ Hudson River Fishermen's Association and Save Our Stripers read paragraph 5 of the stipulation as permitting the staff to seek a cooling system modification.¹² That paragraph sets forth the procedural steps which are to be followed in the event the staff "proposes any modification of the [stipulated] license condition"—*i.e.*, the condition permitting once-through cooling only for an interim period. We concur in this interpretation and hereby construe paragraph 5 of the stipulation as permitting the staff to seek a modification of the license conditions dealing with the cooling system.¹³

As construed herein, paragraph 5 provides a mechanism for fulfilling the intent of ALAB-188. That intent was to provide a new opportunity for reviewing the cooling-system question should it appear from studies being conducted by the applicant or staff either (1) that the long-term effects of open-cycle cooling would be less than anticipated in the FES, or (2) that the adverse effects of closed-cycle cooling would be greater. It was contemplated that any such review would include, *inter alia*, the preparation and evaluation of a new impact statement, the circulation of that statement, and the opportunity for a public hearing. See 10 CFR Part 51. This intent of ALAB-188 would be satisfied if, in the event that the on-going studies did provide significant, material new information, the staff were to seek a license modification pursuant to paragraph 5 of the stipulation.

In this connection, ALAB-188 found that the evidence which had been presented in Indian Point 2 was deficient in several important respects on the projected environmental impact of the various cooling systems. Should new information become available (in the form of data accumulated by the applicant or staff on the effects of the reactor operation both with once-through and with

¹⁰ See stipulation paragraphs 4(a) and (b). Under the stipulation such support is not to be construed as agreement with the substantive position of the party initiating the hearing request.

¹¹ The staff claims that the stipulation gives it no authority in that regard, and that if it wished to reopen that question, it must proceed under its show-cause authority (10 CFR § 2.202). See App. Bd. Tr. 96.

¹² App. Bd. Tr. 55-56, 114-15.

¹³ While the staff claims that it would make no difference which authority is used, *i.e.*, 10 CFR § 2.202, or par. 5 of the stipulation, nevertheless the additional rights and opportunities provided by the stipulation may be significant.

closed-cycle cooling), we believe that the staff, in the discharge of its public interest responsibilities, may have a duty to initiate such a review. That duty would arise if the staff were to conclude on the basis of such new information that its previous position should be re-examined and that open-cycle cooling would be preferable. We would also expect the staff, in the fulfillment of its responsibilities, to initiate the hearing procedures if it were given reason to believe, on the basis of such new information, that a "reasonable mind" might conclude that, on balance, there is reasonable doubt about which cooling system is most appropriate. In such a circumstance, however, the staff would not be obliged, of course, to lend its support to a license modification calling for open-cycle cooling. To the contrary, it would be perfectly free to urge on the merits that the reasonable doubts should be resolved in favor of retaining the requirement of closed-cycle cooling.¹⁴

For these reasons, we are of the opinion that the absence in the stipulation of a direct opportunity for a member of the public to request a hearing is not a fatal defect.

C. The applicant has taken exception to two of the statements or findings of the Licensing Board made in connection with its approval of the stipulation.

1. The first such statement is that the applicant had "conceded that the salt spray deposition from a cooling tower operation would be approximately equal to the background deposition." NRCI-75/6 at 598, fn. 9. The applicant claims that it made no such concession. Our examination of what we believe to be the source^{14a} of the Board's finding confirms the validity of that claim. In addition, our perusal of the recent report submitted by the applicant on the effects of cooling towers leads us to the conclusion that the effects of salt-spray from those towers may be substantially greater than indicated by the Board's finding.¹⁵ This conclusion is confirmed by testimony of record. Tr. 710-11, 718.

¹⁴The Unit 2 review in progress (40 *F.R.* 30882, July 23, 1975) does not explicitly extend to consideration of open-cycle vs. closed-cycle cooling and therefore does not satisfy the requirements of ALAB-188. Presumably, the review for Unit 3 will be initiated shortly, and may well be a suitable vehicle for consideration of open-cycle vs. closed-cycle cooling for both Units 2 and 3.

^{14a}The statement in footnote 9 of the Licensing Board's June 12 Decision reflects an apparent misunderstanding of the data in the "Applicant's Supplemental Responses to Certain Inquiries of the Atomic Safety and Licensing Board", dated April 21, 1975. That document clearly states (p. 2) that while the ambient salt depositions (without a tower) measured from 63 monthly samples taken in the vicinity of Indian Point range from 0.0 kg/km²/month (summer) to 100 kg/km²/month (winter), calculations of the salt deposition from a natural draft tower show an average annual peak of 896 kg/km²/mo.—a factor of almost 9 above maximum natural background. The April 21, 1975 response goes on to say that this level of salt deposition would be well above the minimum value for potential injury to some trees and shrubs.

¹⁵See "Economic and Environmental Impacts of Alternate Closed-Cycle Cooling Systems for Indian Point, Unit No. 2", December 1, 1974, at Section 6.1.4.

In any event, further proceedings concerning the effects of cooling towers are contemplated. There is no apparent necessity for retaining at this stage a finding concerning such effects where that finding does not appear to be material to the Licensing Board's approval of the stipulation. We accordingly grant the applicant's request to strike the statement discussed above as it appears in footnote 9 of the Board's decision.¹⁶

2. The second statement to which the applicant takes exception is the Licensing Board's description of the stipulation as requiring the construction of a closed-cycle cooling system for Unit 3 "unless the Applicant or some other party produces *convincing evidence* that the adverse impact of once-through cooling is not serious or that the most acceptable alternative will have a more seriously adverse impact" (emphasis supplied). NRCI-75/6 at 599. The applicant claims that the proper standard for evaluating the appropriate cooling system is whether a "preponderance of the evidence" demonstrates that a particular system is preferable. We agree.

The standard advocated by the applicant is the one we approved in ALAB-188¹⁷ and to which we continue to adhere. The staff agrees that that standard is a correct characterization of the quantum of proof required under the Rules of Practice. Moreover, the Board may not have intended anything different—*i.e.*, it might have been saying only that the cooling system would be changed if a board were *convinced* by a preponderance of the evidence that another system was superior. Or, as the staff suggests, the Board may only have been using the word "convincing" in a colloquial sense. In any event, we construe the stipulation as incorporating the preponderance standard, and as contemplating the cooling-system determinations to be made on the basis of that standard.¹⁸

D. As to the seismic matter, two questions are presented. The first is raised through an exception filed by the applicant, which asserts that the Board erred in imposing the seismic condition on its full-power authorization. The second is the question which we raised in ALAB-278, NRCI-75/6 555 (June 20, 1975), and later discussed with the parties at oral argument on July 9, 1975: *i.e.*, if a

¹⁶The staff takes the position that the footnote does not constitute a finding on a material issue of fact, that there has been no final adjudication on the merits of the question involved, and that whatever error there might be is hence harmless. It therefore asserts that no appellate relief is justified. Whether or not that assertion is technically correct, and without deciding whether that issue alone could support an appeal (see *Toledo Edison Co.* (Davis-Besse Nuclear Power Station), ALAB-157, 6 AEC 858 (1973)), we believe that the action we have taken is appropriate in the circumstances here.

¹⁷See 7 AEC at 357 and n. 143.

¹⁸Contrary to the staff's argument, we think that a Licensing Board's construction of a stipulation it is approving could have a bearing on a subsequent interpretation of the stipulation. An appeal to correct an asserted error in such construction is accordingly warranted under the *Davis-Besse* rule (*supra*, n. 16).

seismic condition were proper for a full-power authorization, would it not also be appropriate for the existing authorization for a less-than-full-power license?¹⁹ However, in view of further developments as pointed out below, we need not reach either question.

By memorandum and order of August 4, 1975 (CLI-75-8, NRCI-75/8 173), the Commission granted the hearing request of the New York Council on seismic issues encompassing all three Indian Point reactors. In doing so, the Commission declined to order a cessation of plant operations at the Indian Point site, commenting that no party had so requested. It then designated a Board²⁰ to conduct the seismic hearing—and to assume full authority to entertain any request for a stay of operations of any of the three Indian Point reactors. NRCI-75/8 at 178.

This action of the Commission in effect operates to supersede the condition imposed by the Licensing Board, and hence makes the applicant's exception moot.²¹ The Commission's action also obviates the need for our considering (solely in the context of the *Indian Point 3* proceeding) whether a limitation on the existing less-than-full-power authorization should be imposed.

III

As interpreted above, the stipulation is *approved*. The applicant's exceptions relating to the authority under which the operating license is to issue and to the seismic condition are *dismissed* as moot; its exceptions concerning the Licensing

¹⁹On June 30, 1975, Citizens Committee for Protection of the Environment (CCPE) filed two motions: a "Motion for Appointment of a Special Counsel"; and a "Motion for Leave to File a Brief Amicus Curiae" together with an appended *amicus* brief. By order dated July 7, 1975, we denied the motion for special counsel, but granted the motion to file a brief *amicus curiae*, which addressed the question raised in ALAB-278.

²⁰For several stated reasons, it designated the members of this Appeal Board as the Board to conduct the seismic hearing.

²¹In support of the seismic condition imposed by the Board, the Council argued to us that, in inquiring whether the condition were justified, we could look not only at the evidence of record herein but also at "extra-hearing record legislative facts" which a board may consider "in fashioning remedies and deciding matters of policy and law." Given our finding that the applicant's exception is moot, we need not, and do not, express any view on the various legal and policy questions posed by the Council's position.

Board's statements in connection with the environmental stipulation are *granted* and the decision below is accordingly *modified* as provided herein.

It is so ORDERED.

**FOR THE ATOMIC SAFETY AND
LICENSING APPEAL BOARD**

**Romayne M. Skrutski
Secretary to the Appeal Board**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ALAB-288

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Alan S. Rosenthal, Chairman
Dr. John H. Buck, Member
Dr. W. Reed Johnson, Member

In the Matter of
NORTHERN STATES POWER COMPANY
**(Prairie Island Nuclear Generating
Plant, Units 1 and 2)**

**Docket Nos. 50-282
50-306**

Upon petition for reconsideration of so much of ALAB-284 as excluded petitioner from participation in evidentiary hearing on steam generator tube integrity, Appeal Board rules that, because he did not participate either in the evidentiary proceedings on remand on that issue or in Appeal Board endeavors to decide whether the resulting supplemental initial decision must be vacated, petitioner fairly can be taken to have forfeited any further entitlement to party status with respect to the adjudication of the tube integrity issue.

Petition denied.

RULES OF PRACTICE: RIGHT TO PARTICIPATE

Intervention in an NRC adjudicatory proceeding does not carry with it a license to step into and out of the consideration of a particular issue at will.

MEMORANDUM AND ORDER

September 17, 1975

In ALAB-284, NRCI-75/8 197 (August 11, 1975), we set this operating license proceeding down for a further evidentiary hearing before ourselves on the still unresolved steam generator tube integrity issue. We noted that the parties participating in that hearing will be the applicant Northern States Power Company, the NRC staff and, if it so desires, the intervenor Minnesota Pollution Control Agency (MPCA). Another intervenor in the proceeding, Steve J. Gadler, was not included in the list of participants because of the fact that he had

neither taken an appeal from the supplemental initial decision of the Licensing Board on the tube integrity issue¹ nor filed a memorandum in response to the request in ALAB-275² for the views of the parties on the correctness of that supplemental initial decision.

This Board is now in receipt of a letter from Mr. Gadler, dated September 9, 1975, in which he expresses the intent, notwithstanding what was said in ALAB-284, "to remain involved in this proceeding and to appear at the October evidentiary sessions."³ Acknowledging his failure to have filed a memorandum in response to ALAB-275, he tells us that it had been his understanding that the MPCA would note in its memorandum that he concurred in its position. Mr. Gadler assumes that MPCA counsel simply forgot to include that notation.

We have chosen to treat Mr. Gadler's letter as a petition for reconsideration of so much of ALAB-284 as excludes him from active participation in the upcoming evidentiary hearing. So treated, the motion is denied.

1. The tube integrity issue was initially raised in this proceeding by MPCA contention III-14, which asserted that, as a result of corrosion or manufacturing defects, there might be a thinning of the steam generator tubes to be used in the Prairie Island facility with the further consequence that they might fail during the course of a loss-of-coolant accident. In its initial decision rendered on April 2, 1974,⁴ the Licensing Board rejected that contention. Although MPCA's appeal from that decision was not addressed to any extent to the tube integrity issue, Mr. Gadler made fleeting reference to that issue in both his exceptions and his brief. In neither document, however, was the issue properly raised or discussed.⁵

Our own independent examination of the initial decision in its entirety raised doubts as to whether the Board had correctly resolved MPCA contention III-14. Consequently, in the order issued on August 5, 1974 calendaring the MPCA and Gadler appeals for oral argument on September 13, 1974, we informed the parties that we would expect them to discuss at argument the tube integrity issue. In this connection, they were instructed "to stand in full readiness to respond, on the basis of the record adduced before the Licensing Board," to certain specific questions set forth in the oral argument order.

During the course of their oral argument, counsel for the applicant, the staff and MPCA all addressed the tube integrity issue and the questions which we had posed. Mr. Gadler did not. Rather, he confined himself to the observation that

¹LBP-75-27, NRCI-75/5 501 (May 1, 1975). This decision was vacated in ALAB-284.

²NRCI-75/6 523 (June 2, 1975).

³ALAB-284 set October 20, 1975 as the date for the commencement of the further evidentiary hearing. By subsequent order of this Board, that date was changed to October 21, 1975.

⁴LBP-74-17, RAI-74-4 487.

⁵For example, Mr. Gadler's exceptions simply noted "[t]he tube failure problem" without the slightest indication as to "the error of fact or law" which assertedly had been committed by the Licensing Board. See 10 CFR 2.762(a).

he had "not come prepared to discuss the complete engineering of tubes. I don't think that is my field. Tubes are a very special item." (App. Tr. 43).

Two weeks later, we remanded the tube integrity issue to the Licensing Board for a further evidentiary hearing. ALAB-230, RAI-74-9 458 (September 25, 1974). In so doing, we expressly stated that Mr. Gadler was "to be allowed full participation on the remand. He may, if he so desires, present his own evidence and he is also to be given the right to cross-examine witnesses called by the other parties." RAI-74-9 at 463.⁶

On December 10, 1974, Mr. Gadler filed a motion with the Licensing Board asking that it not convene the hearing on remand until after March 15, 1975, so that he would be able "to accompany his wife to the south as prescribed by her doctor to permit her to regain her health." By order of January 2, 1975, the motion was denied by the Board on the ground that it was totally lacking in the kind of detail reasonably necessary to a rational grant of the request." The Board pointed out that, *inter alia*, it had not been told when Mr. Gadler planned to leave St. Paul, Minnesota; when he planned to return; or what might be his southern destination.⁷ Mr. Gadler was granted leave, however, to renew the request, "with supporting justification," no later than January 20, 1975.

Mr. Gadler did not accept this invitation and the hearing on remand commenced in St. Paul on January 28, 1975 (concluding the following day). Mr. Gadler did not appear. MPCA counsel advised the Board at the inception of the hearing that, although Mr. Gadler was then in Mexico, she had been in contact with him. She added that "I think it's safe to say that what MPCA agrees to and what positions we take are consistent with Mr. Gadler's, and I'll undertake to represent his interests today" (Supp. Tr. 115).

Following the completion of the hearing on remand, all parties with the exception of Mr. Gadler filed proposed findings of fact and conclusions of law. On May 1, 1975 the Licensing Board filed its supplemental initial decision. Although neither MPCA nor Mr. Gadler filed exceptions to that decision, as previously noted MPCA (but not Mr. Gadler) responded to our call in ALAB-275 for the views of the parties with regard to whether we should allow the decision to stand.

⁶ This notation was required because, at the time ALAB-230 was issued, we still had under advisement the question of the extent, if any, to which an intervenor may participate in an evidentiary hearing on issues other than those which he has himself raised. Subsequently, we held that "[i]n both operating license and construction permit proceedings, an intervenor can and should be afforded the opportunity to cross-examine on those portions of a witness' testimony which relate to matters which have been placed into controversy by at least one of the parties to the proceeding—so long as that intervenor has a discernible interest in the resolution of the particular matter." ALAB-244, RAI-74-11 857, 868 (November 21, 1974), *reconsideration denied*, ALAB-252, RAI-75-1 1175 (January 6, 1975), *affirmed*, CLI-75-1, NRCI-75/1 1 (January 27, 1975).

⁷ Mr. Gadler's residence is in St. Paul, which is where the hearing on remand was to take place.

2. It is clear from the above background recitation that Mr. Gadler's participation to this point in the consideration of the tube integrity issue has been essentially nil. He did not raise the issue in the first instance; he did not properly appeal the Licensing Board's determination of the issue in the initial decision; he declined to discuss the issue at oral argument before us for the assigned reason that he was not competent to do so; he did not involve himself to any extent in the proceedings before the Licensing Board on remand;⁸ he did not appeal the supplemental initial decision which dealt exclusively with the issue; and, finally, he did not respond to this Board's direction to the parties in ALAB-275 to submit memoranda on the correctness of the supplemental initial decision.

Contrary to Mr. Gadler's apparent assumption, intervention in an NRC adjudicatory proceeding does not carry with it a license to step into and out of the consideration of a particular issue at will. True enough, we have held that an intervenor does have certain participational rights even on those issues (such as the one here-involved) which have been placed into controversy by some other party. See n. 6, *supra*. And, indeed, when we returned this proceeding to the Licensing Board a year ago in ALAB-230 for further exploration of the tube integrity issue, we explicitly determined that Mr. Gadler was to be allowed a still broader role in the hearing on remand. But neither our generic ruling on intervenor participation contained in ALAB-244—nor what we decreed in ALAB-230 to be the permissible scope of Mr. Gadler's involvement on the remand of the tube integrity issue here—carried with it the message that he was being accorded the option of waiting on the sidelines until such time as he might choose to enter the contest.

In short, because he did not participate at all either in the proceedings on remand or in our endeavors to decide whether the supplemental initial decision must be vacated, Mr. Gadler fairly can be taken to have forfeited any further entitlement to party status with respect to the adjudication of the tube integrity issue. We need add only that we do not believe that, in giving effect to this conclusion, we will be reducing the likelihood that the forthcoming evidentiary hearing will produce a complete record on the important safety matter under consideration. Nothing in the history of this case suggests to us that Mr. Gadler is equipped to make a substantial contribution to the development of the record beyond that which will be made by the applicant, the staff and MPCA. Be that as it may, his loss of party status will not preclude him from making available to MPCA and its counsel any information which he might think relevant to the proper disposition of the issue under consideration. In this connection, we note

⁸ In this connection, we are not impressed by the fact that Mr. Gadler had unsuccessfully moved to have the hearing postponed to allow for his intended absence from the St. Paul area. Among other things, had he accepted the invitation to renew his motion with the necessary supporting facts, it is at least possible that the Board would have determined that the hearing could be rescheduled to accommodate his personal plans.

that Mr. Gadler apparently still perceives a coincidence between the MPCA position on that issue and his own.⁹

The petition for reconsideration is *denied*.
It is so ORDERED.

FOR THE ATOMIC SAFETY AND
LICENSING APPEAL BOARD

Margaret E. DuFlo
Secretary to the Appeal Board

⁹Although we do not rely on the fact in reaching our result, Mr. Gadler was last year, and insofar as we know still is, a member of MPCA.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ALAB-289

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Michael C. Farrar, Chairman
Dr. John H. Buck, Member
Richard S. Salzman, Member

In the Matter of

Docket Nos. 50-338
50-339

VIRGINIA ELECTRIC AND POWER
COMPANY

(North Anna Station, Units 1 and 2)

Mr. John T. Schell, Arlington, Virginia, (Mr. Allan E. Kaulbach, Washington, D. C., with him on the brief) for the appellant, the Rappahannock League for Environmental Protection, Inc.

Mr. Michael W. Maupin, Richmond, Virginia, for the licensee, the Virginia Electric and Power Company.

Mr. Clarence T. Kipps, Jr., Washington, D. C., for the intervenors, Culpeper County League for Environmental Protection, et al.

Mr. Albert V. Carr, Jr., for the NRC staff.

Upon appeal from Licensing Board's denial of untimely petition for leave to intervene, Appeal Board finds (1) that no good excuse has been shown for petitioner's extreme tardiness in seeking intervention, and (2) there are no countervailing considerations sufficient to justify permitting intervention.

Decision denying intervention affirmed.

RULES OF PRACTICE: NON-TIMELY INTERVENTION PETITION

Under the Rules of Practice, the appropriate disposition of untimely intervention petitions depends upon both the sufficiency of the justification, if any, offered for the tardiness, and the assessment of four factors set forth in 10 CFR §2.714(a). See: *West Valley*, CLI-75-4, NRCI-75/4R 273.

RULES OF PRACTICE: NON-TIMELY INTERVENTION PETITION

In deciding whether a petition to intervene which has been filed late should be granted, one factor which must be considered is whether the late petitioner has some other means of protecting its interests, e.g., the ability to participate in a state proceeding on essentially the same matter. 10 CFR §2.714(a)(1).

RULES OF PRACTICE: NON-TIMELY INTERVENTION PETITION

Admitting a new party just before a hearing starts ineluctably tends to cause confusion, complications and delay; a board is, therefore, justified in giving this "delay" factor substantial weight in deciding whether to grant a petition to intervene filed close upon the start of the hearing, particularly where intervention at the last moment may force other parties to forego important procedural rights to avoid such consequences.

DECISION

September 18, 1975

On August 21, 1975, the Rappahannock League for Environmental Protection petitioned for leave to intervene in this proceeding, which was noticed for hearing nearly three years ago and which involves an environmental review of the previously-issued construction permits for North Anna Units 1 and 2. At the time the League filed its untimely petition, the trial of the transmission line contention, which is all that remains of the proceeding, was scheduled to commence on September 10, 1975. The trial was later postponed for a brief period; under the present schedule it is to begin tomorrow, September 19.

The Licensing Board denied leave to intervene on September 4. On September 15 we received the League's appeal from that denial. In view of the exigencies of the situation, we waived the requirement for written responses and instead heard oral argument the next day.

Under the Rules of Practice, as elucidated by the Commission in *Nuclear Fuel Services, Inc.* (West Valley Reprocessing Plant), CLI-75-4, NRCI-75/4R 273, the appropriate disposition of untimely petitions depends upon both (1) the sufficiency of the justification, if any, offered for the tardiness and (2) the assessment of four factors set forth in the Rules. 10 C.F.R. §2.714(a). We conclude that no good cause has been shown for the petitioners having appeared on the scene so late and that there are no countervailing considerations sufficient to justify our permitting intervention. Accordingly, we affirm.

1. a. Construction permits for the first two North Anna units were issued in 1971, prior to the Atomic Energy Commission's full implementation of the National Environmental Policy Act. Accordingly, it later became necessary to

determine whether those permits should be withdrawn or modified to protect environmental values.¹ A notice of hearing initiating this proceeding on environmental considerations was duly issued on December 19, 1972 and published in the *Federal Register*.² It called for the filing of intervention petitions within thirty days.

Timely petitions to intervene were filed by two individuals and two citizens groups, all of whom sought to challenge only the routing of a proposed transmission line. Those petitioners represent landowners whose property is in the path of a proposed 500 kilovolt line for the bulk transmission of electricity north from the plant to a proposed substation near Morrisville, Virginia. They challenge the routing of the line on the ground that alternative routes exist which would, if utilized, reduce environmental damage without unjustifiably increasing expenditures. The licensee takes strong issue with this assessment; it also asserts that the route it has selected should now be utilized for the 500 kv line because in any event that route will eventually be used for a 230 kv line which will later be needed to serve increased local demand.

There being no other contested matters, and the licensee's request for State approval to construct the transmission line then being litigated before the Virginia State Corporation Commission, the Licensing Board severed the transmission line issue and went ahead with a hearing on the uncontested matters. In due course, it issued an initial decision which we later affirmed. See LBP-74-81, RAI-74-10 773, *affirmed*, ALAB-256, NRCI-75/1 10.³

The transmission line issue remained dormant until, following the decision of the State Corporation Commission in May of this year,⁴ the applicant requested that the Licensing Board set it for hearing promptly. After a hearing date was set, the Rappahannock League, which represents the interests of different landowners, sought to intervene. Its petition has been supported by the existing intervenors but opposed by the licensee and the NRC staff.

The League, along with the existing intervenors, had participated fully in the State agency proceeding. It attempts to justify its belated appearance here on the ground that, until recently, it had expected that its interests would be adequately represented by the existing intervenors. In that respect, it asserts that only recently did falling demand projections call into serious question the need for the proposed transmission lines. Only now is there a basis, it says, to

¹ See 10 C.F.R. (1974 ed.) Part 50, Appendix D.
² 37 F. R. 28313 (December 22, 1972).

³ In ALAB-256, we also reviewed two other initial decisions dealing with the North Anna facility. We noted then that three other matters (including the one now at bar) remained to be heard. See NRCI-75/1 at 12, fn. 2 and accompanying text.

⁴ The brief "Findings and Final Order of the Commission" issued on May 15, 1975 (Docket Nos. 11655 and 10758) were supplemented by a lengthy opinion issued on September 12, 1975.

challenge the applicant's claim that a 230 kv line will ultimately be needed along the proposed route. According to the League, the existing intervenors do not have the capability or wherewithal to maintain such a challenge. Therefore, goes the argument, the League just realized it can no longer count on the existing intervenors to present in an adequate manner the full case against the proposed routing.

b. The League may well be correct in asserting that there was no basis for questioning the underlying need for the transmission lines in early 1973, at the time intervention petitions were expected to be filed.⁵ At some later point, new developments and the resulting downward revisions of demand projections might have furnished justification for allowing belated intervention. But examination of all the circumstances that have been brought to our attention leads us to find that no later than early 1975 the League had sufficient information to alert it to the existence of an additional basis for challenging the proposed routing of the line. Beyond that point the delay is not excusable.

In this regard, it cannot be said that the dormant status of this proceeding justified the delay. The League could have anticipated that if the licensee obtained a favorable ruling from the Corporation Commission—which by then had had the matter under submission for a substantial period—this proceeding would be quickly reactivated.

In short, even if the League had warrant not to respond to the original notice of hearing, there was no excuse to delay its appearance until the eve of trial.

2. Having failed to furnish a good excuse for its extreme tardiness, the League must shoulder a heavy burden in attempting to justify intervention on the basis of the four factors listed in the governing regulation. While an assessment of the situation discloses certain considerations which lend marginal support to the League's cause, on an overall basis we are left unpersuaded that intervention ought to be granted.

a. Two of the factors to be considered concern, respectively, the availability of other means whereby the petitioner can protect its own interests⁶ and the extent to which those interests can be protected by existing parties. The circumstances here are such that it is helpful to consider these two factors together.

In the State proceeding, the licensee made the same claim it makes here—i.e., that the future need for a 230 kv line to transmit power to the Morrisville locality provides justification for now running the 500 kv bulk transmission line through the proposed corridor. Accordingly, there was room in that proceeding, where the League was accorded full party status, for it to assert

⁵The record affirmatively discloses that the League has been aware of the proposed transmission line route at least since that time.

⁶See *Nuclear Fuel Services* (West Valley Reprocessing Plant), ALAB-263, NRCI-75/3 208, 220 (dissenting opinion).

its opposition to that claim. And that is precisely what it is interested in doing here. To be sure, the record in that proceeding was closed before the occurrence of the significant downward trends in future demand projections. But the League has asked the Corporation Commission to give further consideration to those matters. And, if its petition is denied, it presumably can seek judicial review of that denial or of the denial of its motion, filed in January 1975 before the final decision was issued, to reopen the proceeding for the purpose of considering those same matters. In other words, there are steps the League can take elsewhere to protect its interest.

That same interest can be protected to a marked extent by the existing intervenors in this proceeding. Although it is suggested that they do not have the capability to present in a thorough manner the claim advanced by the League, the League is not precluded from furnishing them financial, technical or legal assistance. If this is done, the League and the existing intervenors together would be advancing the League's interest. In this connection, the oral argument left us with the distinct impression that the League and the existing intervenors contemplated that such assistance would in fact be furnished.

This is not to say that the League's interest can be fully represented by the existing intervenors. We recognize that, largely because the different groups are interested in property in different areas, a point could be reached at which the existing intervenors would be satisfied with a routing change that would not satisfy the concerns of the League's members. But the existence of this possibility does not alter the balance before us. Granted, on the one hand, it strengthens the League's showing under one factor which the Rules direct us to consider. On the other hand, however, it renders all the less excusable the League's tardiness in petitioning to intervene. For it should have been as clear to the League several years ago as it is now that the differing locations of their respective property interests could lead to the League's interests being ignored if the existing intervenors were offered the opportunity to obtain limited relief on the matter of routing. Thus, one of the reasons which supports the League's being allowed to intervene now can be cited as a reason why it should have appeared on the scene long ago.

b. Another factor we must weigh is the extent to which the League's participation may assist in developing a sound record. It does appear, from what we have been told, that the League would have something to offer. But this factor does not weigh heavily. For, as already indicated, the League can make essentially the same contribution by supporting the efforts of the existing intervenors.

c. Finally, we must consider whether the proposed intervention would broaden the issues or delay the proceeding. Viewing the issues sought to be raised by its papers as having been significantly curtailed by the League's oral representations before the Licensing Board and us, we cannot say that broadening of the issues would result from the League's participation.

With respect to the question of delay, the League, as well as the existing intervenors, claims that at worst only slight delay will result and that, in fact, the hearing may move more quickly on the issue of the future need for the 230 kv line because counsel for the League, being more familiar with the subject matter, will be able to proceed more swiftly than would counsel for the existing intervenors.

We are reluctant to attribute significant weight to the claim that little or no delay will ensue: Even if the League were required to take the proceeding as it finds it,⁷ experience teaches that the admission of a new party just before a hearing starts is bound to confuse or complicate matters. And, even putting that to one side, delay can otherwise be avoided only if the parties adverse to the League forego important procedural rights, including the right to discovery. As the licensee pointed out, the need for an early decision on the 500 kv line may force it to do just this. It is scarcely equitable to give the League credit for not causing delay when that result could be achieved only because the circumstances would coerce other parties into waiving substantial rights.

Although it may be apparent from what has been said thus far, we should state expressly that our evaluation of the delay factor has been heavily influenced by the fact that the petition to intervene was filed but three weeks before the hearing was scheduled to commence.⁸ In such circumstances, an appeal to us can be expected regardless of which way a Licensing Board rules. Thus petitioner's procrastination made it inevitable that its entitlement to intervene could not be finally resolved until just before the hearing began, if then. Simple fairness to all parties in these proceedings mandates that such practices not be condoned.

For the foregoing reasons, the decision of the Licensing Board denying intervention is *affirmed*.

It is so ORDERED.

FOR THE ATOMIC SAFETY AND
LICENSING APPEAL BOARD

Margaret E. DuFlo
Secretary to the Appeal Board

Dr. Buck did not participate in the consideration or disposition of this appeal.

⁷ See *West Valley, supra*, NRCI-75/4R at 276.

⁸ We note that in *West Valley, supra*, the petition to intervene, though late, was filed some nine months before the anticipated hearing date.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ALAB-290

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Alan S. Rosenthal, Chairman
Michael C. Farrar, Member
Richard S. Salzman, Member

In the Matter of

THE TOLEDO EDISON COMPANY et al. Docket No. 50-346A
(Davis-Besse Nuclear Power Station)

THE CLEVELAND ELECTRIC Docket No. 50-440A
ILLUMINATING COMPANY et al. 50-441A
(Perry Nuclear Power Plant, Units 1 & 2)

Mr. David C. Hjelmfelt, Washington, D C. (with whom Messrs. Reuben Goldberg, Michael D. Oldak, James B. Davis, and Robert D. Hart were on the brief) for the appellant, City of Cleveland, Ohio.

Mrs. Janet R. Urban, Washington, D. C. (with whom Assistant Attorney General Thomas E. Kauper and Messrs. Joseph J. Saunders, Steven M. Charno, Melvin G. Berger, and Anthony G. Aiuvalasit, Jr. were on the brief) for the United States Department of Justice.

Mr. Wm. Bradford Reynolds, Washington, D. C. (with whom Mr. Gerald Charnoff was on the brief) for the applicants, Toledo Edison Co., et al.

Mr. Benjamin H. Vogler (with whom Mr. Roy P. Lessy, Jr. was on the brief) for the NRC Staff.

Upon appeal from or, in the alternative, request for certification of interlocutory rulings of the Licensing Board and of "Special Master" appointed by that Board with the parties' agreement to decide certain limited discovery matters in antitrust proceeding, Appeal Board rules that appeal of such rulings is

impermissible under 10 C.F.R. §2.730(f) and certification of such rulings is unwarranted.

Upon request for certification of question of validity of role of "Special Master", Appeal Board directs certification and finds role agreed upon by the parties to be valid.

Appeal dismissed; certification of question of validity of role of "Special Master" directed and certified question determined. Further opinion to follow.

MEMORANDUM AND ORDER

September 19, 1975

We issue this order today because the scheduled commencement of the evidentiary hearing before the Licensing Board in this antitrust proceeding is relatively close at hand. An opinion elaborating upon our determinations will follow at a later date.

On full consideration of the briefs and oral arguments of the parties to the pending appeal of the City of Cleveland, this Board has determined that:

1. The City's appeal is addressed exclusively to interlocutory rulings of the Licensing Board and of the "Special Master" who was appointed by that Board with the parties' agreement to decide certain limited discovery matters;¹ it therefore must be dismissed as impermissible under the Commission's Rules of Practice. 10 C.F.R. §2.730(f).

2. a. Treating Cleveland's papers as alternatively seeking certification, the question of the validity of the role played by the "Special Master" in this case warrants our consideration and, accordingly, its certification is appropriate under the authority of 10 C.F.R. §2.718(i): *Cf. Public Service Company of New Hampshire* (Seabrook Station, Units 1 and 2), ALAB-271, NRC1-75/5 478 (May 21, 1975).

b. The voluntary agreement of the parties "to be bound by determinations of the [Special] Master", memorialized in the Licensing Board's order of December 10, 1974, must be taken as precluding the parties from seeking review, now or in the future, of his rulings made within the scope of the jurisdiction conferred upon him by the agreement. On its face, the agreement admits of no other reasonable interpretation. The record before us presents neither any valid basis for varying its terms nor any good reason for relieving the parties from the observance of their voluntary undertaking.

c. So construed, the agreement does not violate Section 034 of Chapter 0106 of the AEC Manual, which proscribes the redelegation of the authority conferred

¹The "Master" was called upon only to determine whether certain documents were privileged from disclosure under the "attorney-client" and "work-product" rules.

upon the licensing boards.² That section must be interpreted in light of the provisions of the Commission's Rules of Practice; it may not be fairly read as circumscribing the parties' rights there provided for. Those Rules authorize, if not encourage, parties to enter voluntarily into binding stipulations governing resolution of procedural matters—discovery procedures not excepted—subject, of course, to the licensing board's approval of the stipulation. See 10 C.F.R. §2.753 and compare Rule 29, Federal Rules of Civil Procedure. Moreover, Manual Section 034 would appear plainly not to bar the parties from stipulating to select an impartial arbiter to resolve discovery disputes. It would exalt form over substance to hold that provision to bar use of an impartial arbiter simply because the parties voluntarily stipulated to leave it to the Licensing Board to select him. In this connection, we see no significance attaching to the fact that the person so selected is denominated a "Special Master" or that he is a member of the NRC Licensing Board Panel.³

3. Assuming that the parties' voluntary agreement does not bar the Licensing Board or this Board from exercising its discretion to review the "Special Master's" discovery rulings *sua sponte*, there is insufficient reason for us to undertake that review function. Therefore, we decline to direct the certification of the merits of the "Special Master's" rulings and, accordingly, we intimate no opinion on their correctness.

Appeal *dismissed*; certification *directed*, limited to the question of the validity of the use made of a "special master" in this case, and the certified question determined as set forth above.

It is so ORDERED.

FOR THE ATOMIC SAFETY AND
LICENSING APPEAL BOARD

Margaret E. DuFlo
Secretary to the Appeal Board

²This provision of the AEC Manual remains in effect under Nuclear Regulatory Commission auspices.

³Were the reference to a "special master" other than by voluntary stipulation, or had the agreement purported to confer a right to appeal his determinations to us, different questions would be presented. In the circumstances of this case we do not reach those questions.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ALAB-291

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Alan S. Rosenthal, Chairman
Dr. John H. Buck, Member
Dr. W. Reed Johnson, Member

In the Matter of
GEORGIA POWER COMPANY
(Alvin W. Vogtle Nuclear Plant,
Units 1 and 2)

Docket Nos. 50-424
50-425

Messrs. George F. Trowbridge, Washington, D. C., and
Milton A. Carlton, Jr., Atlanta, Georgia, for the applicant,
Georgia Power Company.

Mr. Henry J. McGurren for the NRC Staff.

Upon consideration of scope of supplemental evidentiary hearing in construction permit proceeding ordered in ALAB-285, Appeal Board rules that (1) as indicated in ALAB-285, the hearing should embrace issues having a direct relationship to the construction permit amendments being sought; (2) the hearing may include consideration of whether there has been a material alternation in the NEPA cost-benefit balance originally struck; (3) in view of the staff's determination that the facility complies with the recently amended Appendix I to 10 CFR Part 50, such matters need not be considered; and (4) the hearing need not and should not encompass generic safety concerns (unrelated to the amendments) which have developed since the authorization of the construction permits.

**RULES OF PRACTICE: HEARING REQUIREMENT, AMENDMENTS TO
CONSTRUCTION PERMITS**

A hearing with respect to an application for an amendment to an outstanding construction permit need be held only if the Commission determines that the public interest will be thereby furthered, or if one is requested by the applicant or a petitioner for intervention. See 10 CFR 2.105; 10 CFR 2.106(a).

RULES OF PRACTICE: MODIFICATION OF CONSTRUCTION PERMITS

The NRC Staff may make use of the backfitting provisions of 10 CFR 50.109 for the purpose of obtaining (in the interest of the public health and safety or the common defense and security) the addition, elimination or modification of structures, systems or components of a facility after a construction permit has been issued. In addition, the staff has available to it the procedures of 10 CFR Part 2, Sub-part B for either imposing new requirements upon a licensee (permittee) or obtaining the modification, suspension or revocation of an outstanding license (permit).

RULES OF PRACTICE: REOPENING OF PROCEEDINGS

The record of a construction permit hearing in a still uncompleted proceeding should be reopened to receive formal evidence of supervening developments or newly acquired information only where the new disclosures give rise to a *significant* safety (or environmental) issue. See Vermont Yankee, ALAB-167.

ATOMIC ENERGY ACT: SCOPE OF INFORMATION REQUIRED FOR LICENSING

The Commission may issue a construction permit for a nuclear power reactor in the face of yet unresolved generic safety concerns, leaving those concerns for resolution prior to the time that the reactor obtains an operating license. *Power Reactor Development Co. v. Electrical Union*, 367 U.S. 396 (1961); 10 CFR 50.35(a).

ADJUDICATORY HEARINGS: NEW INFORMATION

Although parties to a still uncompleted licensing proceeding have a duty to bring to the attention of the appropriate tribunal new information relevant and material to matters being adjudicated (see McGuire, ALAB-143), it does not necessarily follow that adjudicatory consideration of such information will be required.

MEMORANDUM AND ORDER

September 24, 1975

This is a construction permit proceeding which involves Units 1 and 2 of the Alvin W. Vogtle Nuclear Plant to be located on the Savannah River in Burke County, Georgia. In ALAB-285, NRCI-75/8-209 (August 12, 1975), we remanded the proceeding to the Licensing Board for the purpose of conducting a

supplemental hearing. The remand was prompted by the two applications which the Georgia Power Company recently filed with this Commission seeking amendments to the construction permits for Units 1 and 2. Those permits had been issued by the former Atomic Energy Commission in June 1974 upon the authorization contained in the Licensing Board's initial decision rendered in that month. LBP-74-48, 7 AEC 1166.¹ See also LBP-74-39, 7 AEC 895 (1974).

The first of the two sought amendments relates to the applicant's proposed sale of a majority undivided ownership interest in each of the two units; the intended purchasers being, respectively, the Oglethorpe Electric Membership Corporation (OEMC), the Municipal Electric Authority of Georgia (MEAG) and the City of Dalton, Georgia.² The second sought amendment would extend for two years the earliest and latest construction completion dates which are now fixed in the construction permits. The extension is deemed necessary for the reason that onsite construction activities have been suspended since September 1974 and, even if the proposed sale is consummated by the present target date, will likely not be resumed prior to next April.

Both parties before us agreed that the Licensing Board should now be called upon to hear and decide at least those issues directly raised by the amendment applications. In the circumstances, we saw no reason not to remand the proceeding promptly to that Board for that purpose—with the caveat that “in accordance with the teachings of *Brooks v. AEC*, 476 F. 2d. 924 (D.C. Cir. 1973), appropriate public notice of the supplemental hearing will have to be provided to enable any person whose interest may be affected by the sought construction permit amendments to seek leave to intervene.” ALAB-285, NRCI-75/8 at 211.³

In taking this action, we expressly left unresolved, however, the further question whether the supplemental hearing might embrace issues beyond those

¹ That decision also authorized the issuance of permits for Units 3 and 4 of the Vogtle facility. Those units were subsequently cancelled by the applicant.

In normal circumstances, our *sua sponte* review of the decision (in the absence of exceptions) would have been completed long ago, with the probable consequence that the proceeding would not have still been before us at the time the applications for the permit amendments were filed. Because, however, construction of Units 1 and 2 was suspended a year ago pending a determination by the applicant on whether to cancel those units as well, we deferred the completion of the *sua sponte* review pending further developments. See ALAB-285, *supra*; see also ALAB-276, NRCI-75/6 533 (June 11, 1975).

² As indicated in ALAB-285, the applicant's initial intent was to sell a total 82.4% interest in each unit to those three entities. We were told at oral argument, however, that the proposal has been since revised. The applicant now intends to sell a total 63.9% interest, allocated as follows: OEMC, 30%; MEAG, 30%; Dalton, 3.9%. This revision has no bearing upon either the action taken by us in ALAB-285 or the disposition of the issues to be considered in this opinion.

³ On September 3, the Licensing Board issued a notice of hearing. The notice was published in the *Federal Register* on September 8. 40 F.R. 41569. The deadline therein established for intervention petitions is October 8, 1975.

having a direct relationship to the sought permit amendments. On this question, the papers submitted to us reflected a sharp disagreement between the applicant and the staff. See ALAB-285, NRCI-75/8 at 210-211. It appearing desirable to explore further with the parties the divergent positions which they had advanced, we chose to withhold decision on the proper scope of the supplemental hearing pending oral argument. That argument produced a considerable refinement of the assertions of each party and thus was of substantial assistance to us in the deliberations which led to the result we reach in this opinion.

I

The starting point of our examination of the question of the proper scope of the hearing is the seeming recognition by both parties that a single factor has given rise to that question. That factor is that, although more than a year has now elapsed since the Licensing Board rendered its initial decision authorizing the issuance of the Vogtle construction permits, subsequent developments have left our review of that decision incomplete. As a consequence, the construction permit proceeding has not as yet reached the stage where final Commission action has been taken on the issues presented in that proceeding—which issues, in an ultimate sense, come down to whether there is warrant for the construction of Units 1 and 2⁴ and, if so, what conditions should be imposed upon the permits allowing them to be built.

A. If we understand the staff's position correctly, it at least tacitly acknowledges that, but for the continuing pendency of the construction permit proceeding, the hearing which we have directed on the pending applications for amendments to the permits would necessarily be confined to those issues which are directly presented by those applications (*i.e.*, the matters which will have to be considered and decided by the Board in passing upon whether the sought amendments should be authorized).⁵ Stated otherwise, had final Commission action in the construction permit proceeding already taken place by the time the

⁴In light of the applicant's voluntary cancellation of Units 3 and 4, those units are, of course, no longer under consideration. As will be seen later, however, the fact that the facility now is to consist of two, rather than four, units may have to be taken into account by the Licensing Board in deciding the issues which will be before it at the supplemental hearing. See Part III, *infra*.

⁵It might be noted parenthetically that the Commission's regulations do not provide for a mandatory hearing with respect to applications for amendments to outstanding construction permits. See 10 CFR 50.58(b). Rather, such a hearing need be held only if the Commission determines that the public interest will be thereby furthered or if one is requested. See 10 CFR 2.105; 10 CFR 2.106(a). The applicant may make the request. 10 CFR 2.105(d) (1). Alternatively, the request may take the form of a petition for leave to intervene filed in response to a notice of opportunity for hearing published in compliance with the Atomic Energy Act (as interpreted in *Brooks v. AEC, supra*). In this instance, the

Footnote 5 continued on page 408.

permit amendments were applied for, the staff would have made no claim that the hearing on those amendments could appropriately encompass any additional issue(s) which, in the staff's view, might be suggested by developments occurring subsequent to the issuance of the permits. Rather, in that situation, the staff would have been left to the pursuit of the other means at its disposal for dealing with changed circumstances having a possible material bearing upon the permits. Specifically, irrespective of whether an application for a permit amendment(s) may be under consideration, the staff always has available to it the procedures spelled out in Subpart B of 10 CFR Part 2 for either imposing new requirements upon the licensee (permittee) or obtaining the modification, suspension or revocation of an outstanding license (permit). And short of invoking those formal procedures, the staff may make use of the backfitting provisions contained in 10 CFR 50.109 for the purpose of obtaining (in the interest of the public health and safety or the common defense and security) "the addition, elimination or modification of structures, systems or components of the facility after the construction permit has been issued."

Given, however, the fact that the authorization of the construction permits has not as yet received final agency approval, the staff sees the supplemental hearing as not being perforce confined to a consideration of the proposed permit amendments and such changed circumstances as may directly relate to whether those amendments are warranted. In this regard, we are pointed to two prior decisions of this Board: *Duke Power Co.* (William B. McGuire Nuclear Station, Units 1 and 2), ALAB-143, 6 AEC 623 (1973) and *Vermont Yankee Nuclear Power Corp.* (Vermont Yankee Nuclear Power Station), ALAB-167, 6 AEC 1151 (1973).

In *McGuire*, this Board criticized the failure of the applicant and the staff to have advised the Licensing Board promptly of certain modifications which the applicant had made in its quality assurance organization. Even though the adequacy of that organization was a contested issue in the proceeding, the modifications (which had occurred prior to the rendition of the initial decision) had not come to the attention of either the Licensing Board or ourselves until evidence was later received at a hearing on remand. We admonished the Bar that, "[i]n all future proceedings, parties must inform the presiding board and other parties of new information which is relevant and material to the matters being adjudicated", adding that otherwise "reasoned decision-making would suffer. Indeed, the adjudication could become meaningless, for adjudicatory boards would be passing upon evidence which would not accurately reflect existing facts". ALAB-143, 6 AEC at 625-26.

Footnote 5 Cont'd.

applicant requested a hearing in light of the continuing pendency of the construction permit proceeding. We granted that request in ALAB-285 without deciding whether, as the applicant may have thought, proposed construction permit amendments must be placed in adjudication if the basic proceeding dealing with the permit application is not already at an end.

The staff takes this to establish that, until the final curtain has fallen on a construction permit proceeding, there is the obligation on its part to make full disclosure of any supervening developments or newly acquired information which comes to its attention. Whether the record of that proceeding should then be reopened by the Board to receive formal evidence on the matters disclosed would be determined by resort to the test laid down in *Vermont Yankee*: Do the new disclosures give rise to "a significant safety-related issue"? ALAB-167, 6 AEC at 1152 (emphasis supplied).⁶

Applying the *McGuire-Vermont Yankee* doctrines to this case, the staff concludes that there are post-initial decision developments (unrelated to the permit amendment applications) which must be placed before the Licensing Board and which might necessitate further consideration at the supplemental hearing. We are told specifically of two generic safety concerns pertaining to the operation of Westinghouse pressurized water reactors. The first brings into question whether there has been an underestimation of the loadings on the support structures for the reactor pressure vessel. The second is in the area of the seismic and environmental qualification of certain equipment associated with the reactor. Both of these matters are now being studied by the staff on a generic basis. It appears, however, from a recent staff report submitted to a licensing board in another proceeding that it may be as much as another year before this study is completed.⁷

Apart from these generic safety concerns, the staff initially suggested to us that the Licensing Board also might have to inquire into whether the Vogtle facility is now in compliance with the recently adopted Appendix I to 10 CFR Part 50, which establishes "numerical guides for design objectives and limiting conditions for operation to meet the criterion 'as low as practicable' for radioactive material in light-water-cooled nuclear power reactor effluents." CLI-75-5, NRCI-75/4R 277 (April 30, 1975). Cf. *Potomac Electric Power Co.* (Douglas Point Nuclear Generating Station, Units 1 and 2), ALAB-218, RAI-74-7 79, 82-83 (July 15, 1974). In a post-argument supplemental memorandum, however, the staff informed us that it no longer believes that Appendix I compliance is potentially an issue for consideration at the supplemental hearing.

⁶The single issue being considered in ALAB-167 was safety related (*i.e.*, fuel densification) and thus this Board was not there called upon to decide whether the same test would apply to the reopening of a record on an environmental issue. We perceive no good reason, however, why a different standard should be invoked.

⁷See "Answers to ASLB Questions on Preliminary Report of the NRC Staff," filed on August 22, 1975 in *In the Matter of Duquesne Light Co.* (Beaver Valley Power Station, Unit No. 1), Docket No. 50-334. That document, of which we can take official notice, represents (pp. 2, 3) that the staff "expects" or "anticipates" that the review of each of the two concerns "will be completed within [or in] twelve months". It is further indicated that the Advisory Committee on Reactor Safeguards would be advised of the results of the review. *Ibid.*

Appendix I has just been amended, effective September 4, 1975, to provide that the requirements of paragraph D of Section II of the Appendix need not be complied with

... by persons who have filed applications for construction permits which were docketed on or after January 2, 1971, and prior to June 4, 1976, if the radwaste systems and equipment described in the preliminary or final safety analysis report and amendments thereto satisfy the Guides on Design Objectives for Light-Water-Cooled Nuclear Power Reactors proposed in the Concluding Statement of Position of the Regulatory Staff in Docket-RM-50-2 dated February 20, 1974, pp. 25-30, reproduced in the Annex to this Appendix I.

40 F.R. 40816, 40818. Under paragraph D, an applicant must, given certain circumstances, augment its radwaste system to effect a reduction in the radiation dose to the population located within 50 miles of the reactor. See NRCI-75/4R at 289. Since the Vogtle construction permit applications were docketed in 1973, the recent amendment applies here and the staff has now satisfied itself that the Vogtle facility meets the guidelines referred to in it. Beyond that, the staff has concluded that the facility meets the requirements of paragraphs A, B and C of Section II of Appendix I, which concern radiation doses to individuals. See NRCI-75/4R at 288-89.

There is nothing before us which casts doubt upon the validity of the staff's present assessment. We thus see no reason why we should not accept the staff's withdrawal of its earlier suggestion that there might prove to be a need for the Licensing Board to determine Appendix I compliance in the course of the supplemental hearing. Accordingly, we do not consider that matter further in this opinion.

B. For its part, the applicant reads *McGuire* more narrowly than does the staff. In its view, all that was there held is that the Licensing Board (and this Board) must be told of any newly acquired information which is relevant and material to issues which have been put in contest by one of the parties. Thus, unlike the staff, it finds no mandate stemming from *McGuire* which might obligate the staff to apprise the Licensing Board of the generic safety concerns under present staff review.

In any event, the applicant insists, the supplemental evidentiary hearing is not an appropriate forum for addressing those concerns. In a conceded departure from the position taken in its written submission (summarized in ALAB-285), it is now willing to have the Licensing Board inquire whether the changed circumstances associated with the sought permit amendments (including the cancellation of Units 3 and 4) have altered "in a material way the basic environmental cost-benefit balance and safety determinations reflected" in the initial decision (App. Tr. 25-26). It also professes a willingness to have the Licensing Board determine whether there have been any significant post-June

1974 changed circumstances with respect to such aspects of the facility as its site and its design (App. Tr. 26, 33-35). But it does not regard what it characterizes as “developments in regulatory criteria” to be “changed circumstances” in this context (*ibid.*). Rather, the applicant maintains, such developments both can and should be dealt with in the first instance outside of the adjudicatory framework. In this connection, we are reminded that, following the issuance of a construction permit for a facility, there often will be changes in safety-related regulatory criteria applicable to that facility. These changes are normally accommodated, to the extent necessary, through the backfitting process and the applicant considers that process to provide an adequate vehicle for giving effect to any new criteria which may be established as a result of the pending staff review of the two identified concerns.

II

We have given careful consideration to the positions of the respective parties, as summarized above. On a balancing of all of the relevant factors appearing to us, we conclude that the hearing need not and should not encompass the generic safety concerns to which we have been referred by the staff. Further, although not entirely ruling out the possibility that some other safety matter might arise which would have to be considered by the Licensing Board, we think that to be a remote contingency.

A. To begin with, our decision in *McGuire*, ALAB-143, *supra*, takes us only a short distance in deciding the question before us. The staff itself has readily acknowledged that *McGuire* establishes no more than a reporting requirement: as previously seen, it imposes a duty upon the parties to a still uncompleted licensing proceeding to bring to the attention of the appropriate tribunal—the Licensing Board or the Appeal Board as the case may be—“the new information which is relevant and material to the matters being adjudicated.”

If, as the staff maintains but the applicant disputes, the reach of *McGuire* extends to newly evolved generic safety concerns of applicability to the reactor under consideration, the staff has already discharged its disclosure obligation thereunder by bringing those concerns to the attention of this Board. At this juncture, it is we—not the Licensing Board—which has jurisdiction over the basic construction permit proceeding. For, as of now, all that is within the domain of the Licensing Board is what was remanded to it in ALAB-285 for hearing and disposition; to wit, the two applications for permit amendments and those issues *directly* raised by those applications.

In the final analysis, the situation here appears essentially no different than it would have been had the applicant not applied for permit amendments. In such circumstances, there would have been no room for question that, during the pendency of our *sua sponte* review of the initial decision, any new

information or developments coming within the *McGuire* doctrine would have had to be disclosed to us and not the Licensing Board. It is equally beyond doubt that, upon such disclosure, it would have been our task, at least *ab initio*, to pass upon whether the new information or developments might warrant further evidentiary consideration by the Licensing Board of one or more issues in the case. See, e.g., *Northern States Power Co.* (Prairie Island Nuclear Generating Plant, Units 1 and 2), ALAB-230, RAI-74-9 458 (September 25, 1974).

This being so, we need not resolve here the disagreement between the staff and the applicant respecting the precise dimensions of *McGuire*. What we must determine instead is (1) whether, in the absence of the need for an evidentiary hearing on proposed permit amendments, we would have been justified in remanding the cause to the Licensing Board for consideration of the newly disclosed generic safety concerns; and (2) if not, whether it makes a difference that the Licensing Board will be conducting a hearing on permit amendments and could consider the generic safety concerns in the course of that hearing.

B. It is long-settled that the Commission may issue a construction permit for a nuclear power reactor in the face of yet unresolved generic safety concerns, leaving those concerns for resolution prior to the time that the reactor obtains an operating license. *Power Reactor Development Co. v. Electrical Union*, 367 U.S. 396 (1961); 10 CFR 50.35(a). And it is not uncommon for this practice to be followed. The present case provides an illustrative example. Supplement No. 1 to the staff's Safety Evaluation Report (SER), issued on May 1, 1974, took note (at p. 18-3) of the fact that the Advisory Committee on Reactor Safeguards (ACRS) had expressed its "continuing concern regarding generic problems related to large water reactors." The staff pointed out that those problems "... are being worked on by the various reactor vendors and will be the subject of continuing attention by the ... staff. At such time as improved system designs are available that offer substantial additional protection to the public health and safety, such improvements will be backfitted to the Vogtle units where practicable and necessary." *Ibid.* Thereafter, following the conclusion of the hearing on radiological health and safety matters, the staff tendered, *inter alia*, this proposed finding (II-25) to the Licensing Board:

... In a letter dated April 16, 1974, to the Chairman of the Commission (SER Appendix G), the ACRS identified items requiring further consideration, including emergency makeup water wells, the 17 x 17 fuel array and its effect on ECCS capability, reliability tests for the emergency diesel generators, emergency plans in light of the proximity of Vogtle plant to the AEC's Savannah River Plant and the Barnwell Nuclear Fuel Plant, and continuing concern regarding generic problems related to large water reactors. In the letter, the ACRS concluded that these items can be resolved during construction and that, if due consideration is given to these items, the Vogtle Plant Units can be constructed with reasonable assurance that they

can be operated without undue risk to the health and safety of the public. (SER, Appendix G) Subsequent to issuance by the ACRS of its April 16, 1974 letter, the Staff issued on May 1, 1974 its Supplement No. 1 to its SER bound into Ex. S-7. This supplement addresses the status of each of the items identified by ACRS and concludes that such items have been resolved or will be resolved satisfactorily to the Staff prior to plant operation (SER 18.0).

The finding was adopted by the Board in its June 27, 1974 initial decision. See Finding No. 28, 7 AEC at 1180.⁸

We have been given no reason to believe that the two additional generic safety concerns now disclosed by the staff need be treated in any significantly different fashion. Specifically, the staff does not claim (and nothing before us suggests) that either or both of those concerns may not be susceptible of resolution—if not generically, at least insofar as these two reactors are concerned⁹—by the time that Unit 1 is ready for operation. As earlier noted, the staff anticipates the completion of its review of the concerns within approximately a year. See fn. 7, *supra*. Whether or not the completion date for Unit 1 is extended by the Licensing Board, the staff will have ample time thereafter to determine, in the light of the product of the review, what design or equipment changes (if any) might be necessitated.

In short, it does not appear to us that the emergence of the new generic concerns amounts to the kind of extraordinary development which, under the standards established in *Vermont Yankee*, ALAB-167, *supra*, might call for a reopening of the record of the construction permit proceeding. At this juncture, it cannot be said that these concerns (any more than those previously identified in the proceeding) give rise to a significant safety issue requiring determination at the construction permit level.¹⁰ Whether they will ripen into such an issue remains to be seen; if so, there will be time enough on the operating license level for the staff (and, if an adjudicatory hearing is held, the Licensing Board) to deal with them appropriately.

The question remains whether a different result should obtain because the Licensing Board will be conducting a supplemental evidentiary hearing in all events and thus could undertake to consider the generic safety concerns without having to convene an independent hearing for that purpose. We think not. In the first place, the fact that there may be an already available forum does not mean that issues not ripe for adjudicatory consideration should nonetheless now be heard. Beyond that, it is doubtful that the permit amendment hearing can be deemed an available forum. Once again, it will likely be well into next year

⁸ See also *Consumers Power Co.* (Midland Plant, Units 1 and 2), ALAB-123, 6 AEC 331, 348-49 (1973); *Long Island Lighting Company* (Shoreham Nuclear Power Station), ALAB-156, 6 AEC 831, 844-45 (1973).

⁹ See *Shoreham*, ALAB-156, *supra*, at 844.

¹⁰ *Vermont Yankee* was, of course, an operating license proceeding.

before the staff winds up its own review of the two generic safety concerns. By that time, the hearing on the permit amendments conceivably might be completed. In this connection, the applicant informed us at oral argument that, unless that hearing moves forward with dispatch, the proposed sale (and with it the resumption of construction) will be jeopardized, if not foreclosed altogether. It will therefore presumably ask the Licensing Board to expedite the hearing. The extent to which this may be feasible doubtless will be heavily influenced by whether, in response to the notice of hearing published a few weeks ago, any petitions for leave to intervene are filed and thereafter granted. But it is difficult to perceive any justification for protracting the length of the hearing simply to permit the possible introduction of issues which are totally extraneous to the purpose for which the hearing has been ordered.¹¹

C. We have previously alluded to the applicant's acknowledgment that the Licensing Board is entitled to assurance that, since June 1974, there have not been changes in "project plans" pertaining to such aspects of the facility as its site and design which (although unrelated to the sought permit amendments) might bear significantly upon the safety determinations made by that Board in its initial decision. We think that acknowledgment to have been fully justified. In determining whether any particular change of that character should be considered at the hearing, however, the Licensing Board should bear in mind that the test is whether a *significant* safety-related issue is presented by that change. *Vermont Yankee*, ALAB-167, *supra*.¹²

III

There is one other aspect of the supplementary evidentiary hearing which, by reason of what was said by the parties at oral argument, requires some mention. We were told by the staff that it is currently conducting a further environmental review of the facility in light of the reduction from four to two units and the proposed extension of the prescribed earliest and latest completion dates. According to the staff, this review may produce additional information bearing upon, *inter alia*, alternatives to the construction of a nuclear facility or, short of that, to the chosen site or some other facet of this particular facility.

¹¹What has been said in this portion of our opinion would likely have equal application to any additional generic safety concerns which might surface between now and the rendition of the Licensing Board's decision following the supplemental hearing. Should the occasion arise, we leave it to the Licensing Board to make that determination.

¹²The applicant has already informed us of one design change: it proposes to install in Units 1 and 2 an airborne particulate radioactivity monitoring system designed to withstand a safe shutdown earthquake. Although the Vogtle PSAR will be amended to reflect this change, and the Licensing Board will be asked by the applicant to modify its initial decision to take account of it, it appears plainly not to give rise to a significant safety-related issue upon which additional evidence would be required.

The staff contemplates providing the Licensing Board with any such information acquired by it. This might be done by way of an addendum to the Vogtle Final Environment Statement. Or the staff might seek to tender testimonial or documentary evidence at the hearing.

The applicant has explicitly disclaimed any opposition to Licensing Board consideration of whether, by reason of either the request for extension of the completion dates or the cancellation of Units 3 and 4, there has been a material alteration in the NEPA cost-benefit balance which that Board had struck in the initial decision. This being so, we need not decide here whether such consideration is required by statute or regulation, either as an integral part of the adjudication of the permit amendment applications or in connection with the still non-finalized construction permit proceeding. We are confronted, however, with the applicant's expressed concern that the staff may seek an open-ended reexploration at the supplemental hearing of all the environmental issues which, albeit in the context of a four-unit rather than a two-unit facility, have already been canvassed by the Board in the construction permit proceeding. As the applicant sees it, neither of the two changed circumstances in question might justify a reopening of such issues (mentioned in passing by staff counsel) as alternative siting of the facility and the impact of plant construction upon local communities.

We would pursue a most perilous course indeed were we now to attempt to fix a precise boundary for the Board's environmental inquiry. That must be left in the first instance to the discretion of the Licensing Board, which will be in a much better position to make an informed judgment on the necessary ingredients of a reevaluation of the Vogtle cost-benefit balance in light of the acknowledged changed circumstances. The applicant itself seems to concede as much (App. Tr. 103).

At the same time, however, a few general observations may be in order at this juncture. It will not be the Board's function at the supplemental hearing, either in passing upon the permit amendment applications or in the discharge of any obligations it might have with respect to the still on-going construction permit proceeding, to embark broadly upon a fresh assessment of the environmental issues which have already been thoroughly considered and which were decided in the initial decision. Rather, the Board's role in the environmental sphere will be limited to assuring itself that the ultimate NEPA conclusions reached in the initial decision are not significantly affected by such new developments as the reduction in size of the overall facility and the sought extension of completion dates.

It remains to be seen, of course, whether the Board will be presented with an affirmative claim by some party that the NEPA balance has been so affected. Should this occur, the Board would be fully justified in requiring a convincing

preliminary showing that there is a substantial basis for the claim. Only upon such a showing would there be need for the Board to allow the matter to be pursued in depth at the hearing.

We stress this point because our own examination of the record in the construction permit proceeding, and more particularly the Final Environmental Statement and the initial decision, does not suggest at first blush that the ultimate environmental determinations made by the Board hinged to an important extent upon circumstances which no longer obtain. It does not readily appear, for example, that alternatives to the facility itself, its site or some integral part of it (such as its cooling system) were rejected for the sole or primary reason that four—and not some lesser number—of units were to be constructed. And, although it is quite true that the cancellation of Units 3 and 4 may well have occasioned a *diminution on the benefit side of the scale* which is not matched by an equivalent lessening in the quantum of environmental costs, those costs do not appear of sufficient magnitude that the NEPA balance is likely to tip against construction of the facility on that basis alone.

What has just been said should not be taken as a prejudgment of these matters, let alone as reflecting a belief that the outcome of the further NEPA assessment in light of the agreed-upon changed circumstances is already ordained. It well may turn out that there are crucial factors which either have been overlooked by us or will come to the fore in the course of the staff review or otherwise. All we mean to do here is to urge that the Licensing Board take pains to insure that, insofar as addressed to the NEPA cost-benefit balance, the hearing not be sidetracked by the injection of issues or concerns having no discernible relationship to whether changed circumstances have invalidated the balance previously struck.¹³

¹³In a post-argument memorandum solicited by this Board, the staff indicated that, before it can complete its review of the effect of changed circumstances upon the cost-benefit balance, it will need to obtain further information from the applicant in certain specified areas. We were further informed that, once the requested information is supplied, its review will be completed within six weeks.

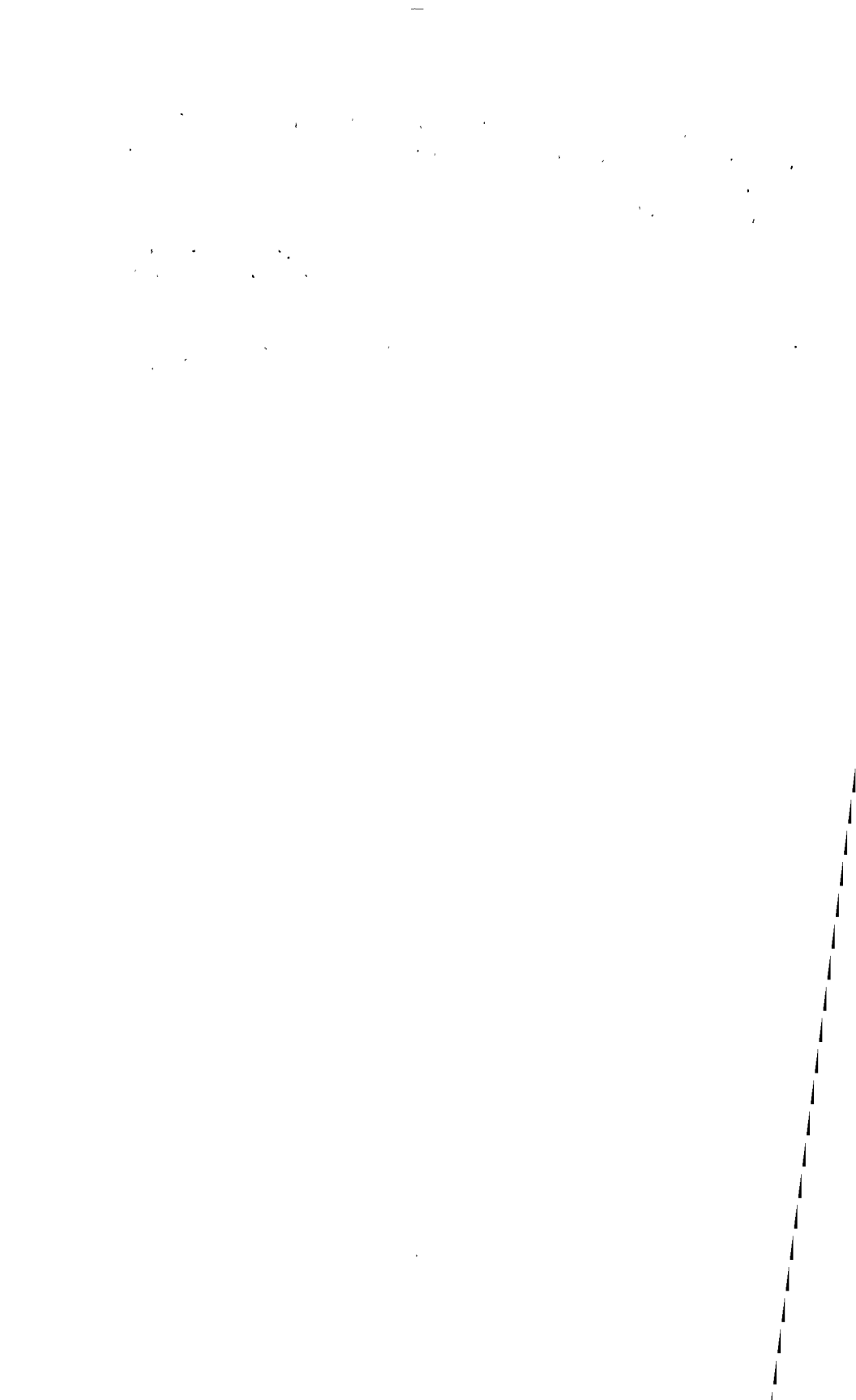
We leave it to the Licensing Board to settle any dispute which may arise respecting the reasonableness of the staff's timetable or the relevance of the additional information sought by the staff to the environmental questions which the Board must examine. The Board should, of course, bear in mind the general guidelines set forth above.

The scope of the supplemental hearing called for by ALAB-285 is to be determined by the Licensing Board in conformity with the views expressed in this opinion.

It is so ORDERED.

**FOR THE ATOMIC SAFETY AND
LICENSING APPEAL BOARD**

**Margaret E. DuFlo
Secretary to the Appeal Board**



UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

LBP-75-50

ATOMIC SAFETY AND LICENSING BOARD

Thomas W. Reilly, Chairman
Frederick J. Shon, Member
Dr. Frank Hooper, Member

In the Matter of
GULF STATES UTILITIES COMPANY
(River Bend Station,
Units 1 & 2)

Docket Nos. 50-458
50-459
September 2, 1975

Upon application for construction permits, Licensing Board issues partial initial decision on environmental and site suitability aspects of the facilities, making factual determinations requisite for the issuance of an LWA and imposing certain conditions. Board also denies intervenor's motion to postpone issuance of LWA pending final assessment of environmental impact of radiological releases in light of new Appendix I to 10 CFR Part 50.

LWA: SCOPE OF INFORMATION REQUIRED FOR ISSUANCE

The issuance of an LWA does not depend upon a board's finding that a plant conforms to radiological health and safety requirements of Appendix I to 10 CFR Part 50, but only that (1) there is reasonable assurance that the plant can be designed to conform to Appendix I; (2) if the plant is so designed, the radiological impact will be of small weight in the environmental balance; and (3) it is unlikely that any cost incurred in modifying the plant to meet Appendix I would be so large as seriously to disturb the cost-benefit or plant-vs.-alternatives balances.

TECHNICAL ISSUES DISCUSSED:

1. Radiological releases (as-low-as-practicable);
2. Use of "duty factor" in the context of forecasting uranium requirements.

APPEARANCES

Troy B. Conner, Jr., Esq., and Mark J. Wetterhahn, Esq.,
of Conner, Hadlock & Knotts, Washington, D. C., and

Stanley Plettman, Esq., of Orgain, Bell & Tucker, Beaumont, Texas, for the Applicant, Gulf States Utilities Company.

Kenneth W. Kennon, Esq., St. Francisville, Louisiana, for the Intervenor, Will Pozzi.

C. James Gelpi, Esq., Executive Assistant Attorney General, Julian Johnson, Esq., and Richard Troy, Jr., Esq., for the State of Louisiana.

Lawrence Brenner, Esq., and David E. Kartalia, Esq., Office of the Executive Legal Director, U.S. Nuclear Regulatory Commission, Washington, D. C., for the NRC Regulatory Staff.

PARTIAL INITIAL DECISION (PARTIAL CONSTRUCTION PERMIT PROCEEDING—ENVIRONMENTAL MATTERS AND SITE SUITABILITY ONLY)

I. INTRODUCTION

On October 23, 1973, the U. S. Atomic Energy Commission¹ published a "Notice of Hearing on Application for Construction Permits" (38 *Fed. Reg.* 29243) with respect to the application filed by the Gulf States Utilities Company ("Applicant") for construction permits to build two boiling water reactors, the River Bend Station, Units 1 and 2 ("RBS" or "the facility"), to be located in West Feliciana Parish, Louisiana.² The Notice set forth the requirements pursuant to the Atomic Energy Act of 1954, as amended, and the National Environmental Policy Act of 1969 to be met prior to the issuance of construction permits. The Notice also provided that any person whose interest might be affected by the proceeding could file a petition for leave to intervene, in accordance with the requirements of 10 CFR §2.714, not later than November 26, 1973, and also further notified interested persons to file requests for limited appearances pursuant to the provisions of 10 CFR §2.715. In

¹ In accordance with the Energy Reorganization Act of 1974, 88 Stat. 1233, the Atomic Energy Commission has been abolished and its regulatory responsibilities have been assumed by the Nuclear Regulatory Commission.

² The proposed facility would be constructed on a 3292-acre site near the east bank of the Mississippi River, approximately 24 miles north-northwest of Baton Rouge and 3 miles southeast of the town of St. Francisville.

addition, the Notice designated this Atomic Safety and Licensing Board ("Board") to conduct the hearing in this proceeding.

Though the Notice set forth all the issues which must be considered and decided by this Board to determine whether construction permits should be issued to the Applicant, this Partial Initial Decision addresses only the environmental issues specified by 10 CFR Part 51 and the site suitability issues specified by 10 CFR 50.10(e)(2). An initial decision on the remaining radiological health and safety issues, and this Board's ultimate decision on issuance of the construction permits, will be issued after concluding further public hearings on the remaining radiological health and safety aspects of the application.

Pursuant to the Notice, a timely joint petition for leave to intervene was filed on November 26, 1973 by William H. Pozzi and Ray Lefebvre. The Applicant objected to the granting of the petition on the grounds of lack of both interest and acceptable contentions. The Nuclear Regulatory Commission Staff (Staff), while objecting to several of the stated contentions, took the position that the petitioners had satisfied the interest requirement and that at least three contentions were set forth in compliance with the requirements of 10 CFR §2.714.

On December 27, 1973 the Board held a special prehearing conference to hear argument on the petition to intervene. In its "Special Prehearing Conference Order," dated January 3, 1974, the Board ruled that three contentions were admissible and admitted Messrs. Pozzi and Lefebvre as Joint Intervenors. The Board, upon the suggestion of the Staff and Intervenors, deferred ruling on the remainder of the contentions pending discussions among the parties to narrow, simplify and clarify the issues, including the three contentions found *prima facie* admissible.

On January 30, 1974, the Applicant, pursuant to 10 CFR §2.714a, appealed this Board's grant of intervention to the Atomic Safety and Licensing Appeal Board (Appeal Board). The Staff on March 6, 1974, filed a brief before the Appeal Board in opposition to the Applicant's appeal. On March 12, 1974, the Appeal Board issued ALAB-183 denying Applicant's appeal and affirming this Board's January 3, 1974 Special Prehearing Conference Order.³

On April 8, 1974, we issued a Notice and Order for a Second Prehearing Conference to be held on May 7, 1974. The Order directed the parties to confer in advance to refine and clarify Intervenors' contentions. On May 3, 1974, the Staff filed a "Status Report on Behalf of all Parties" which (1) set forth seven contentions then advanced by Intervenors; (2) noted objections by the Applicant and/or Staff to several of the contentions advanced by the Intervenors;

³ *Gulf States Utilities Company* (River Bend Station, Units 1 and 2), RAI-74-3, 222 (March 12, 1974).

(3) stated that all other contentions previously advanced were withdrawn; and
(4) proposed a schedule for discovery.

Immediately after the May 7, 1974 prehearing conference in St. Francisville, La., the Board inspected the proposed plant site (by low-level light aircraft tour). Following the prehearing conference, at which argument was heard on the seven contentions advanced in the "Status Report," the Board issued its "Second Prehearing Conference Order and Rulings on Contentions," dated May 22, 1974, approving the proposed discovery schedule and admitting four of the contentions advanced by Intervenor. The contentions dealt with:

Contention 1—Geothermal and solar energy alternatives

Contention 2—Alternative of a coal-fired plant

Contention 3—"As low as practicable" releases through the pasture-cow-milk pathway

Contention 4—Alternative of underground siting

On October 3, 1974, one of the Intervenor, Mr. Lefebvre, filed a "Motion By Intervenor to Withdraw" from the proceeding. The Board, by its ruling dated October 22, 1974, granted Mr. Lefebvre's motion. Accordingly, Mr. Pozzi is now the only intervenor in this proceeding.

By Joint Motion dated October 11, 1974, the Intervenor, Applicant and Staff filed a withdrawal of Contentions 1 and 2, relating to geothermal and solar energy alternatives, and the alternative of a coal-fired plant. The Board approved the withdrawal of Contentions 1 and 2 in its Order dated December 20, 1974.

In a letter to the Staff dated October 15, 1974, Mr. Frederic J. King, Jr., a New Orleans attorney, requested that his "intention to intervene" be entered in this proceeding. Both the Staff and Applicant responded that Mr. King's request was manifestly untimely (one year late) without any explanation therefore, and in addition failed to set forth his interest or any contentions as required by 10 CFR §2.714. In its December 16, 1974 "Order Denying Petition To Intervene," the Board denied Mr. King's petition for the reasons advanced in the Staff's and Applicant's responses, and advised Mr. King of his right to appeal pursuant to 10 CFR §2.714a. No appeal was entered by Mr. King.

On February 4, 1975 and March 12, 1975, the Applicant and Staff, respectively, filed motions for summary disposition of Intervenor's two remaining contentions. In its "Rulings on Motions for Summary Disposition,"⁴ the Board denied the motions with respect to Intervenor's Contention 3 ("as low as practicable" releases through the pasture-cow-milk pathway). However, the Board granted the motions for summary disposition of Intervenor's Contention 4 (alternative of underground siting) on the basis that the affidavits of the Staff and Applicant and Intervenor's affidavit in response showed that:

⁴ *Gulf States Utilities Company* (River Bend Station, Units 1 and 2), NRCI-75/3, 246 (March 20, 1975).

Contention 4 does not present a reasonably practical or presently-feasible alternative to the proposed method of construction of the River Bend nuclear facility, in terms of costs, present availability of alternative technology, or the time-frame in which the new electric power is needed to be on-line. See *NRDC v. Morton*, 458 F.2d 827, 837-838 (D.C. Cir. 1972), on the "rule of reason" principle that NEPA was never intended to require an agency to extend environmental consideration to alternatives that are remote, speculative or outside the time-frame within which the new facility is needed. [*Id.*, at 250]

On March 11, 1975, the Attorney General of the State of Louisiana (State), petitioned to participate in this proceeding as a representative of an interested state pursuant to 10 CFR §2.715(c). No party objected and on March 19, 1975, the Board approved the State's participation pursuant to Section 2.715(c).

The evidentiary hearing sessions on environmental and site suitability issues were held on March 24, 25, 26, and 27, 1975 and May 20 and 21, 1975 in Baton Rouge and St. Francisville, Louisiana. In accordance with 10 CFR §2.715, a number of limited appearance statements were made in both Baton Rouge and St. Francisville. The Applicant and Staff responded during the course of the hearing to the questions posed in the limited appearance statements, and in addition, the Staff mailed comprehensive written responses to the limited appearors. The Board is satisfied that the relevant questions raised were fully addressed. Two new questions raised by the State, the availability of uranium to fuel the RBS and the dose through the sweet potato pathway, were extensively considered by the Board as part of the evidentiary hearing and are discussed, *infra*.

The record in the case to date consists of a 1,349-page transcript of the prehearing conferences and evidentiary hearing containing, *inter alia*, the testimony of witnesses for the Staff, Applicant and the State (Intervenor presented no witnesses) and the exhibits which were received in evidence as listed in Appendix A ("List of Exhibits"). [Appendix A is omitted from this publication but is available at the Commission's Public Document Room, Washington, D. C.] Proposed findings of fact and conclusions of law were submitted by both the Staff and the Applicant, but not by the Intervenor nor the State.

On April 30, 1975, the Nuclear Regulatory Commission issued its Opinion in the Appendix I Rulemaking Hearing—Numerical Guides for Design Objectives and Limiting Conditions for Operation to Meet the Criterion "As Low As Practicable" for Radioactive Effluents, Docket No. RM 50-2. CLI-75-5, NRCI-75/4R, 277. The new Appendix I became effective June 4, 1975 and is applicable to this proceeding. Pending the submission of evidence which evaluates the environmental impact of radiological releases from the RBS in light of the new analysis being performed by the Staff pursuant to Appendix I, the

Board kept the record of the proceeding open at the end of the May 21, 1975 hearing session, although the parties agreed to file incomplete proposed findings of fact on subjects not affected by the unresolved issues.

The Board took this action over Applicant's objections that it is not necessary that the Staff's analysis be submitted prior to our determination, in view of the Board's authority to amend the FES as appropriate. (Tr. 1315) In the first instance, the Board notes that at the time of our May 21, 1975 decision to keep the record open, no party, including the Applicant, had submitted evidence in the record of this proceeding evaluating the radiological impact of the RBS in light of the new Appendix I. Subsequent to that, Applicant, by the vehicle of its proposed finding, purported to present such an analysis. The Board found that this was an unacceptable substitute for the evidence required because the Applicant's findings relied on the very Staff analysis (in the FES and testimony at the hearing) already in the record which the Staff itself was in the process of re-evaluating. Thus, there was no independent analysis to substitute for the Staff's which could serve as a basis for the required determination, even if we felt we could proceed in the absence of the Staff's reevaluation. In any event, the Board found that it could not proceed to a determination of the crucial (and indeed, contested) issue of the environmental impact of radiological releases from the RBS in the absence of the Staff's reanalysis of both its FES and the supplemental testimony related to radiological impacts previously given by its witnesses.⁵

By Motion⁶ dated July 17, 1975, the Staff submitted its evidence on the potential effect application of the new Appendix I might have on the RBS cost-benefit environmental analysis. The evidence consisted of three affidavits (Norris, Hewitt and Kastner) and the Staff moved that such evidence be admitted, that the record be closed, and that a schedule be set for the filing of such supplemental proposed findings and conclusions as would relate to the Staff's Appendix I assessment testimony. In fact, the Staff's testimony on this point does not purport to be a complete final reassessment of the precise impact the new Appendix I standards will have on the River Bend facility. Such a detailed assessment is still underway. Rather, it is a limited, interim analysis utilizing calculations resulting in an "upper bound assessment" of the potential radiological impacts from normal operation of RBS. The Applicant joined the Motion to admit the Staff's evidence, close the record, and set a schedule for

⁵For an Appeal Board holding that the Applicant's analysis cannot be taken as a substitute for the appraisal of the Staff, see *Texas Utilities Generating Company, et. al.* (Comanche Peak Steam Electric Station, Units 1 and 2), ALAB-260, NRCI-75/2, 51, at 55 (February 26, 1975).

⁶"NRC Staff's Motion For Admission of Evidence Showing Potential Effect of Appendix I on NEPA Cost-Benefit Analysis."

receipt of supplemental findings. The Board, by Order⁷ of August 1, 1975, received the Staff's evidence, closed the record and set August 16, 1975 as the deadline for the filing of supplemental findings. Both the Staff and Applicant submitted supplemental findings on the Appendix I issue, but not the Intervenor, nor the State (but see discussion of Intervenor's August 12 Motion, *infra*).

II. FINDINGS OF FACT

A. National Environmental Policy Act Requirements and the Environmental Impact Statements

1. As required by 10 CFR Part 50, Appendix D⁸ the Applicant submitted with its application, an Environmental Report (ER) dated September 24, 1973. The ER, as amended, was received into evidence as Applicant's Exhibit No. 2. (Tr. 377) Pursuant to the requirements of the National Environmental Policy Act of 1969 (83 Stat. 852) as implemented by E.O. 11514 and the CEQ guidelines of August 1, 1973 (38 *F.R.* 20550) and based on the environmental information submitted by the Applicant in the ER, as supplemented, and on its independent analysis and review, the Staff prepared a Draft Environmental Statement (DES) which was issued in June, 1974. By a Notice of Availability published June 7, 1974, the public was invited to comment on the DES. (39 *Fed. Reg.* 20227) Copies of the DES were also provided to appropriate Federal, State and local agencies for their comment. In September 1974 the Staff published its Final Environmental Statement (FES) (39 *Fed. Reg.* 35993) which includes, among other things, the full text of all comments received with respect to the DES (Appendix A) as well as the Staff's responses to those comments (Chapter 11). The FES was received into evidence as Staff Exhibit 1. (Tr. 561, hereinafter referred to as "FES" or "Staff Ex.1".)

2. Certain testimony filed by the Staff at the evidentiary hearing amended the FES in some respects. (Errata and Update of the Final Environmental Statement by Jan A. Norris, Environmental Project Manager, following Tr. 561; Tr. 823-825) The FES, as amended by the record of this proceeding, fully describes the need for the units, the plant site, the major systems of the plant, the environmental effects of site preparation and transmission line construction, the environmental effects of both plant operation and postulated design basis accidents, and the Applicant's environmental monitoring program.

⁷"Order Receiving Staff Evidence, Closing Record and Setting Schedule for Submission of Supplemental Findings."

⁸Since the Notice of Hearing was published, 10 CFR 50, Appendix D has been superseded by 10 CFR Part 51. (See 39 *Fed. Reg.* 26279).

3. The FES contains a cost benefit analysis which considers and balances the environmental effects of the proposed facility, alternatives available for reducing or avoiding adverse environmental effects, alternative methods for generating electricity, and the environmental, economic, technical and other benefits of the RBS.

4. The Staff concluded on the basis of its analysis and evaluation, set forth in the FES, that after weighing the environmental, economic, technical and other benefits of the RBS against its environmental and other costs, that the action called for under the National Environmental Policy Act of 1969 (NEPA) and 10 CFR Part 50 Appendix D is the issuance of construction permits subject to certain limitations to protect the environment. (FES, p.iii [items 7a-f] and Tr.823) The Board, on the basis of its consideration of the entire record, concurs that these are appropriate conditions to be imposed on the construction permit. Further, the Board finds that the FES as supplemented and corrected by the testimony and evidence presented in this proceeding, is a comprehensive and adequate review and evaluation of the environmental impacts resulting from plant construction and operation.

B. Compliance with Federal Water Pollution Control Act

5. The Commission may not issue any license or permit for the facility unless, in compliance with §401 of the Federal Water Pollution Control Act Amendments of 1972 (FWPCA), the State of Louisiana either certifies (a) that there are no applicable effluent limitations or standards under §§301, 302, 306 and 307 of the FWPCA ("negative certification") or (b) that there are such applicable standards and limitations and the discharges from the River Bend facility will comply with those standards and limitations ("positive certification") or (c) in the alternative has waived certification.

6. On October 8, 1974 the Environmental Protection Agency promulgated effluent limitations and standards which defined the various levels of technology contemplated by the FWPCA to reduce the discharge of pollutants. 40 CFR Part 423 (39 *Fed. Reg.* 36186). Accordingly, compliance with §401 of the FWPCA can now only be demonstrated by a "positive certification" or a waiver of certification.

7. In a letter to the Applicant dated October 25, 1974, (Applicant's Exhibit 3B), the Louisiana Stream Control Commission stated:

The Commission in approving these waste treatment facilities is of the opinion that the discharges will not violate water quality standards of the State of Louisiana. Therefore, in accordance with provisions of Louisiana Revised Statutes of 1950, Title 56, Section 1439(5)—Act 628 of the 1970 Louisiana Legislature—this is your letter of certification from the Louisiana Stream Control Commission that the installation complies with Section 21(b) of the Federal Water Quality Improvement Act of 1970.

This purported certification was, of course, not the required certification pursuant to §401 that the discharges from the facility will comply with the applicable effluent limitations or standards of §§301, 302, 306 and 307 of the FWPCA. Accordingly, by letter dated December 2, 1974 the Applicant requested such certification from the Louisiana Stream Control Commission. (Applicant's Exhibit 3C)

8. By letter dated December 13, 1974 (Applicant's Exhibit 3D), the Louisiana Stream Control Commission replied as follows:

This is in response to your letter of December 2, 1974, requesting a certification pursuant to Section 401 (a)(1) of the Federal Water Pollution Control Act (FWPCA) (33 USC 1251 *et seq.*) that the discharge from the construction and operation of the River Bend Station Units 1 and 2, will comply with the applicable provisions of Sections 301, 302, 306 and 307.

The Louisiana Stream Control Commission (Commission) has already issued a permit to Gulf States permitting it to discharge treated waste from the River Bend Station and has already stated its opinion, by letter of October 25, 1974, that the discharge will not violate water quality standards of the State of Louisiana. However, the Commission is not in a position to grant your request of December 2, 1974, because the Commission does not intend to take any action with respect to such discharges other than our letter to you of October 25, 1974. The Commission does not intend to take any certification action as requested in your letter of December 2, 1974, in light of the promulgation of October 8, 1974, regulations by the Environmental Protection Agency (EPA) specifying best practicable control technology currently available and best available technology economically achievable. When EPA issues a draft National Pollutant Discharge Elimination System permit with respect to such River Bend Station, the Commission will take up the certification for River Bend Station required by Section 401 (a)(1), PL92-500 (FWPCA).

This letter shall not be construed as a denial of the certification requested by your letter of December 2, 1974.

The Applicant and Staff agree that the December 13, 1974 letter from the Louisiana Stream Control Commission is a failure or refusal to act on a request for certification and therefore, as expressly provided for in §401 (a)(1) of the FWPCA, constitutes a waiver of the §401 certification requirements. ("Applicant's Motion To Convene Hearing," dated February 5, 1975; "NRC Staff's Answer To Applicant's Motion To Convene Hearing," dated February 21, 1975). The Board agrees. The letter clearly states that while certification has not been denied, no further action will be taken on the request for §401 certification until a draft National Pollutant Discharge Elimination System (NPDES) permit is

issued. This will not occur until the approximate time frame of proposed operation, clearly more than the maximum reasonable time of one year for a certification request to be acted on, as specified in §401(a)(1).

9. In accordance with §5 of the Commission's "Interim Policy Statement On Implementation of Section 511 of the FWPCA" (IPS) (38 Fed. Reg. 2679), since there are applicable limitations promulgated pursuant to the FWPCA, but no certification of compliance pursuant to sections 401 or 402 (NPDES permit), the Board has examined the compliance of the facility with the applicable limitations promulgated by EPA.

10. The Board has considered the evidence filed by the Staff⁹ and the Applicant¹⁰ on this matter and concludes that the facility is in compliance with the applicable EPA requirements, including application of the "best available technology economically achievable" as required by 40 CFR Part 423. With respect to the limitation of heat from the main condensers, this standard requires the facility to use a closed-cycle cooling system (40 CFR §423.13; Staff Assessment, at 4). This requirement is met by the Applicant's plans to install mechanical-draft cross-flow, wet cooling towers to dissipate the waste heat from the circulating cooling water. (Staff Assessment, at 4; Applicant's Exhibit 3E, at 3). In addition, the Board concludes that the applicable EPA requirements would not affect the conclusions of the analyses of water-related alternatives conducted by the Applicant and the Staff and considered by the Board, *infra*.

C. Impacts on Land Use

11. The primary impacts of the RBS on land use will be the utilization of about 850 acres of the 2679-acre originally proposed site for construction activities. (Staff Ex. 1, p.4-1; App. Ex. 2, Table 4.1-3, Figs. R4.1.10-1, 4.1-1, and 4.1-2) In addition, some impact will result from the construction of transmission facilities and the clearing of rights-of-way (Staff Ex.1, p.4-2; App. Ex.2, Sect. 4.2), as well as a major impact resulting from the dewatering of the terrace aquifer at the rate of about 20,000 gpm during the early phase of construction. (Staff Ex. 1, p.4-2, App. Ex. 2, Sect. 4.1) In addition to these major impacts construction of a new access road to the site, connecting Highway 61 to Route 965, and the haul road will require about 9.4 acres of land. (Staff Ex.1, p.4-1; App. Ex. 2, Fig. 10.10-1)

⁹Staff's Assessment of Compliance of the River Bend Station with Environmental Protection Agency Effluent Guidelines and Standards (hereafter "Staff Assessment"), following Tr. 564.

¹⁰Applicant's Testimony of James Meitzen—Compliance of the River Bend Station with the EPA Agency Effluent Guidelines and Standards for Steam Electric Power Generating Point Category (Applicant's Exhibit 3E).

D. Impacts of Construction

12. Construction of the plant will require the preemption of approximately 850 acres. Of this land, about 564 acres is wooded and will require clearing; about 286 acres is open pasture. (Staff Ex.1, p.4-1) After construction is completed, about 86 acres which will have been used for stockpiling of spoil and fill material will be cleared and then allowed to revert to its natural state. (*Id.*) Seven ponds totalling approximately 4.7 acres will be destroyed by construction of RBS, but a new 33-acre pond will be constructed by the Applicant (*Id.*), and of the 850 acres, about 476 acres will be replanted in grasses and other vegetation, and the remaining 278 acres will be occupied by permanent structures. (Staff Ex.1, p.4-1; App. Ex.2, Sect. R-4.1.11-1)

13. The major road to be constructed on the site will lead from the reactor buildings to the riverfront structures. (Staff Ex.1, p.4-1) The road will cross the southern portion of the site and will include a bridge which spans Alligator Bayou. The new sections of this road will require about 16 acres of land. (*Id.*) A branch of the Illinois Central Railroad currently traverses the site and will serve as railway access to the site. Two sidings will be constructed onsite to lead from the main tracks onto the immediate plant site. (*Id.*) The Board finds that the use of the railroad branch line and the construction of the sidings onsite are acceptable.

14. Construction of the plant will require some excavating of the area. Some of the material so excavated will be used as backfill; those materials unsuitable for use as backfill will be distributed along the transmission line right-of-way and seeded. (Staff Ex.1, p.4-1; App. Ex.2, Sect. 4.2.4) Dust control during construction will be accomplished by use of sprinkler trucks as necessary and by surfacing access roads, heavily used construction roads, and major parking areas. The effects of erosion on the site will be minimized by the use of remedial methods such as seeding and straw cover. (*Id.*) About four temporary pits (75 x 15 x 10 ft.) will be used to dispose of washings from concrete operations. (*Id.*; App. Ex.2, Appendix M) After settling, the effluent water will be discharged to West Creek, and the disposal pits will be backfilled with soil when nearly full. (*Id.*) Materials cleared from the site and other combustible construction wastes will be burned in accordance with present local ordinances. Noncombustible construction wastes will be buried onsite. (Staff Ex.1, p. 4-1)

15. Clearing of the plant area and excavation of soil material will result in unavoidable erosion into the West Creek—Grants Bayou system. West Creek will be rechanneled into a concrete-channeled storm drain and this will help minimize erosion, but increased levels of turbidity are expected in Grants Bayou following local rainfall. (Staff Ex.1, p.4-6) West Creek and Grants Bayou are subject to scouring by heavy runoff following local rainfall. When flow is reduced, sediments suspended at high flow rates will deposit until the storm

resuspends the material and moves it downstream. (*Id.*) The impact on aquatic production from rechanneling the middle reach of West Creek and from increased sediment loading in its lower reaches will be limited because it is an ephemeral (temporary) stream and is normally a low producer. (*Id.*) The Board agrees with this assessment.

16. Construction of the transmission lines and towers will affect approximately 526 acres of forested land. (Staff Ex.1, p.4-2; App. Ex.2, Sect. 4.3.1.2) Approximately 85.5 miles of transmission lines will be laid by the Applicant. Of this total length, about 33.7 miles will traverse forested areas, about 36.1 miles will pass through pastures, about 13 miles will traverse cropland, about 2 miles will pass through residential areas, and the remaining approximately 0.7 mile will cross rivers, railroads, and highways. (Staff Ex.1, p.4-2; App. Ex.2, Sect. 3.9) The greatest impact of transmission line construction will be the clearing of 526 acres of forested areas with resulting loss of habitat. However, the Applicant has outlined and the Staff has evaluated plans for restoring low-growing ground cover by seeding and fertilization. (*Id.*) Pasture land will be the other major category of land affected by construction of the transmission lines. However, this land can continue to be used for this purpose after construction. (Staff Ex.1, p.4-2)

17. In addition to the areas to be impacted by construction of the transmission lines, the Applicant has indicated that one to four residences may have to be relocated. (Staff Ex.1, p.4-2) To mitigate these potential impacts, the Staff requested that the Applicant submit additional information on the impact of the transmission lines and possible alternate routes. (Staff Ex.1, Appendix C) Based upon the information submitted and the Staff's evaluation of same, the Staff concurred with the Applicant that the proposed transmission line corridors were the best selected on a benefit-cost basis. (Staff Ex.1, pp.9-16, 9-17) The Board concurs in the Staff's and Applicant's analyses and conclusions and we conclude that the plans drawn for minimizing land impacts due to transmission line construction are acceptable.

18. In addition, since forest and pasture lands are abundant in this region of the country, use of the referenced acreages for plant and transmission line construction will not have a significant effect on land use patterns in this area. We also note that no historic sites, archaeological sites or recreational areas are expected to be affected by plant or transmission line construction. (Staff Ex.1, p.4-2)

19. Another major impact, construction of the embayment on the eastern bank of the Mississippi River and at the location of the intake structure and barge slip will result in the addition of about 10 tons/hr. of sediment into the river over a period of about three months. (Staff Ex.1, p. 4-6; App. Ex.2, Sect. 4.1.4) The introduction of this amount of sediment into the river from dredging will hardly be noticeable beyond the actual dredging area because the river normally carries a suspended sediment load of about 31,250 tons/hr. (Staff

Ex.1, p.4-7) In addition, the thalweg (deepest part) of the Mississippi River is near the east bank at the site of the dredging and the rapid flow of the river should enhance mixing and minimize deposition. (*Id.*) Even at low-flow conditions (100,000 cfs.), the additional sediment load of 10 tons/hr. would amount to less than 1 ppm. (*Id.*) The Board concludes that the impacts from dredging at the RBS site will be minimal and are therefore acceptable.

20. In response to the Staff's review of the application, the Applicant has made a number of commitments to limit the adverse environmental effects of construction of the facilities. (Staff Ex.1, pp.4-8, 4-9) In addition to those commitments set forth in the FES, and in response to a concerned person who made a limited appearance (Mrs. Broadbent, Tr. 240), the Staff proposed the following additional condition (Tr.823):

Construction of the station may result at times in temporary closing of the roads in the vicinity of the site. The Applicant shall assure that safe and continuous access between St. Francisville and all affected properties is maintained throughout the duration of such closures.

The Applicant has agreed to this additional condition (Tr.825) and we find it acceptable.

21. In sum, the Board finds that the adverse impacts on the site area from construction of the River Bend Station have been adequately described and evaluated. The Board further finds that the measures committed to by the Applicant, together with the additional measures recommended by the Staff, will ensure that adverse environmental effects will be at the minimum practicable level during construction of the RBS.

E. Dewatering

22. A major impact of RBS construction will be the dewatering of the terrace aquifer. (Staff Ex.1, p.4-2; App. Ex.2, Section 4.1) Dewatering of this aquifer will be necessary for about 16 months during the excavation and backfill phase of construction of the facility's major buildings. Water will be pumped from the aquifer at the rate of about 20,000 gpm in order to lower the water table from about 57 ft. msl to about 12 ft. msl. Also the terrace aquifer will supply water for construction use from an 800-gpm capacity well drilled to a depth of about 150 ft. Expected use will be about 75,000 gal/day. (Staff Ex.1, p.4-2)

23. The Applicant and the Staff have evaluated the terrace aquifer drawdown potential. As a result of the dewatering activities at the site, the drawdown is expected to be detectable within a 2-mile radius. (Staff Ex.1, p.4-2) Within 2,000 ft. to 2 miles of the construction area there are about 22 wells that utilize the terrace aquifer. Ten of these wells produce from levels between 0 and -50 ft. msl; the rest are deeper. (*Id.*) The Staff's and Applicant's evaluations indicate that the watertable surface is not expected to be lowered below 30 ft.

msl at a distance of 2,000 ft. from the site and beyond, and therefore dewatering is not expected to have a significant effect on water use in the area. (*Id.*; App. Ex.2, Section 4.1; Tr.792-3) The Board concurs with this assessment of the drawdown potential for the RBS site and environs and concludes that dewatering and withdrawal of water during construction will not affect water usage in the area.

24. The dewatering discharge will be sent to Grants Bayou via a stilling basin. (Staff Ex.1, p.4-2, 4-6; App. Ex.2, Appendix M, Request 2.7.33) Thus during the 16-month period of dewatering, Grant's Bayou will become a continuously flowing stream. The dewatering process will provide a base flow of about 46 cfs. (*Id.*) Except when it receives runoff from local storms, water quality in the Bayou will be dominated by well water which is colder than normal for Grant's Bayou and is richer in silicates and total phosphorous. The increased flow is expected to offset deposition of the increased sediment load associated with storms, tending to keep the bed of Grant's Bayou scoured of fine silts and clays. (*Id.*)

25. During the period of dewatering of the terrace aquifer the aquatic organisms which inhabit Grants Bayou may be impacted by the change to a continuously flowing stream as well as the increased silicates levels and the colder than normal water injected into the bayou. (Staff Ex.1, p.4-7) Because phytoplankton use energy from the sun to convert water, carbon dioxide, and minerals into organic matter they will be affected by the increased turbidity which decreases the depth of the photic zone, thereby decreasing the volume in which phytoplankton can survive. (*Id.*) In addition, zooplankton may be affected by clogging of their filtering mechanism in areas affected by increased suspended sediments. Also the cooler temperature of the water will likely cause a transitory period of lower abundance. (*Id.*)

26. Benthic organisms are likely to be affected in Grants Bayou because of potential alteration of the substrate during land clearing, construction, and dewatering. (Staff Ex.1, p.4-7) Increased scouring of fine silts and clays could be detrimental to benthic organisms requiring soft silty sediments and encourage forms more adaptable to continuously flowing water. (*Id.*) However, the Staff has stated in the FES that after dewatering activities cease, the Bayou will revert to an intermittent stream and appropriate biological communities will become reestablished. (*Id.*) The Board concludes that the impacts on Grant's Bayou resulting from dewatering activities at the RBS site will not be longlived and are therefore acceptable.

27. In sum, the Board finds that the impact on the site and environs from the dewatering of the terrace aquifer have been adequately described and evaluated by the Applicant and Staff. We conclude that adverse environmental effects from this activity will be at the minimum practicable level during construction of the RBS and are acceptable.

F. Impacts of Operation

28. The River Bend Station will use a closed-loop cooling water system with mechanical-draft cooling towers for the rejection of heat. (Staff Ex.1, p.3-3) The turbine condenser system circulation will be 1,018,000 gpm, and the service water 83,000 gpm. (*Id.*) The makeup water will be taken from, and blowdown returned to the Mississippi River. At maximum consumption, 62.4 cfs (28,000 gpm) will be taken from the river, of which 47.7 cfs will be lost by evaporation, 2.7 cfs will be returned to the river from the water treatment system, and 12.0 cfs will be returned as blowdown. (*Id.*)

29. The evaporative losses for both units represent 0.05% of the minimum expected river flow and 0.01% of its annual mean flow. (Staff Ex.1, p.5-1) The Staff has evaluated the loss of riverwater at this rate and concludes that it is not expected to affect any navigational, recreational, or consumptive uses of the Mississippi River. (*Id.*) We concur with the conclusions drawn by the Staff.

30. The principal physical impact of the RBS heat-dissipation system is expected to be from atmospheric effects of the mechanical-draft cooling towers, including fog and salt deposition. (Staff Ex.1, p.5-7) The probable hours of fog and the amount of salt deposition (drift) from the cooling towers were estimated by the Staff using the Oak Ridge Fog and Drift code, and weather data were obtained from the U.S. Weather Bureau hourly weather-data tape from Ryan Airport, Baton Rouge, Louisiana, for the 10-year period 1963-1972. (Staff Ex.1, p.5-3)

31. An average of 1150 hr/year of natural fog and no icing was recorded for the period. (*Id.*) The Staff has calculated that a maximum additional fog, approximately 12 hr/year, is expected in a southern direction at a distance of two miles. (*Id.*) Applicant, basing its calculation on Ryan Airport data and on one year of onsite data and using other calculational techniques (App. Ex.2, pp.5.1-10ff), estimated about 44 hours of fog due to tower operation 2,000 feet south of the towers. The Board views these calculations as in reasonable agreement when variability of the data and state-of-the-art are considered, and the Board further believes that the calculation indicates there will be no fogging problem. Further, even the small amount of fogging predicted will be confined to Applicant's property (App. Ex.2, p.5.1-13), as will any icing which may occur. (*Id.*) The Board concludes that fogging and icing due to the towers will be of insignificant impact.

32. Salt deposition from cooling tower drift is expected to be the most significant nonradiological impact of station operation on the terrestrial ecosystems at the RBS site. (Staff Ex.1, p.5-7; App. Ex.2, Section 5:1) The Staff and Applicant testified that salt deposition rapidly diminishes as the distance from the towers increases, thus no observable effects due to drift are expected outside the site boundary. (Staff Ex.1, p.5-16; Tr.550, 660) Notwithstanding the different assumptions for draft-rate and droplet size distribution in each analysis,

both the Staff's and the Applicant's analysis indicate that at 1/2 mile from the towers about 180 lbs/acre/year deposition rate is expected. (Staff Ex.1, pp.5-5, 5-6) In general, the Staff and the Applicant agree that salt deposition will not significantly affect plant or animal life because the plant is located in an area which has high precipitation, and most of the salt which will be deposited will be continuously leached from the vegetation. (Tr.551, 660) In addition, the Applicant is committed to a monitoring program to identify any salt drift effects on vegetation at the site and is also committed to take remedial actions should salt deposition have significant adverse effects on the vegetation at the site. (Tr.550-2)

33. The Board agrees that the impacts of fog, icing, and salt deposition resulting from operation of the cooling towers will not be significant, and with the implementation of the monitoring program and any necessary remedial measures, the potential for adverse environmental impacts will be further minimized.

34. The operation of the River Bend Station could potentially affect the aquatic ecosystems on and near the site through entrainment and impingement of organisms, and from blowdown effects—both thermal and chemical. (Staff Ex.1, pp.5-18 through 5-21) Entrainment would affect chiefly two species, goldeye and freshwater drum, since their fertilized eggs, unlike those of other species present, are not demersal. (Staff Ex.1, p.5-19) Eggs of other species could only be entrained if deposited in water of sufficient turbulence to keep them in suspension until they reach the intake aperture. (*Id.*) The embayment area around the proposed intake structure will be deep and well flushed and is not likely to be attractive as a spawning ground. (*Id.*) The Board agrees that with the exception of the aforementioned species, the impact of entrainment in the RBS intake structure will be minimal and is, therefore, acceptable.

35. The goldeye is not an important commercial or sport fish in the River Bend reach of the river and only limited reproductive activity occurs locally. (*Id.*) However, the freshwater drum is an important commercial fish in the lower Mississippi River. The fertilized eggs of both of these species would be vulnerable to entrainment if they are swept into the vicinity of the makeup structures. (*Id.*) However, as the impact on total population of these species in the affected portion of the river is small (*Id.*), the Board concludes that the overall impact on these species will also be small.

36. Those organisms too large to pass through the intake screens will be subject to impingement. For the RBS, however, this is not likely to be a significant problem because the intake structure is located at a point where the channel of the Mississippi River is near the east bank (Staff Ex.1, p.5-18), and fish are not normally attracted to the fast flowing channel. However, construction of the embayment may provide an attractive slow-moving area for fish, increasing the relative numbers subject to impingement. (*Id.*) This increase is not expected to be significantly large however and, based on the Staff and

Applicant's evaluations of the impingement potential, we conclude that even with an increase in the relative numbers of fish in the vicinity of the intake structure, the potential loss of fish by impingement will be minimal.

37. The River Bend Station will discharge water into the Mississippi River which will elevate the river water temperature. (Staff Ex.1, pp.3-7, 5-19) The cooling water, mainly blowdown from the cooling towers, will be discharged to the river just downstream of the intake cove, about 610 ft. down river from the intake. (Staff Ex.1, p.3-7; App. Ex.2, Supp.3, Fig. R-3.4-2a) The nominal blowdown rate will be 14 cfs, giving a discharge velocity of about 3 ft/sec. (*Id.*) The monthly average discharge temperature will vary from about 66°F in winter to about 90°F in summer. (Staff Ex.1, p.3-7) The Staff's evaluation of the thermal discharge potential indicates that the rate of discharge will be small compared with minimum flows of the lower Mississippi River. (Staff Ex.1, pp.5-19ff.) The fish populations in this part of the Mississippi River are tolerant of a wide range of temperatures (temperatures in the river sometimes reach 87°F) and should be capable of maintaining themselves during short periods of thermal stress. Further, the thermal plume will be restricted to the fast-flowing channel that fish normally avoid, and blockage of migration is not expected to occur. (*Id.*)

38. The Staff has also asserted that during the summer, the 1°F isotherm is expected to extend only 50 ft. downstream from the point of discharge. (*Id.*) Since most local species of fish, except the goldeye and the freshwater drum, have ova that are demersal, and many lay their eggs in shallow, calm areas where vegetation is present, the thermal plume will not affect such areas. Further, because the plume is basically a surface phenomenon, it should have no adverse effect on demersal ova attached to the substrate. (*Id.*) The buoyant and semibuoyant eggs of the goldeye and freshwater drum may be subjected to the thermal plume, but the limited extent of the plume will make the impact of minor importance. (*Id.*) The Board agrees that the discharge of heat will be comparatively small and that the impact on fish populations in the river will be minimal.

39. Phytoplankton and zooplankton will be subject to thermal stress once entrained in the thermal plume. (*Id.*) This degree of stress will depend on the portion of the plume into which they are entrained and the length of time they remain within that temperature region. The Applicant has estimated and the Staff has concurred that during the winter, plankton could be exposed to temperature increments from 2° to 56.5°F above ambient for a period of 3.5 min.; during the summer, the maximum increment would be about 9°F. (*Id.*) The Board concurs that this increase in temperature for the short exposure period would cause a minimal effect on the plankton community, and is, therefore, acceptable. Since the plume is basically a surface phenomenon, it should have negligible effect on benthos. (*Id.* at 5-20)

40. Chlorine will be added as a biocide to each unit. (Staff Ex.1, p.3-19) Chlorination (to a maximum of 3 ppm) will occur before the cooling water enters the main condensers, and the system is expected to be treated for approximately 60 min/day. (*Id.*) Monitors on the blowdown line will automatically stop the chlorination when the free residual chlorine level in the blowdown reaches 0.1 ppm. (*Id.*) The Staff on the basis of these measures estimates that the chlorine discharged to the Mississippi River will be diluted to acceptably low levels within a 200 ft. zone downstream from the outfall. The Board agrees that the measures for restricting chlorine discharge to the Mississippi River are acceptable.

41. In addition to chlorine, the Staff has stated that low-radioactive level liquid waste and nonrecoverable wastes from regeneration of makeup demineralizers will be neutralized and discharged to the river periodically after mixing with the cooling-tower blowdown. (Staff Ex.1, p.5-20) In order to meet the Louisiana State water quality criteria of 120 ppm for sulfate, the average effluent at its average concentration of sulfate will require about a 15 to 1 dilution with Mississippi River water. (Staff Ex.1, p.5-20) This will require about 180 cfs of the river flow, and the Staff and Applicant have estimated that the necessary dilution will occur less than 200 ft. downstream from the outfall.

42. The Board concludes that operation of the RBS will not have a significant impact on the biota of the Mississippi River. In addition, we note that the site is sufficiently remote that unacceptable noise levels of operating machinery, including the cooling towers, will not be audible offsite (Staff Ex.1, p.5-21; App. Ex.2, Section 5.7.1), and the air pollution from occasional operation of the diesel engines on emergency equipment will not be significant. (Staff Ex.1, p.3-19) Further, the impact from the influx of operating personnel on recreational facilities will not be significant. (Staff Ex.1, p.5-21) We, therefore, find that the environmental impacts from operation of the RBS will be within acceptable limits.

G. Radiological Releases

43. During routine operation of the plant, small quantities of radioactive material will be released to the environment. Their release must be controlled in accordance with Part 20 of the Commission's regulations. In addition, an applicant for a construction permit must identify the design objectives and the means to be employed for keeping levels of radioactive materials in effluents to unrestricted areas as-low-as-practicable. On June 9, 1971, the Commission published in the *Federal Register* (36 *Fed. Reg.* 11113) for public comment proposed Appendix I to 10 CFR, Part 50 which would have provided numerical guides for design objectives and technical specification requirements for limiting conditions for operation for light-water-cooled nuclear power reactors. On

November 30, 1971 (36 *Fed. Reg.* 2275), the Commission published notice of a public rulemaking hearing on the proposed amendments.

44. The Applicant's analyses presented in the ER (ER Section 5.3) to show compliance with the "as-low-as-practicable" criterion and the Staff's evaluation contained in the FES (FES Section 5.4) were based upon the proposed Appendix I and certain regulatory guides interpreting it. As of the start of the evidentiary hearing in this proceeding, the Commission had not issued its decision in this rulemaking proceeding.

45. On April 30, 1975, the Commission issued its decision in the RM 50-2 rulemaking proceeding (40 *Fed. Reg.* 19439, May 5, 1975) amending its regulations to, *inter alia*, provide a new Appendix I to provide numerical guides for design objectives and limiting conditions of operation to meet the criterion of "as-low-as-practicable". At the evidentiary hearings, the Staff requested that the record be held open until a Staff position on the new Appendix I could be developed and material pertinent thereto could be offered in evidence. The Board agreed to do so over Applicant's objection. (Tr.1315)

46. On July 17, 1975, Staff offered for admission into evidence the affidavits of Norris, Hewitt, and Kastner on the subject of compliance with new Appendix I. No party objecting, the Board accepted the affidavits in evidence by its order of August 1, 1975 (but see Section III, *infra*).

47. In this partial initial decision, the Board will first consider the facility's compliance with the "as-low-as-practicable" criterion prior to the adoption of Appendix I by the Commission, and will evaluate the environmental impact as it was assessed in the Final Environmental Statement (Staff Ex.1) issued before the Commission published its new Appendix I. The impact of new Appendix I on this radiological assessment is discussed in Section II.H. below. It must be borne in mind that the discussion in this present Section II.G. represents the Staff's best evaluation of the environmental impact of the design proposed. The treatment in Section II.H. represents an estimated upper limit to impacts under certain broadened considerations dictated by new Appendix I. Exact evaluation of such broadened parameters will be deferred until the safety hearings (see discussion in Section II.H. and Section III, *infra*).

48. The Staff and Applicant have calculated the releases of radioactive materials in the liquid wastes (ER Section 3.5; FES Section 3.5). The Staff indicates that 1.2 curies per year per reactor will be released, excluding dissolved gases and tritium, but has utilized a value of 3.0 curies per year to account for anticipated operational occurrences and equipment downtime (FES Section 3.5.1.7). Based on data from operating boiling water reactors, the Staff estimated the tritium releases to be 20 curies per year per reactor (FES Section 3.5.1.7). The Applicant has estimated releases of radioactive material in liquid effluents of 0.015 Ci/yr per reactor, excluding tritium and dissolved gases and 16 Ci/yr per reactor of tritium (ER Section 3:5). The Applicant's lower release values can be reconciled with the Staff assumption due largely to differences in

the quantity of liquid waste recycled in the waste collection subsystem (WCS); the Staff assumed that 10% of the WCS Stream will be discharged over the life of the plant due to equipment downtime and anticipated operational occurrences, whereas the Applicant assumed total recycle of the stream (FES Section 3.5.1.7).

49. Based on the more conservative Staff evaluation, the calculated amount of radioactive material in liquid effluents from Units 1 and 2, exclusive of tritium and dissolved gases, will be less than 5 curies per year (FES Section 3.5.1).

50. The whole body and critical organ dose resulting from the release of liquid effluents, considering the significant pathways to man, including water, fish, and invertebrate ingestion, swimming, boating and fishing have been calculated to be substantially less than 5 mrem/year (FES Sections 3.5.1.7; 5.4.2.1; 5.4.2.2).

51. The gaseous waste treatment and ventilation exhaust systems will consist of equipment and instrumentation necessary to reduce releases of radioactive material in gaseous effluent and from equipment and building vents. The principal source of gaseous radioactive waste will be the offgas from the main condenser air ejectors. Additional sources of gaseous wastes will be ventilation air from the auxiliary, turbine, and fuel handling buildings and gases collected in the containment building. The release of radioactive gases from the turbine gland seals will be negligible since clean steam will be supplied for these seals. The treatment system for offgas from the main condenser air ejector will be a refrigerated (0°F) charcoal delay system providing for decay of short-lived noble gases prior to discharge to the atmosphere through the turbine building vent (ER Section 3.5; FES 3.5.2.1).

52. With regard to the main condenser offgas treatment, the Staff and Applicant each calculated that the release of iodine from this source would be negligible (ER Section 3.5; FES Section 3.5.2.1). The Staff calculated that 730 curies per year of noble gases would be released while Applicant calculated 1700 curies per year, the difference being accounted for by the different assumptions of air leakage into the condenser. (FES Section 3.5.2.1)

53. Radioactive gases will be released to the turbine building due to steam leakage. In the FES, the Staff calculated the turbine building vent release to be 250 curies per year for noble gases and 0.07 curies per year per reactor for iodine-131. This was based upon release of the ventilation air from the turbine building without treatment. (FES Section 3.5.2.3)

54. The main condenser mechanical vacuum pump will be used during reactor startup to exhaust air from the main condenser. The Staff calculated that the mechanical vacuum pump operation would release 2700 curies per year of noble gases with the Applicant's estimate somewhat higher because of a higher assumed usage factor. (ER Section 3.5; FES Section 3.5.2.4) The Staff assumed

that radioactive gases will be released to the containment building due to leakage from reactor associated equipment and calculated that 0.01 curies per year per reactor of iodine-131 will be released. (FES Section 3.5.2.5)

55. As described in the FES (see FES Table 3.4), these sources represent all of the significant pathways of release of gaseous radioactive effluents from the facility. The Staff dose calculations based upon its assumed releases were performed using annual average site meteorological conditions and assuming the release occurs at a constant rate. (FES Section 5.4.2.3) As stated in the FES, the release of radioactive materials in gaseous effluents from the simultaneous operation of Units 1 and 2 will result in a whole body dose of less than 10 mrad/year due to gamma radiation and less than 20 mrad/year due to beta particles at or beyond the site boundary. The Staff also concluded that the total quantity of iodine-131 released to an unrestricted area will not exceed 1 Ci/yr per reactor. (FES Section 3.5.2.8) The maximum calculated annual individual doses due to gaseous effluents were .32 mrem to the whole body area and 1.4 millirads to the skin, both at the site boundary. (FES Table 5.5)

56. The primary food pathway to man involves ingestion by dairy cows of radioiodine deposited onto grazing areas. Consumption of milk from these cows can result in exposure to the thyroid of a child who is assumed to consume one liter of milk daily from a cow grazing 12 months annually. (ER Section 5.3; FES Section 5.4.2.3)

57. At the time the FES was issued, there was a difference between the Applicant and Staff as to the ability of the gaseous release control equipment, as then proposed, to meet the "as-low-as-practicable" criterion with respect to the release of iodine. The Applicant had undertaken a series of tracer tests of the ground level release type to demonstrate that natural dispersion at the site, assuming ground level releases, was sufficiently better than the Staff model's predictions as to preclude the need for additional inplant control measures.

58. At the hearing, the Applicant stated that it accepted the fact that no credit would be given for the tracer tests in the Staff's "as-low-as-practicable" calculations. (Tr. 419) The Applicant reserved the right to pursue further courses of action necessary to demonstrate the adequacy of the River Bend design which was originally proposed in the Environmental Report with respect to the treatment of routinely released gaseous radioactive effluents. (Tr.419; ER Suppl. 7)

59. As a result, the Applicant made the following commitment:

If necessary in the judgment of the NRC Staff to assure that routine River Bend gaseous releases will be "as-low-as-practicable", Gulf States agrees that a principal architectural and engineering criterion of the facility design will be the installation prior to facility operation of charcoal adsorbers or a stack.

60. The Applicant has agreed to submit the proposed design of any needed additional dose reduction equipment to the Staff for its review and evaluation

prior to installation. The equipment, if needed, would be installed prior to facility operation. (ER, Suppl. 7)

61. The Staff presented testimony at the hearing with regard to the calculated dose from the facility should the charcoal adsorbers or stack be added to the facility. The calculated dose with the addition of charcoal adsorbers is 5.64 mrem per year to the critical child's thyroid through the pasture-cow-milk pathway. The Staff concluded that the use of such equipment results in doses which meet the design objective of "as-low-as-practicable". (Affidavit of Dr. Michael A. Parsont on Radiological Dose from Airborne Radioiodine Through the Air-Pasture-Cow-Milk Pathway in the Vicinity of the Proposed River Bend Station Units 1 and 2, Tr. following 700 [hereinafter "Parsont Testimony"]).

62. The Board has examined the commitment (ER Suppl.7) in view of the resulting calculated dose and is satisfied that either the addition of appropriate charcoal adsorbers or of a stack if required by the NRC Staff, is a feasible and practicable manner of meeting the "as-low-as-practicable" criterion as implemented through the proposed Appendix I. (ER Suppl.7)

63. The combined dose due to gaseous effluents to the population living within a 50-mile radius using projected 1980 population was calculated to be 0.08 man-rem. (FES Table 5.8) Other pathways considered in calculating the man-rem dose from radioactive effluents from the plant were drinking water (negligible), consumption of fish (0.34 man-rem) and invertebrates (0.17 man-rem) and recreation (1.08 man-rem) (FES Table 5.9, Section 5.4.2.5). The total man-rem from radioactive effluents totals 1.67 compared to the 70,000 man-rem delivered to the population within 50 miles of the River Bend facility as a result of the average natural background dose rate of about 0.1 rem/year in this region.

64. As a result of a limited appearance statement and because of sweet potato farming in the vicinity of the River Bend Station (ER Section 2.2), the Board asked the parties to examine the pathways for human radiological dose for any nuclide which will be released by the Station and address the maximum dose to any individual from the sweet potato pathway.

65. Both the Applicant and Staff agreed that no water-borne pathway exists to man via the sweet potato. There is no use of Mississippi water for irrigation, and surface waters and ground water in the vicinity of the site could not reach the sweet potato growing area. (Applicant's Ex.7 at p. 1; Response to March 31, 1975 ASLB Questions 1 and 2 [hereinafter "Parsont's Response on Sweet Potato"] at pp.2-4) In spite of this fact, the Staff calculated a dose through the liquid pathway using conservative parameters and concluded that the dose to an individual was only 0.17 mrem whole body and the critical organ dose was 0.65 mrem to the bone.

66. The Applicant and Staff calculated that the maximum dose which could be delivered through the sweet potato pathway would be from airborne

radioactivity. They both chose extremely conservative rates of sweet potato consumption in order to be responsive to the Board's inquiry concerning the maximum dose. The Applicant utilized a consumption rate of 110 pounds per year while the Staff was even more conservative, utilizing 160 pounds per year. (Applicant's Ex.7 at p.2; Tr.1289) While the Staff utilized values for the bioaccumulation factors (or transfer coefficients) for concentration from the soil to the sweet potato derived from the literature (Tr.1294-5), the Applicant measured these values on actual sweet potatoes grown in the area, utilizing the soil in which they were grown. The Board considers that the Applicant's approach satisfies the concern of the witness for the State of Louisiana, Dr. Meyers, that the bioaccumulation factor values not be dependent solely on a literature search. (Tr.1307-10) Other differences in assumptions were that the Staff assumed all the sweet potatoes were eaten fresh while the Applicant considered half were fresh and half eaten six months after harvest. (Tr.1264-6) In order to assure a conservative source term for the calculation, the Staff went beyond the source terms utilized in the FES for gaseous effluents in that they assumed a gaseous release of tritium. (Tr.1289-90)

67. The Applicant calculated the annual dose from the sweet potato, assuming that the crop grew at the site boundary and at the nearest existing sweet potato farm. At the site boundary, the dose was .0026 mrem to the whole body and 1.8 mrem to the critical organ. (Applicant's Ex.7 at p.2) The corresponding dose at the nearest existing farm is .0048 mrem whole body and 0.33 mrem to the bone. The Staff concluded that the whole body dose was 0.39 mrem whole body and 5.99 mrem to the thyroid for sweet potatoes raised at the critical point on the site boundary. (Parsont's Response on the Sweet Potato, at p.10) The Staff concluded that, by virtue of the conservative assumptions used in its calculation, the dose would, in actuality, be much smaller. The Staff, therefore, still considered the pasture-cow-milk pathway to be the critical one. Finally, the Staff concluded that the resultant dose from the ingestion of the sweet potato would represent no measurable impact. (Parsont's Response on the Sweet Potato at pp. 10-11)

68. At the hearing, the Board explored in detail differences in assumptions and the resulting differences in doses calculated by the Applicant and Staff. The Board concludes that in spite of these differences, considering the conservative assumption used by both, the dose through the sweet potato pathway is not significant and does not represent a critical pathway to man.

69. The Board also inquired into the matter of "as-low-as-practicable" doses for restricted area-occupational exposure. As indicated in the Staff's testimony (Staff Response to ASLB Question 10 by Seymour Block (hereinafter "Block Testimony")), following Tr.700), the figure of 400-500 man-rem per year occupational radiation exposure per reactor given in the River Bend FES (5-14) is a reasonable extrapolation of operating data for the purpose of assigning an environmental impact. (Block Testimony, at 1) However, the major fraction of

occupational exposure is from maintenance and repair activities, most of which are unpredictable both as to frequency and as to radiation exposure resulting from the activity. (Block Testimony, at 3) Therefore, neither the 400-500 man-rem per year figure or any other quantitative value is used as an "as-low-as-practicable" goal. Rather, occupational exposures are kept "as-low-as-practicable" by the use of appropriate plans, procedures and designs to reduce such exposure, as presented in Regulatory Guide 8.8 and as implemented by the Applicant in Chapter 12 of the River Bend PSAR. The Board finds that this approach properly implements the objective of keeping occupational exposure "as-low-as-practicable", and that even if the exposures should be as high as 400-500 man-rem per year per reactor, the total impact on the human genetic pool would be small in comparison with the 70,000 man-rem per year due to natural background in the plant's vicinity. (Staff's Ex.1, p.5-15)

70. The Board finds that the radiological impact of the plant as described in the Final Environmental Statement and further explored at the hearings will be negligibly small.

H. Reassessment of Radiological Impact in the Light of Appendix I

71. The NRC Staff is presently in the process of reassessing its models for estimating radiological releases and doses to reflect the Commission's direction in new Appendix I that such assumptions and models should reflect the best available evidence and should not substantially underestimate actual exposures. Appropriate models are also under development for use in sequential cost-benefit analyses for potential radwaste arguments. It will be some time before these models are completed by the Staff and can be applied specifically to the radwaste systems proposed for the River Bend facility to determine compliance with Appendix I. It is anticipated that the assessments will be completed in connection with the radiological health and safety hearing.

72. For the present purposes, the Board does not deem it necessary to address the question of whether the plant's specific design complies with Appendix I.¹¹ To make the partial initial decision at issue here, the Board need only determine whether such a design is possible, whether, if so, the impact of such a design would be small, and whether the cost of such a design would disturb the environmental balances (see discussion in Section III, *infra.*). Such determinations can be made by considering the Staff's submittal concerning Appendix I. On the basis of information presently available on the technology to reduce radioactive effluent releases, the River Bend facility can be designed to meet the requirements of Appendix I. (Hewitt Affidavit, at 2) In the event the

¹¹ That matter will, of course, be ventilated at the radiological health and safety hearing, and at that hearing Intervenor's Contention #3, which bears upon compliance with "as-low-as-practicable" requirements, will also be dealt with.

detailed assessment to determine compliance with Appendix I shows a need for any additional equipment, the cost of any additional equipment required would be insignificant in terms of the overall cost of the facility—less than one-half of one percent of the overall cost of the facility—and thus would not affect the overall cost-benefit balance. (Norris Affidavit, at 7)

73. The Staff has presently estimated how the use of newer data and the broader consideration of population dose called for by Appendix I would affect the dose estimates previously set forth in the River Bend FES. For this purpose, the Staff performed certain calculations which result in an upper bound assessment of the potential radiological impacts from normal operation of the River Bend facility. The interim calculations are reflected in the affidavits of Mr. Hewitt (at Table 1) and Dr. Kastner (at 3-4). The calculations performed result in dose estimates which are unlikely to be exceeded in the detailed assessment. The upperbound dose estimates are based on revised estimated releases calculated by Mr. Hewitt and based on current operating data applicable to the radwaste systems proposed for the River Bend facility. (Hewitt Affidavit, at 3) The release values used in the Staff's interim dose calculations are not anticipated to differ significantly from the values for the final assessment (*Id.*). In any event, Dr. Kastner's calculation of upper-bound dose estimates includes sufficient conservatism to account for any variation that might occur in the Staff's final calculation of radiological releases. (*Id.*)

74. The Staff's interim assessment is based on the most current operating data available and includes broader consideration of the population dose (man-rem) impact by inclusion of the thyroid man-rem dose as required by Appendix I. In addition, although the FES did not explicitly consider carbon-14 and particulates released in gaseous effluent, they have been included in the Staff's interim assessment. (Hewitt Affidavit, at 5)

75. The following are the revised estimates of radioactive effluent release rates for the River Bend facility:

Calculations of Radioactive Materials in Total Effluents
Released from River Bend Station, Units 1 and 2

	Ci per year
Noble Gases	7,900
Tritium	120
Carbon-14	19
Radioiodines and other nuclides	6.5

(Kastner Affidavit, at 3; Norris Affidavit, at 5)

76. The "upper-bound" estimate of population dose to the general public due to effluents from the RBS is 66 man-rem to the total body and 230

man-rem to the thyroid. (Kastner Affidavit, at 4; Norris Affidavit, at 5) The Board had some reservations about the calculational techniques issued in the Staff's "upper-bound" assessment. In particular, we wished to know the source of the C-14, and some details as to the method of estimating its quantity and dilution. Our questions in those matters have been answered by correspondence in the Allens Creek case (Docket Nos. 50-466, 50-467) of which we have taken official notice (*vide* Section III, *infra*, and Appendices C and D to this decision) [Appendices C and D are omitted from this publication but are available at the Commission's Public Document Room, Washington, D. C.]. The Board will accept the Staff's estimates as upper bounds, but when detailed evaluation of compliance with Appendix I is made the Board will wish to be certain that the C-14 source from the nitrogen (n,p) reaction has also been included for any dissolved or gaseous nitrogen which may be exposed to neutronfluxes. Further, as indicated in the affidavit of Mr. Norris, the detailed assessment will include an evaluation of maximum individual radiological exposure, which will be controlled by the requirements of Appendix I. As further indicated in Mr. Norris' affidavit, this evaluation will include consideration of the sweet potato pathway, which has been identified as a concern in this proceeding. (Norris Affidavit at 3)

77. As indicated in the affidavits of Mr. Norris and Dr. Kastner, the upper-bound estimates show the radiological impact is larger than that contained in the FES. However, the Board finds that this increase does not significantly affect the results of the overall cost-benefit analysis of the River Bend facility. (Norris Affidavit, at 6; Kastner Affidavit at 4). The portion of the NEPA cost-benefit balance associated with radiological releases from the facility is controlled by the Commission's interim value of \$1,000 per total body man-rem and/or thyroid man-rem annualized cost as established in the rulemaking decision. Applying the Commission's value to the upper-bound assessment of approximately 300 man-rem and thyroid man-rem, the overall cost is less than \$300,000 per year, which is less than one-half of one percent of annualized station cost described in the FES (Table 10-20) and not significant to the overall cost-benefit balance in the FES (Chapter 10). (Norris Affidavit, at 6; Kastner Affidavit at 4)

78. Since changes to the Applicant's radwaste system could affect an assessment of the potential radiological environmental impact after compliance with Appendix I, it was necessary for the Staff to seek confirmation that the Applicant does not intend, in connection with its application for construction permits, to modify or remove any part of the radwaste treatment systems and equipment presently described in its Preliminary Safety Analysis Report and Environmental Report. As described in Mr. Norris' affidavit (at 4), the Applicant has made this commitment. In view of this commitment, the radiological impact of the plant will not be increased over that described in the Staff's interim assessment.

79. The Board finds that it has reasonable assurance that the plant will meet Appendix I to 10 CFR 50; that the radiological impact of the plant will be small, and that costs to meet Appendix I will not materially affect the balances struck in the Final Environmental Statement.

I. Environmental Effects of Transportation of Radioactive Material and the Uranium Fuel Cycle

80. The Staff has evaluated the effects of the uranium fuel cycle as it pertains to the RBS and the transportation of radioactive material to and from the facility, in accordance with standard tables S-3 and S-4 to 10 CFR Part 51, and has considered the effect of these impacts in the cost-benefit balance. (FES, at 5-16, Table 5.10, 10-8 (uranium fuel cycle); FES, at 5-13-5-14, Table 5.7, 7-3-7-4, Table 7.3, Tr.565-567 (transportation)) The Board has examined the Staff's evaluations and concludes that they were properly performed pursuant to the regulations, and that such environmental effects as pertain to the RBS are negligible.

J. Social and Economic Effects of Construction and Operation

81. During the construction period the impacts on residents of the community near the site will primarily be from vehicular traffic on the roads during shift changes. (Staff Ex.1, p.4-8) The traffic on Highway 61 is expected to increase from its current level of about 5000 vehicles per day to about 9000 vehicles per day during peak construction activities, which will result in inconvenience to local residents during the shift changes. However, in the Staff's judgment this impact will be relatively minor, and will be a maximum for only a short period during the peak construction activities. (*Id.*) The Board concurs.

82. Construction at the site will also result in activities, sounds, and dust that are common to large construction projects. (*Id.*) Dust generated by heavy equipment will be controlled by the use of spray trucks. (*Id.*; App. Ex.2, Section 4.1.3) In addition, the remoteness of the location in a sparsely populated area diminishes the significance of these impacts. (Staff Ex.1, p.4-8)

83. In order to mitigate these impacts of construction, among others, the Applicant has made a number of commitments which are outlined in Section 4.5 of the FES. (Staff Ex.1, pp.4-8, 4-9) The Board has already given its approval to these commitments, *supra*.

84. It is expected that during the peak construction year, over 2200 workers will be involved in the RBS activities. Most of the workers will be from the Baton Rouge area or will locate in Baton Rouge if they are not already permanent residents. (Staff Ex.1, p.4-8; App. Ex.2, Sections 4.1.1.3, 4.1.2) Only a small number of workers are expected to move into the St. Francisville area. (*Id.*) The permanent operating force will number approximately 95 individuals.

(Staff Ex.1, p.5-21) It appears that the greatest demand for additional housing will be primarily satisfied through existing rental units as well as through mobile home units brought into the area by the workers. (Staff Ex.1, p.4-8; App. Ex.2, Sections 4.1.1.3, 4.1.2, 8.3)

85. The added population in the area due to construction of the RBS will add small increases to the local school population. (*Id.*) Community services expected to be required by the construction personnel will be primarily in the areas of fire and police protection, road maintenance and utility services. (*Id.*)

86. Construction and operation of the RBS will cause substantial tax revenues to accrue to local governmental entities. It is estimated that \$2,400,000 will be paid in taxes each year to the West Feliciana Parish School system. (*Id.*) Ad valorem taxes on the site and the construction equipment will also contribute revenues to the parish. (*Id.*) Of course, members of the plant construction force who purchase homes in the local area, and the permanent plant operating force of 95 people will, together with their families, become taxpayers on the local level.

87. The Board finds that the Applicant has adequately described, and the Staff has properly evaluated the likely social and economic impacts from construction and operation of the River Bend Station. The Applicant will take mitigating measures during construction which will, to the maximum extent feasible, reduce the impacts of construction on the local site area. The Board also notes that construction and operation of the RBS will cause substantial secondary benefits, such as local taxes, increased payrolls, and increased employment to accrue to the local community and to local governmental entities. The existence of these secondary benefits does not play a part in our determination whether or not to proceed with RBS. However, we think it should be noted that to the extent construction and operation of the RBS do have an adverse impact on the community, these secondary benefits do exist and will serve in some measure to offset this impact.

K. Environmental Monitoring

88. The Applicant has proposed preoperational and operational programs for monitoring chemical, thermal, and radioactive effluents, and for the conduct of aquatic, terrestrial and radiological surveys. (Staff Ex.1, Chap. 6, pp. 6-1 through 6-7) A preoperational hydrological monitoring program is under way on the Mississippi River, where the plant intake and discharge will be located, and on Alligator Bayou and Grants Bayou, local streams that directly receive the runoff from the RBS site. (Staff Ex.1, p.6-1) In addition, the Mississippi River is routinely monitored for hydrological, physical, and chemical data by several agencies. Daily measurements of temperature and river stage, and the weekly or bimonthly sampling for chemical analysis at St. Francisville, Louisiana will be

undertaken by the U. S. Geological Survey. (*Id.*) River flows are recorded by the U. S. Army Corps of Engineers about 50 miles upstream of the site. (*Id.*)

89. The Applicant also conducted a preoperational groundwater hydrology study at the site which included a 72-hour pumpdown test at 2000 gpm. (*Id.*; App. Ex.2, Section 4.1.1.5) In addition, permanent piezometers equipped with automatic recording devices have been located within 1000 ft. of the site to record fluctuating groundwater levels. (Staff Ex.1; 6.1.1.2). The Staff and Applicant calculated maximum levels of drawdown during construction (see ER §4.1.1.6, FES para. 6.1.1.2). The Board agrees with those conclusions and finds the hydrological monitoring program to be adequate.

90. A preoperational onsite meteorological program was initiated by the Applicant. Wind speed and direction are measured at 30 feet and 150 feet; vertical temperature gradient is measured between 30 feet and 150 feet ambient temperature and dewpoint temperature are measured at 30 and 150 feet; and precipitation is measured at ground level. (Staff Ex.1, p.6-1) The Applicant has also undertaken extensive ecological and radiological monitoring programs. Much of the preoperational monitoring will continue until the plant begins operation and some will continue after operation starts, however, details of operational monitoring will be described in detail in the technical specifications for the operating license. (Staff Ex.1, pp. 6.2 through 6.7)

91. The Staff has reviewed the Applicant's preoperational and operational program proposals and proposes that the following *condition* be implemented to minimize adverse environmental effects: The Applicant will be required to conduct proposed monitoring programs, as summarized in Section 6 of the FES, including the modifications proposed by the Staff. (Staff Ex.1, p. iii, Section 6) The Board agrees that the condition is appropriate for the protection of the environment and is to be made a condition to the construction permit.

L. Environmental Effects of Postulated Accidents

92. The probability and spectrum of accidents that could occur at the River Bend Station including associated fission product releases have been analyzed as to potential environmental effects by the Staff and Applicant. (Staff Ex.1; Chap. 7; App. Ex.2, Section 7) This was done in response to the standard accident assumptions and guidance issued as a proposed amendment to Appendix D to 10 CFR Part 50 by the Commission on December 1, 1971. (36 *F.R.* 22851) (*Id.*)

93. In addition, the Staff responded to a Board question as to whether the figures in the FES, Table 7.2 would require some modification as a result of the necessary modification of the River Bend design to reduce calculated doses which was noted in the Safety Evaluation Report (SER). The Staff's response, which this Board accepts (Staff Response to ASLB Question #1; fol. Tr.564 (hereinafter referred to as "Staff Response")), indicates that postulated

accidents are evaluated realistically in the Staff's Final Environmental Statement. (Staff Response pp.1-2) Thus, consequences predicted in this way will be far less severe than those given for the same events in SER's where more conservative evaluations are made for the purpose of assuring that adequate engineered safety features are provided. (*Id.*) The Staff concluded that while the modification to RBS could result in some small reductions to the dose estimates reported in the FES, the changes will not be large enough to warrant new estimates or alter the conclusions presented in the FES. (*Id.*) Therefore, the FES will not require amendment to reflect the Applicant's final modifications when submitted. (*Id.*) The Board agrees with the Staff's conclusion on this matter. In sum, the results of realistic analysis have caused the Staff and Applicant to conclude (ER §7.1 and Table 7.1-3; FES §7.1), and the Board to find, that the environmental risks due to postulated radiological accidents are exceedingly small.

M. Alternatives

94. The Staff conducted a thorough review and evaluation of alternatives to the RBS, including alternative sites, alternative energy sources, alternatives not requiring new generating capacity, and alternative plant designs. (Staff Ex.1; Chap.9; App. Ex.2, Section 9.1) The Staff independently evaluated the Applicant's review of alternative sites within its service area. (*Id.*) The Applicant's investigation identified seven potential plant sites within its service area. (*Id.*) In addition to those sites, the Board has also considered the possibility of underground siting for the River Bend Station on the basis of affidavits submitted to it in consideration of the Staff's and Applicant's pre-hearing motions for summary disposition. As set forth in Section I herein (Introduction), we have concluded that underground siting of nuclear power plants is not presently a viable alternative to the proposed facility. Furthermore, even if present technology rendered underground siting as generally practical today, the particular geology of the River Bend area would militate against its use in this region (FES, para. 9.1.2.3; see also affidavits of Durham and Derr, App. Motion for Summary Disp., Feb. 4, 1975).

95. In order to select the best of the seven sites the Applicant used a rating system based on location, physical characteristics, ecology, transportation, and transmission line requirements for the final evaluation process which resulted in the selection of site "N" as the preferred site for the plant. (App. Ex.2, Section 9.2.2.1; Staff Ex.1, p.9-3) The Staff assessed the alternative sites and found that proposed site "N" and alternative site "R" were the most acceptable based on the economic and environmental analysis. (Staff Ex.1, p.9-5). The Staff further concluded that no alternative site demonstrated a significant overall advantage over the proposed site in terms of environmental and technical costs. (*Id.*) On the basis of the Staff and Applicant's evaluations of the proposed and alternative

sites, the Board finds that the site selected by the Applicant for the RBS and the Staff's evaluation of that site is adequate, and that none of the alternative sites would prove environmentally more acceptable.

96. The Staff independently evaluated a number of alternative energy sources, including alternative methods of generating the necessary electricity, and alternatives such as purchased power, that would not require construction of additional generating capacity. (Staff Ex.1, pp. 9-1, 9-2) Of the energy sources considered, only coal and oil are viable alternative means of generating the electricity required by the RBS service area. (Staff Ex.1, pp. 9-5, 9-6, 9-7) However, the economic comparison clearly favors nuclear power. (*Id.*) Furthermore, coal and oil fired plants are considered to be unfavorable alternatives because of greater land use, higher fuel cost, pollution abatement costs, and greater aesthetic impacts. (Staff Ex.1, p. 9-6) In addition, oil is considered an unfavorable alternative because political and economic factors could disrupt oil supplies and prevent the Applicant from meeting its power commitments. (Staff Ex.1, p. 9-7) Neither the purchase of power, diversity exchange from other neighboring utilities, reactivating or upgrading an older plant, nor operating peaking units as baseload, are viable alternatives to the generating capacity represented by the RBS. (Staff Ex.1, pp. 9-1, 9-2; App. Ex.2, Section 9.2; Tr.518-9, 534-7)

97. Based on a review of alternative plant designs which include eight alternative cooling systems (once-through cooling, round mechanical-draft cooling towers, forced-draft hyperbolic towers, natural draft towers, dry cooling towers, wet-dry towers, cooling ponds, and spray ponds or spray canals) (Staff Ex.1, pp. 9-12 through 9-14), the Board concludes that the round mechanical draft cooling towers selected by the Applicant and evaluated by the Staff (Staff Ex.1, p. 9-12) are environmentally and technically the best choice for the River Bend Station heat dissipation system.

98. The Staff also reviewed the proposed and the alternative intake and discharge systems, alternative chemical, biocide, sanitary waste and transmission systems, and hauling and access road, and concluded in each case that the Applicant's choice was a reasonable one. (Staff Ex.1, pp. 9-15 through 9-18)

99. In sum, the Board concludes that based on the overall evaluation of the environmental, technical and economic parameters, the plant as proposed represents the best selection from feasible alternatives.

N. Need for Power

100. The Applicant's service area is shown in Figure 8.1 of the Staff's FES. The most heavily populated areas, the most industrialized segments, and the predominant load centers in the Applicant's service area are the Baton Rouge, Lake Charles, and Beaumont areas. (Staff Ex.1, p. 8-1) The Applicant is a member of the Southwest Power Pool (SPP), which is composed of 14 major

electric utilities in portions of seven states (Arkansas, Kansas, Louisiana, Mississippi, Missouri, Oklahoma, and Texas).¹² This affiliation was established for reliability purposes, but imposes no obligation on members to make electricity available. (Update, p. 8-1) In fact, the Applicant has indicated that neighboring utilities are scheduling increases to meet their own demand requirements and are not planning to establish substantial surpluses for sale. (*Id.*; App. Ex.2, Table 9.1-1, Fig. 9.1-1) Each member is expected however, on the average, to maintain a minimum capacity reserve of 15% above expected peak load. (Update, p. 8-1)

101. The demand for electric energy in the Applicant's service area is experiencing a period of sustained growth and is expected to continue growing. The Applicant presently serves over 389,000 electric customers, and his annual sales are in excess of 20 billion kilowatt hours. (*Id.*)

102. The peak load demand on the system increased from 1531 Mwe in 1963 to 3896 in 1974 (Update, p. 8-1; App. Ex.2, Supp. 6, Table B). This represents an average annual increase of 14.0% (compound average annual increase of 8.9%). (Update, p. 8-1) While the Applicant's actual 1974 peak load was lower than previously forecast, his current projections reflect a continued increase in demand though at a slower growth rate. (*Id.*) The Applicant's projections of peak demand indicate an increase from 3896 Mwe in 1974 to 7246 Mwe in 1985 for an average annual increase of 7.8% (compound average annual increase of 5.8%). (*Id.*) The Applicant has stated that without the RBS Units 1 and 2 its projected reserves above projected peak load would be 4.6% in 1982 and -9.7% in 1984. (App. Ex.2, Supp. 6, Table C; Tr.396)

103. The Staff has assessed the Applicant's forecast summer peak loads for the years 1975 through 1985 and has concluded that his projections are reasonable and possibly even underestimate the growth in view of his historical load growth rate. (Update, p. 8-1a) This conclusion is based on data presented in the *Electrical World's* 25th Annual Electrical Industry Forecast and in the *Project Independence Report*. (*Id.*) The summer peak load demand on the nation's utilities as a whole is forecast by *Electrical World* to increase at a compound average annual rate of about 5.6% from 1973 through 1985. (*Id.*) The Applicant's forecast summer peak loads represent a compound average annual growth rate of 5.5% over the same 12-year period. It should be noted that the Applicant's compound average peak demand growth rate of 9.2% from 1964 through 1973 was higher than that experienced by the nation's utilities as a whole (7.8%) during this same period. (*Id.*)

104. Several independent alternative strategies are used in the Project Independence analysis to derive electric capacity and consumption projections. Under the "business-as-usual" strategy, wherein world oil prices remain at

¹²Errata and Update of the Final Environmental Statement by Jan A. Norris (hereinafter referred to as "Update"), following Tr. 561, 8-1.

\$11/bbl (FOB United States) and there is no implementation of major changes in the present United States energy policy, the need for electric generating capacity is forecast to increase 6.3% per year from 1973 to 1985. (*Id.*) Under the "demand management" strategy, which involves increasing dependence on domestic coal and uranium resources for electric generation and decreasing dependence on oil and natural gas, the need for electric generating capacity is forecast to increase at 7.4% per year during the same period. (*Id.*) Under an energy conservation strategy without demand management, the compound annual growth rate of electric consumption is forecast to be 5.6%. (*Id.*) This growth rate is the same as the peak demand growth rate forecast for the nation's utilities by *Electrical World* and about the same as that forecast by the Applicant for his system. (*Id.*)

105. In evaluating the River Bend Station, the Staff has also considered the impact of energy conservation and substitution on the Applicant's need for power. During the period from October 1973 to April 1974, consumption of electricity in the Applicant's service area has been less than forecasted. (Update, p. 8-6) However, the Staff has concluded that the current trend toward less consumption and lower peak demand as they relate to the need for power in the RBS service area over the next six to ten years is highly uncertain. (*Id.*)

106. The Staff further concluded that while it was possible that a continued conservation of electric energy use by consumers plus increased electricity prices will have a dampening effect on the growth of electric energy requirements, the possible shifts from present consumer use of alternative forms of energy, such as natural gas and oil, to electricity could accelerate the growth of electric energy requirements. (Update, p. 8-11) We agree.

107. The Applicant's installed generating capacity at the time of the 1974 summer peak load (July) totaled 4564 Mwe. (Update, p. 8-9; App. Ex.2, Supplement 6, Table A) This capacity was provided by 20 gas-fired units and one oil-fired unit. (App. Ex.2, Suppl. 5, Table 1.1-5) Because of the recent decline in the rate of system load growth, the Applicant has re-evaluated his schedule of future capacity installation. Additions to the Applicant's generating capacity now planned for the years 1975 through 1985 include 580 Mwe of oil-fired capacity, 480 Mwe of gas-fired capacity, 1080 Mwe of coal-fired capacity, and 1880 Mwe of nuclear capacity, for a total of 4020 Mwe. (Update, p. 8-9; App. Ex.2, Suppl. 6, Table A) The Applicant's revised schedule delays the expected commercial operation dates for the proposed River Bend Units 1 (940 Mwe) and 2 (940 Mwe) from September 1980 and 1982, respectively, until September 1981 and 1983, respectively. (*Id.*)

108. Because of past and expected future curtailments of natural gas, the Applicant is undertaking an extensive program to convert a number of gas-fired units to oil as their primary fuel. However, conversion of these units to oil is expected to reduce their generating capacity. Derating of the Louisiana Station

because of a reduced steam load is also planned. The deratings planned during the 1975-1985 period total 996 Mwe. (Update, p. 8-10)

109. The Staff has concluded that because of the high degree of uncertainty in forecasting the course of the energy crisis and its ultimate resolution through conservation and substitution measures, the River Bend units should not be delayed beyond the presently scheduled dates (FES §8.5). If demand projections are too high, the construction schedule could be stretched out. Even in that event, the Staff concludes that the proposed nuclear capacity should be added as quickly as possible to reduce the amount of fuel consumed by gas and oil-fired units, releasing these fossil fuels for other uses. Finally, the Staff concludes that since all of Gulf States' installed generating capacity is fossil fired, addition of the nuclear baseload units would provide a mix of generating capacity that would help assure minimum discontinuance of service if the supply of a fuel is interrupted (Update § 8.2.3.6, 8.5). The Board concurs.

110. In view of these considerations, the Board concludes that the proposed River Bend Nuclear baseload generating units should be constructed in the time frame projected to provide the Applicant the generating capacity needed to meet the power demand of its service area, reliability requirements required by each member of the SPP, to permit less dependence on fossil-fueled generating facilities, and to furnish dependable and economical electrical service to its customers.

O. Availability of Uranium

111. In the course of the proceeding, the State and some persons making limited appearances raised the concern as to whether there would be enough uranium available to fuel the facility over its operating lifetime. In response to this concern, the Board conducted an extensive inquiry. Evidence was presented by witnesses for the State, Professor Raphael G. Kazmann and Mr. Morgan G. Huntington, and by Mr. John A. Patterson of the Energy Research and Development Administration (ERDA), who testified on behalf of the Staff. (Statement Before Atomic Safety and Licensing Board by John A. Patterson, hereafter "Patterson Testimony", following Tr.842)

112. This question is a generic one in that it is impossible to look at the uranium necessary for the River Bend Station without examining the entire uranium reserves picture in the United States, if not the entire world, since Gulf States Utilities must economically compete for the available supply. Accordingly, for the sake of a complete record, the Board has examined whether there is reasonable assurance that the uranium necessary to fuel all presently planned reactors over their lifetime would be available. (Gulf States has already obtained firm contracts for the delivery of five million pounds of "yellow cake", which will supply fuel for approximately 16 per cent of the life of the River Bend units (Tr.477).)

113. As of April 1, 1975, there were 55 operable power reactors, 76 in the process of construction, and 105 additional units planned. (Patterson Testimony Figure 1) These 236 reactors would require some 940,000 tons of U_3O_8 through the year 2000 and 1,240,000 tons over their lifetime. (*Id.*)

114. In order to assess the U. S. supply position in uranium, ERDA has broken down the resource categories considering the degree of knowledge available about resources and their economic availability. The category of "ore reserves" has the highest assurance regarding the magnitude and economic availability based upon detailed sampling data. (Patterson Testimony at 4-5)

115. ERDA has subdivided the category of potential resources into three subgroups, probable, possible, and speculative, to reflect the varying nature of the estimates. Probable resources are those contained within favorable trends largely delineated by drilling data within known productive uranium districts. Possible potential resources include those situations that are outside of identified mineral trends but which are in formations and geologic provinces that have been productive. Speculative resources are those estimated to occur in formations or geologic provinces which have not been productive, but which, based on the evaluation of available geologic data, are considered to be favorable for the occurrence of uranium deposits. (Patterson Testimony at 5-6)

116. As of January 1, 1975, the resources estimated total 3.7 million tons through the \$30/lb price category of which 1,980,000 tons are either in the ore reserve category or the probable potential category. This amount would be more than sufficient to fill the 1,240,000 tons lifetime requirements of the 236 reactors committed or planned and yet allow for further nuclear growth. (Patterson Testimony at 8-9) While long range future growth in nuclear power could be affected by uranium supply depending on the success in development of resources, this is largely a question for new entries into nuclear power and the relative economics of available alternative fuels. (Patterson Testimony at 9) With regard to providing expansion of uranium resources to meet anticipated nuclear growth (other than for the 236 reactors which are operable, under construction or planned), the Staff testimony has indicated three methods by which the long term resource position may change by discovery of new low cost resources, utilization of higher cost resources, or importation of foreign uranium. (Patterson Testimony, at pp. 9-23)

117. The Board notes that the electric power costs from nuclear reactors are rather insensitive to increases in uranium prices, since the cost of fuel is only about 25% of the cost of power from a nuclear plant and the cost of uranium only about 20% of that fuel cost. Therefore, the price of natural uranium is only about 5% of the cost of nuclear power. A ten-fold increase in uranium prices would result in less than doubled power cost, i.e., about 50%. (Patterson Testimony at 18-19) Thus, nuclear fuel enjoys an important advantage in that the cost of power from it will tend not to rise substantially even should its fuel cost rise substantially due to dwindling supplies.

118. The State's witnesses were concerned with a term called "duty factor," which they defined as the amount of electricity generated per unit of U_3O_8 . Mr. Patterson testified that although the term "duty factor" was not one used by ERDA and, in fact, the concept had no material bearing or empirical input to ERDA's methods of forecasting uranium requirements, nevertheless, the "duty factor" that he derived from his figures was 32 million kilowatt hours/ton U_3O_8 . Mr. Patterson testified that the calculation of "duty factor" is very sensitive to the assumptions used in the computations. (Tr.903; 911012) The State's witnesses utilized a "duty factor" of 14 million kilowatt hours/ton which they derived from what was apparently a misapplication of information supplied to them. To arrive at the 14 million kilowatt hours of electric energy, they simply took the amount of uranium loaded into U. S. reactors during a certain time period and divided that number into the electric energy produced during that period. (Tr. 912) However, the manner in which the State's witnesses calculated the factor does not take into account the energy still remaining in the uranium at the end of the arbitrary time period used. For example, if the energy remaining in the core is taken into account then, as shown in State's Exhibit 4, the "duty factor" for the Yankee and Dresden-1 reactors are 28.5 and 37.5 million kilowatt hours/ton U_3O_8 as derived by Mr. Patterson.

119. The State's witnesses thus assumed the uranium requirements for each reactor would be two to three times as great as Mr. Patterson calculated. Further, the State's witness, Dr. Kazmann, took issue with reliance on any uranium "resources" (that is, any ore in categories other than "reserves"). (Tr.1054) Under Board questioning, Dr. Kazmann agreed that these two points: whether or not there is usable uranium left in the core and in unloaded fuel after a period of production of electricity, and whether or not one can count on uranium resources as well as reserves, constituted the chief differences between his position and that of Mr. Patterson. (Tr.1138)

120. The Board recognizes that if, indeed, there are neither resources nor recoverable uranium in fuel; all reactors presently planned could not be fueled throughout their lifetimes. However, in view of the facts that State's own Exhibit 4 suggests that recovery is feasible; that reprocessing plants are being built (Tr.1224); and that Mr. Patterson is professionally qualified for and engaged in estimation of uranium resources, while the State's witnesses claim no

such specialized expertise with respect to uranium (Tr.614, 1151),¹³ the Board believes it is likely that all reactors currently built or planned can be fueled, and that the River Bend Station, in particular, should encounter no difficulty due to uranium shortages. The Board finds that the commitment of uranium resources has been adequately treated in the Final Environmental Statement. (Staff Ex.1, p.10-5)

P. Cost-Benefit Balance

121. The Board has considered the environmental, economic, technical and other costs and benefits for the proposed River Bend Station. (FES, at 10-1 to 10-9) The Board finds that the major environmental and other costs are as follows:

(a) Disturbance during construction of approximately 850 acres of the site, some of which may be permanently removed from present uses. Temporary removal of vegetation at the site which will promote erosion. Increased siltation and turbidity in the bayous during construction.

(b) Consumption of Mississippi River water at a rate of 48 cfs due to evaporation in the cooling towers, with a resulting increase of dissolved solids in the returned water.

(c) Dewatering of the terrace aquifer during construction for about 16 months at a rate of 20,000 gpm resulting in a lowering of the water table by approximately 45 feet at the building site. The dewatering will cause some loss of wildlife in the wetlands and temporary pond habitats affected.

(d) Loss of small numbers of aquatic organisms by entrainment and minor losses of benthic aquatic animals from siltation and dewatering activities during construction.

(e) Insignificant impact from the small thermal and chemical discharges to the Mississippi River.

(f) A small risk associated with accidental radiation exposure. (See Section II.L., above.)

(g) Use of approximately 2200 acres of land for transmission lines of which about one-fourth will be in woodland or scenic areas.

¹³The Board gave correspondingly much greater weight to the testimony of Mr. Patterson, an official of the Energy Research and Development Administration, who has been involved in exploring for, estimating, studying and evaluating U.S. uranium resources for over 20 years and in supervising Government research teams performing such work. As Chief, Supply Evaluation Branch, Division of Production and Materials Management, ERDA, it was the specific duty and official responsibility of his government agency and his particular staff to do the kind of study, analysis and evaluation leading to the precise determination the Board was searching for on the subject of present and future domestic uranium availability. Accordingly, his figures and his opinions in this area are entitled to great weight. (John A. Patterson Education and Experience, following Tr. 839)

(h) A number of adverse impacts in the local community, consisting of temporary increased traffic on local roads and suspension of farming, hunting and fishing on the site.

(i) A slight increase in fogging and icing caused by evaporation and drift from the cooling towers.

(j) Approximately 9.5 acres of land committed for a new access road to the site.

(k) The capital and operating costs of the plant.

122. The Board finds that the principal benefit of the proposed facility is the generation of approximately 11.5 billion kilowatt hours per year of electricity, which is required by the Applicant to meet the need for electric power.

123. The Board has included in its cost-benefit analysis the revised radiological impacts as assessed by the Staff in the affidavits of Messrs. Norris and Hewitt, and Dr. Kastner. Based upon the Board's findings on radiological releases in section II.G. above, the Board concludes that the costs associated with radiological impacts are insignificant.

124. The Board finds that the economic benefits from the construction and operation of the proposed facility outweigh environmental, economic and other costs and therefore the balancing of these factors favors issuance of construction permits for the proposed facilities.

Q. Findings of Fact on Site Suitability

125. Applicant and the Staff have evaluated the suitability of the proposed site for the River Bend Station from the standpoint of radiological health and safety considerations. The evaluation has included a consideration of the reactor site criteria identified in 10 CFR Part 100 of the Commission's regulations. (Site Suitability Report by the Office of Nuclear Reactor Regulation, U. S. Nuclear Regulatory Commission (hereinafter "Site Suitability Report"), Tr. following 668, at p. 1-1 and 1-2)

126. Each of the plant's generating units incorporates a nuclear steam supply system consisting of a General Electric Company boiling water reactor. (PSAR §1.1) Each unit is designed for rated thermal output of 2894 Mwt. (PSAR §1.1; Site Suitability Report at 1-1). The site suitability evaluation was conducted for a stretch thermal power of 3039 Mw. (Site Suitability Report at 1-1) Each unit of the facility will use a single cycle forced circulation, boiling water reactor (BWR) and a vapor suppression type of containment, both of which are based on designs introduced by the General Electric Company in 1972. The new containment design concepts are refinements of previously approved boiling water reactor facilities now in operation or under construction. (*Id.* at 1-1)

127. The site for the proposed facility is located on the east bank of the Mississippi River in West Feliciana Parish, Louisiana, approximately 24 miles north-northwest of Baton Rouge, the nearest population center containing more

than 25,000 people. (*Id.*, at 2-1) Baton Rouge's 1970 population was about 166,000. (*Id.*, at 2-1)

128. The Staff has estimated that, by the year 2020, the nearest population center of 25,000 or more persons may be as close as 18 miles (Scotlandville, Louisiana). (*Id.*, at 2-1 to 2-2). The Board concludes that the River Bend site is located far enough from current and potential population centers to satisfy 10 CFR §100.11(a)(3) which requires the population center boundary to be at least $1\frac{1}{3}$ times the low population zone distance.

129. The low population zone distance proposed by the Applicant in the PSAR is 2 miles. (*Id.*, at 2-1) However, the Applicant has recently notified the Staff that the proposed low population zone distance will be changed up to maximum of 4.5 miles. (*Id.*, at 2-2) The nearest population center of 25,000 or more persons, Baton Rouge, Louisiana (1970 population—165,963), is 20 miles south-southeast of the site. (*Id.*, at 2-1) By the year 2020, the nearest population center may be as close as 18 miles (Scotlandville, Louisiana). (*Id.*, at 2-2) The distance to the present and potential population center is well in excess of the minimum distance of one and one-third times the low population zone radius required by 10 CFR Part 100 (*Id.*, at 2-2), even if a low population zone radius of 4.5 miles is ultimately proposed.

130. With respect to the analysis of the 2 mile low population zone distance, no unusual features have been identified which would prevent development of appropriate emergency plans. (*Id.*, at 2-2) The review of features within the potential maximum 4.5 mile low population zone distance has not been completed (the final low population zone will be reviewed for the upcoming radiological health and safety hearing phase). (*Id.*, at 2-3) However, there is reasonable assurance that adequate engineered safety features can be provided to meet the guideline values for accident doses in 10 CFR 100.11(a)(2) at even the smaller 2 mile distance. Although the review of site features within the potential 4.5 mile low population zone has not been completed, the Board concludes that for the currently reviewed minimum 2 mile low population zone there is reasonable assurance that the requirements of 10 CFR Part 100 will be met.

131. The proposed exclusion distance in the PSAR is 610 meters. (*Id.*, at 2-1) The Applicant has recently notified the Staff that this distance will be changed to a 914 meter radius. (*Id.*, at 2-2) There is reasonable assurance that adequately engineered safety features can be provided to meet the guideline values for accident doses indicated in 10 CFR 100.11(a)(1) for even the smaller 610 meter distance. (*Id.*, at 2-1) Therefore, there is of course reasonable assurance that the dose guideline values can be met by the 914 meter exclusion distance. The Applicant owns all the land and mineral rights within the 914 meter radius exclusion area. The Illinois Central Railroad spur line traverses the exclusion area southwest of Unit 2. The Applicant has made arrangements with the railroad in the case of an emergency to terminate shipments into the area. (*Id.*, at 2-2) We conclude that the Applicant has the authority to control all activities within the

914 meter exclusion area and thus can satisfy the requirements of 10 CFR 100.3(a) pertaining to exclusion area control.

132. Based on the above findings, the Board concludes that for the minimum exclusion distance of 914 meters and minimum low population zone distance of 2 miles, there is reasonable assurance that the proposed site is suitable for the location of nuclear power reactors of the general size and type proposed in compliance with the requirements of 10 CFR Part 100. Further, there seem to be no demographic or topographic features which would alter that conclusion should the 914 meter exclusion area and the 4.5 mile low population zone ultimately be utilized.

133. No industrial, transportation or military facilities or roads or Mississippi River traffic in the area of the proposed facility have been identified which could significantly influence the design of the plant or affect safe operation. (Site Suitability Report at 3-1 and 3-2; Tr.691-3). The Staff has concluded that the three small airports located between 5 and 10 miles from the site and the three airways in the vicinity of the site will not be of any significance with respect to the safe operation of the River Bend Station.

134. The River Bend site is located in a region where average and short term atmospheric dispersion conditions are less favorable than most other areas of the country. (Site Suitability Report at 4-1). The Staff concluded, however, that, based upon the one-year onsite meteorological data in the form of joint frequency distributions of wind speed and direction from a 30-foot level and atmospheric stability by the vertical temperature gradient between 30-foot and 150-foot, there are no meteorological characteristics that would preclude site acceptability for reactors of the type and size indicated. (PSAR §2.3; Site Suitability Report at 4-1 and 4-2) The Staff also concluded that the onsite data for this period is reasonably representative of long-term conditions expected at the site (*Id.*) The Board concurs.

135. Plant grade at the River Bend site is 95 feet MSL and the plant protected against flooding to a level of 98 feet MSL. (Site Suitability Report at 5-2). An analysis of condition associated with a Probable Maximum Flood peak on the Mississippi River would result in a maximum postulated river level at the site of 56.5 feet MSL. The Staff analyzed the possibility of flooding of the West Creek along with a failure of the channel due to a hypothetical Operating Basis Earthquake and found that the peak water level for this condition could reach an elevation of approximately 98.5 feet MSL for a few minutes' duration. (Tr. 678-9) Based upon a commitment of the Applicant in the PSAR to maintain all appropriate doors closed during the operation of the plant, the Staff concluded that the flood potential at the River Bend site is not unique compared to other sites that have been licensed by the NRC for reactors of the size and type proposed, and that the Applicant has proposed acceptable means of providing flood protection. The Staff also concluded that there were no unique site features with respect to ground water user contamination potential and that

plant construction and operation will not adversely affect, nor be affected by, regional ground water. (PSAR §10.4; Site Suitability Report at 5-1 to 5-4) The Mississippi River will provide the supply of normal makeup cooling water to the cooling towers. (PSAR §10.4; Site Suitability Report at 5-1) Mechanical draft cooling towers, used for safe shutdown of the plant systems will be located at plant grade and will not be dependent on the river for emergency operation. (PSAR §9.7.5; Site Suitability Report at 5-2).

136. There are no known geotechnical hazards such as surface faulting, landsliding, liquefaction potential, or ground failure attributable to subsidence or collapse brought about by man's activities at the River Bend site or in the region presenting a risk to the proposed facility. (PSAR §2.5; Appendix 2-Q, Site Suitability Report at 6-1; Tr.683-8). The site is located within the Gulf Coastal Plain physiographic province uplands about one mile east of the Mississippi River Alluvial Valley. The immediate site area is blanketed by loess, underlain successively by an inter-glacial terrace, the Port Hickey, consisting of silts and clays, an unnamed transitional deposit (predominantly sands and clayey sands) and the Pliocene-Pleistocene Citronelle formation. The Citronelle is a sand and gravel deposit with sporadic clay layers. The combined thickness of these four deposits ranges from 95 to 300 feet. Mesozoic and additional Cenozoic deposits underlying the site are estimated to be approximately 27,000 feet thick overlying the Paleozoic basement. Surface and subsurface investigations by the Applicant have confirmed the absence of geologic structures in the site area. (PSAR §2.5; Site Suitability Report at 6-1)

137. The Safe Shutdown Earthquake (SSE) at the site will be governed by the seismicity of the Gulf Coast Geosyncline tectonic province. Other nuclear power plants within the tectonic region have been designed for similar seismic conditions. (Site Suitability Report at 6-2) All safety-related structures are to be founded on compacted granular engineered backfill overlying the dense, stable portion of the Citronelle formation. The Staff has concluded that the foundation materials will be adequate for the imposed structural loads under both static and dynamic conditions. (*Id.*) The Applicant has committed to conduct a program to continuously monitor heave and settlement during excavation, construction, and post-construction activities to verify the design bases. (*Id.*)

138. The Staff and Applicant have both concluded there are no geologic features in the site vicinity representing a hazard or potential hazard to the River Bend Station, there is no fluid extraction activity in the vicinity which could adversely affect the facility and that surface faulting is not a potential hazard in the site area. (PSAR §2.5; Site Suitability Report at 6-3)

139. The Staff further found that, based upon their analysis and evaluation of available geologic and seismicity data, including the results of investigations performed by the Applicant, there are no geologic or seismic considerations that

would preclude the acceptability of the site for reactors of the size and type proposed. (Site Suitability Report at 6-3)

140. The Staff concluded that, on the basis of its analysis and evaluation, there is reasonable assurance that the proposed site for the RBS is a suitable location for the two nuclear reactors of the size and type proposed, from the standpoint of radiological health and safety considerations under the Atomic Energy Act and the rules and regulations promulgated by the Commission pursuant thereto. The Board concurs.

III. INTERVENOR'S MOTION TO POSTPONE ISSUANCE OF A "TEMPORARY WORK AUTHORIZATION"

141. By motion dated July 17, 1975, with affidavits attached, the Staff submitted its supplemental evidence reassessing the environmental impact of radiological releases from the proposed plant in light of the new Appendix I to 10 CFR Part 50. By Board Order¹⁴ of August 1, the parties were given until August 16 to file any proposed supplemental findings of fact and conclusions of law limited to the Staff's Appendix I assessment.

142. Although the Intervenor submitted no proposed findings of any kind nor interposed any objection to the Staff's Motion to Admit its Appendix I assessment testimony, on August 19¹⁵ the Board received a document from Intervenor's counsel (without supporting affidavit) entitled "Motion To Postpone Issuance of a Temporary Work Authorization Pending Fulfillment of Compliance With 10 CFR 50 Appendix I." The Motion is more in the nature of argument, but it does respond to the Staff's Appendix I assessment, and the Board believes the merits of the Intervenor's argument should be addressed here. After due consideration, the Motion is DENIED, and the Board's analysis of the merits follows.¹⁶

143. At issue in the present hearings is the question of whether the Board can make those findings required by 10 CFR §50.10(e)(2) of the regulations in order to allow the Director of Nuclear Reactor Regulation to issue a limited work authorization (presumably the document styled "temporary work authorization" by Intervenor in his motion). These findings include all of those required by 10 CFR §51.52(b) and (c) plus a finding that there is reasonable assurance

¹⁴"Order Receiving Staff Evidence, Closing Record and Setting Schedule for Submission of Proposed Findings."

¹⁵The Motion is dated August 12, 1975, and, judging from the attached service list, the document was never served on, or filed with, the Secretary of the Commission or the Public Document Room, pursuant to the Commission's Rules of Practice (10 CFR §2.701(a)). The Board has forwarded the original to the Secretary of the Commission for appropriate filing and has made a copy for its own use.

¹⁶The Board's analysis agrees in substance with the position of the NRC Staff as set forth in its response to Intervenor's Motion.

that the site is a suitable location for a nuclear power reactor of the general size and type proposed. It is not required that the Board make findings at present as to whether the specific design of the River Bend station conforms to the radiological health and safety requirements of 10 CFR 50, the regulations with which Appendix I is associated. Whether or not the specific design can be expected to meet Appendix I requirements will be the subject of further hearings. The matters addressed (albeit obliquely) by Intervenor in paragraphs 2, 3, 5, 6 and 7 of his motion are therefore, in the opinion of the Board, to be ventilated at the forthcoming safety hearings.

144. As to paragraph 4 of Intervenor's motion, which, taken with his paragraph 7, appears to question the reliability of Staff's presentation as an "upper bound" to the radiological impact, while the Board has had some reservations¹⁷ about the details of the Staff's calculations, the Board now feels quite confident that the Staff's results tend to overestimate rather than underestimate the impact. Intervenor presents no evidence to the contrary.

145. As the Board sees its present obligation, a positive finding in the present portion of the proceeding would require a showing that:

1. There is reasonable assurance that the plant can be designed to conform to Appendix I.
2. If the plant is so designed, the radiological impact will be of small weight in the environmental balance.
3. It is unlikely that any costs incurred in modifying the plant to meet Appendix I would be so large as to seriously disturb the cost-benefit or plant-vs-alternatives balances reached in the environmental hearings.

146. Staff's motion addresses itself to all three of these matters and presents affidavits tending to support positive findings. Intervenor offers no refutation.

IV. CONCLUSIONS OF LAW

The Board has considered all documentary and oral evidence presented by the parties. Based upon our review of the entire record in this proceeding and the foregoing findings and in accordance with 10 CFR §50.10(e) and Appendix D to 10 CFR Part 50 of the Commission's regulations, the Board has concluded as follows:

¹⁷The Board's reservations were essentially identical to those of the Board presiding in the case of *Houston Lighting & Power Co.* (Allens Creek Nuclear Generating Station, Units 1 and 2), Docket Nos. 50-466 and 50-467, when that Board was presented with similar affidavits in that case. We hereby take official notice of that Board's questions and the Staff's replies thereto; see Appendices C and D herein [Appendices C and D are omitted from this publication but are available at the Commission's Public Document Room, Washington, D. C.].

(a) The environmental review conducted by the Staff pursuant to the National Environmental Policy Act of 1969 has been adequate;

(b) The requirements of Section 102(2)(C) and (D) of the National Environmental Policy Act of 1969 and Appendix D to 10 CFR Part 50 have been complied with in this proceeding;

(c) The Board has weighed the environmental, economic and other costs of the proposed facility and has independently considered the final balance among conflicting factors contained in the record of this proceeding, and having considered available alternatives in accordance with Appendix D to 10 CFR Part 50 (now 10 CFR Part 51), the Board determines that the appropriate action to be taken (if, after hearing further evidence in the radiological health and safety phase of the proceeding, the Board should then make affirmative findings on issues 1-3 and a negative finding on issue 4 as those issues are set forth in the Commission's Notice of Hearing) is issuance of construction permits¹⁸ for the proposed River Bend Station, Units 1 and 2, subject to the *conditions* for the protection of the environment recommended by the NRC Staff as follows:

(1) Applicant shall take whatever mitigating actions are necessary, including those expressed in §4.5 of the Final Environmental Statement, to avoid unnecessary adverse environmental impacts from construction of the River Bend Station and associated transmission lines.

(2) Applicant will conduct its proposed preoperational monitoring programs as described in Section 6.1 of its Environmental Report and as summarized in Chapter 6 of the Final Environmental Statement including the Staff's recommendations in Section 6.1.4 of the Final Environmental Statement.

(3) Applicant shall establish a control program which will include written procedures and instructions for purposes of controlling all construction activities and additionally, Applicant's program will provide for periodic management audits for the determination of the adequacy of implementation of environmental conditions. Moreover, Applicant will maintain sufficient records of evidence of compliance with all the environmental conditions.

(4) Applicant will prepare and record an environmental evaluation of any construction activities not previously evaluated by the Commission, before engaging in such activities. If there is an indication that such activities could result in a significant adverse environmental impact or that the impact is significantly greater than measured in the Final Environmental Statement, Applicant shall provide a written evaluation of such

¹⁸ Construction permits cannot be issued until and unless the Board makes all of the radiological health and safety findings required under the Atomic Energy Act of 1954, as amended, and the Commission's original Notice of Hearing in this proceeding (issued Oct. 17, 1973; 38 *Fed. Reg.* 29243, Oct. 23, 1973).

activities and shall obtain the prior written approval of the Director of Nuclear Regulation for such activities.

(5) If unexpected harmful effects or evidences of serious damage are detected during construction of the facility, Applicant will provide to the Staff an acceptable analysis of the problem and a plan of action to eliminate or significantly reduce such harmful effects or damage.

(6) Construction of the facility may result at times in temporary closing of the roads in the vicinity of the site. Applicant shall assure that safe and continuous access between St. Francisville and all affected properties is maintained throughout the duration of such closures.

(d) Based upon the available information and review to date, there is reasonable assurance that the proposed site is a suitable site for reactors of the general size and type as proposed from the standpoint of radiological health and safety considerations under the Atomic Energy Act of 1954, as amended, and rules and regulations promulgated by the Commission pursuant thereto.

(e) This Board has thus made all of the findings required by 10 CFR §50.10(e)(2) with the result that the Director of Nuclear Reactor Regulation may authorize the Applicant in this proceeding to engage in limited construction activities for the River Bend Station Units 1 and 2 in accordance with the aforementioned conditions and all other applicable Commission rules and regulations.

V. ORDER

Based upon the Board's Findings and Conclusions, IT IS ORDERED THAT: This Partial Initial Decision shall constitute a portion of the Initial Decision to be issued upon completion of the radiological health and safety phase of this proceeding. IT IS FURTHER ORDERED THAT: In accordance with Sections 2.754, 2.755, 2.760, 2.762, 2.763 and 2.764(a) of the Commission's Rules of Practice, 10 CFR Part 2, this Partial Initial Decision shall be effective immediately and shall constitute the final action of the Commission thirty (30) days after the date of issuance hereof, subject to any review pursuant to the Rules of Practice. Exceptions to this Partial Initial Decision may be filed by any party within seven (7) days after service of this Partial Initial Decision. A brief in support of the exceptions shall be filed within fifteen (15) days thereafter, twenty (20) days in the case of the Staff. Within fifteen (15) days after service

of the brief of appellant (twenty (20) days in the case of the Staff), any other party may file a brief in support of, or in opposition to, the exceptions.

IT IS SO ORDERED.

**THE ATOMIC SAFETY AND
LICENSING BOARD**

Dr. Frank F. Hooper, Member

Frederick J. Shon, Member

Thomas W. Reilly, Esq., Chairman

**Issued at Bethesda, Maryland
this 2nd day of September, 1975.**

**[Appendixes A, B, C, and D are omitted from this publication but are available
at the Commission's Public Document Room, Washington, D. C.]**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

LBP-75-51

ATOMIC SAFETY AND LICENSING BOARD

Frederick J. Coufal, Chairman
R. Beecher Briggs, Member
Lester Kornblith, Jr., Member

In the Matter of
VIRGINIA ELECTRIC & POWER
COMPANY
(North Anna Power Station, Units
1 and 2)

Docket Nos. 50-338
50-339
(10 CFR Part 50, Appendix
D, Section B, Proceeding)
September 4, 1975

Upon untimely petition for intervention in environmental proceeding relating to routing of proposed transmission line, Licensing Board finds (1) that petitioner's explanation for late filing is not convincing; and (2) it has failed to demonstrate the desirability of its participation under the four factors set forth in 10 CFR §2.714(a), particularly inasmuch as it has not shown that its presence is needed to represent an otherwise unrepresented point of view, and it has admitted that its participation would cause delay.

Petition denied.

**INTERVENTION: CONSIDERATION OF ISSUES ASSERTED BY
UNTIMELY INTERVENOR**

Under the Commission's *West Valley* decision (CLI-75-4, NRCI-75/4R 273), even though no good reason is shown for late filing, the four factors listed in 10 CFR §2.714(a) must be considered before a board can deny a petition for intervention.

ORDER

This proceeding is one of those in which construction permits were issued prior to the adoption of Section B of Appendix D to 10 CFR Part 50. A detailed

history of the proceeding may be found in the Partial Initial Decision dated October 30, 1974, and need not be repeated here except to say that the parties¹ agreed on July 9, 1974, to separate from other environmental issues to be tried shortly thereafter an issue concerning the routing of the proposed North Anna-to-Morrisville transmission line and, to the extent relevant, the North Anna to Possum Point line. The reason for isolating this issue was that the Virginia State Corporation Commission was then considering whether or not to authorize the line and the parties desired to delay consideration of that issue here until the State Commission had acted. Those of the Intervenorers who were concerned with the separated issue had no interest in the balance of the environmental matters heard in the fall of 1974 and did not appear. That hearing resulted in the Partial Initial Decision mentioned above which authorized the Director of Regulation to continue in effect construction permits for the units in question with the addition of certain conditions.

On May 15, 1975, the State Corporation Commission issued its Certificate of Public Convenience and Necessity for the proposed line and others. Thereafter this matter was set for an evidentiary hearing to begin August 28, 1975. Because of delays in the hearing sought by Staff and Intervenorers, the hearing date has been advanced to September 19, 1975.

On August 21, 1975, present Petitioner, Rappahannock League for Environmental Protection, Inc., filed a petition to intervene, making its first appearance in this proceeding. Staff and Applicant have opposed the petition while the Intervenorers urge its allowance. Examination of the pleadings and relevant transcript as well as consideration of 10 CFR §2.714 and the Commission's West Valley decision² lead to the conclusion that the petition should be denied.

Petitioner became aware of Applicant's proposal to build a power line through Rappahannock County at least as early as late 1971, (Staff Exhibit "Broyhill letter" following Aug. 28 Tr. p. 579) and a year prior to publication of the Notice of Hearing setting forth the right of interested persons to intervene in the Section B proceeding (37 F.R. 28313, December 19, 1972). It participated through Counsel as an Intervenor in the proceeding before the Corporation Commission and raised the very issues urged here. (Applicant's Exhibit "Motion" following Aug. 28 Tr. p. 579 and Findings and Final Order of the Commission.)³ It now seeks to justify its untimeliness by urging that other

¹ Applicant, Staff, Fauquier League for Environmental Protection and Culpeper County League for Environmental Protection.

² In the Matter of Nuclear Fuel Services, Inc., *et al.*, (West Valley Reprocessing Plant) CLI-75-4, NRCI-75/4R-273.

³ No party has offered the order of the Corporation Commission dated May 15, 1975, but we take official notice thereof.

Intervenors have not made a sufficient effort to develop a record as to lack of need for the line or for a line in the proposed location. Since Intervenors who have been admitted here participated with the Petitioner in the State proceeding, the strengths or weaknesses in their cases must have been apparent to Petitioner as early as the fall of 1973 and the first two months of 1974 or at least as early as January 1975 when its motion (Applicant's Exhibit "Motion" following Aug. 28 Tr. p. 579) was filed. Petitioner's explanation for filing some two and one-half years late is not convincing.

Under *West Valley* even though no good cause is shown for the late filing, factors (1), (2), (3) and (4) of paragraph (a) of 10 CFR §2.714 must be considered.

Petitioner's interests, according to Petitioner, were until lately thought by it to be protected by the presence of other Intervenors (Petition, p. 3). It is not clear why Petitioner has suddenly and belatedly lost faith except that present Intervenors have not, it is said, urged the need for power or power line argument. To the extent that such contentions may now be relevant we perceive no reason to doubt Intervenors' ability to make an adequate record. The need for Petitioner's presence in the proceeding to represent an otherwise unrepresented point of view has not been shown. It is clear that Petitioner's presence will cause delay. Though contending in the petition that its intervention would not require additional time, Petitioner later admitted that there would be delay if the Petition was allowed (Aug. 28, Tr. p. 592). When advised of the possibility that a late Petitioner might have to take a case as it found it, Petitioner's Counsel opined that it wouldn't help to be admitted if no delay for case preparation was allowed. (Id. p. 617). This case is old enough.

For the reasons of untimeliness and the failure to demonstrate the desirability of its participation under the four factors set out in §2.714(a), the petition must be rejected.

Board Members Briggs and Coufal join in this Order and authorize Member Kornblith to sign the same.

IT IS ORDERED that the petition to intervene filed herein on August 21, 1975 by Rappahannock League for Environmental Protection is denied.

It is Further Ordered that the evidentiary hearing heretofore rescheduled to begin on September 10, 1975, be continued so as to begin at 10 a.m. on September 19, 1975, in the Postal Rate Commission Hearing Room, Suite 500, 2000 L Street, N. W., Washington, D. C.

It is further ordered that direct testimony of the parties be delivered no later than September 12, 1975, except that Intervenors' and Staff's testimony on

“reliability” need not be delivered on that date if it is then unavailable, but on the first possible date thereafter..

**THE ATOMIC SAFETY AND
LICENSING BOARD**

Lester Kornblith, Jr.

**Dated at Bethesda, Maryland,
this 4th day of September, 1975.**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

LBP-75-52

ATOMIC SAFETY AND LICENSING BOARD

Marshall E. Miller, Chairman
Margaret M. Laurence, Member
Andrew C. Goodhope, Member

In the Matter of

Docket No. 50-482A

KANSAS GAS AND ELECTRIC COMPANY
AND KANSAS CITY POWER AND
LIGHT COMPANY

September 9, 1975

(Wolf Creek Generating Station,
Unit No. 1)

Upon amended petition for leave to intervene and request for antitrust hearing, Licensing Board finds that (1) petitioner has not corrected the deficiencies in its pleadings previously outlined by the Appeal Board (ALAB-279), and (2) the pleadings do not comply with the Commission's Rules of Practice, specifically 10 CFR §2.714.

Petition denied.

**RULES OF PRACTICE: CONTENTION REQUIREMENT
FOR INTERVENTION**

A petition seeking to raise antitrust matters must describe with particularity and specificity a situation inconsistent with the antitrust laws and the necessary nexus, and a near paraphrase of the statutory language is not sufficient.

ATOMIC ENERGY ACT: ANTITRUST PROVISION

As specified by the Congressional Joint Committee on Atomic Energy (see H.R. Rep. No. 91-1470, 1970), there must be a reasonable probability of contravention of the antitrust laws for the antitrust provisions of the Atomic Energy Act to be invoked by a petitioner. A mere statement of what a complaining party "might" not be able to do if an applicant were granted a facility license, or how an applicant "could" utilize its alleged monopoly with such a license, does not satisfy that standard.

MEMORANDUM AND ORDER

Following a review of the original petition of Kansas Electric Cooperatives, Inc. (KEC) to intervene in the Kansas Gas & Electric Company (KGE) Wolf Creek power facility licensing, the Department of Justice concluded December 10, 1974, that no anticompetitive conduct would be involved under the license as applied for, providing certain further conditions were agreed to by the applicants. The Department advised that an antitrust hearing was not necessary.

After publication of the Department's recommendation in the *Federal Register* December 23, 1974, KEC as an interested party filed a renewed petition to intervene and request for an antitrust hearing, maintaining that the proposed license including the added conditions was inadequate to insure KEC's "effective" and "competitive" participation in the Wolf Creek project. A hearing before the Atomic Safety and Licensing Board was held February 28, 1975. On March 27, 1975, the Board issued a Memorandum and Order granting KEC's petition.¹

KGE appealed the Board's decision April 1, 1975, on the grounds that the KEC petition failed to comply with the Commission's Rules of Practice.²

On June 30, 1975, the Atomic Safety and Licensing Appeal Board reversed the Licensing Board's decision, with the recommendation that KEC be allowed to submit an amended petition. The Appeal Board found the KEC petition lacking in (1) a precise statement of how the alleged anti-competitive situation, existing or likely to be created by the license as applied for, conflicts with relevant antitrust law and (2) adequate explanation of specific relief sought as a result of an intervention proceeding. As to point 1, it should be noted that the Appeal Board did not uphold KGE's contention that KEC had not demonstrated a connection between the alleged anti-competitive situation and the licensing of the Wolf Creek facility. Rather, the Board questioned KEC's pleadings as to how the alleged anti-competitive situation conflicted with antitrust law.

The guide lines for our consideration of this amended petition for intervention are contained in the opinion of the Appeal Board upon review of the original petition.³ It was there held that the Commission's antitrust mandate extends to anti-competitive situations intertwined with or exacerbated by the award of a license to construct or operate a nuclear facility.⁴ The anti-competitive aspects of an unjustified refusal of a utility to wheel power over its

¹ The Board found the renewed petition deficient in "meticulous regard for the specific requirements of the Commission's regulations concerning petitions for intervention." But of KEC's four specific contentions, the Board found at least one sufficient to warrant the requested antitrust hearing and on that basis decided in favor of the petitioner.

² KGE also raised the question of the Commission's jurisdiction in the proceeding. The question of jurisdiction is not applicable to the amended petition.

³ ALAB-279, NRCI-75/6, p. 559 (1975).

⁴ *Id.*, p. 569.

transmission system are not to be ignored in determining whether there is a situation inconsistent with the antitrust laws.⁵ Where necessary to correct an anti-competitive situation created or maintained by a nuclear facility, the Commission may condition the license to require the licensee to wheel a reasonable amount of supplemental power to another utility entitled to access to that facility.⁶

However, the Appeal Board also held that the petition for intervention was insufficient to satisfy the requirements of the Commission's Rules of Practice. A petition seeking to raise antitrust matters must describe with particularity and specificity a situation inconsistent with the antitrust laws and the necessary nexus, and a mere paraphrase of the statutory language is not sufficient. The specific relief sought must also be identified.⁷ The notice pleading permitted under the Federal Rules of Civil Procedure is not adequate, but a petition to intervene must lucidly and unambiguously give notice to the board and adverse parties of the ultimate facts and legal issues asserted.⁸ The petition was held to be too imprecise with reference to how the situation conflicts with the relevant antitrust laws and policies. It was not clear whether the cooperative was asserting a combination in restraint of trade under Section 1 of the Sherman Act, or monopolistic conduct under Section 2. Both statutes could be involved, but their elements are not identical. It could not be clearly determined whether monopoly power in the relevant market was being alleged, or even what the relevant market was.⁹ Unlike other proceedings before the Commission, an antitrust review involves consideration of a well-established field of law covered by many judicial opinions, and statutes which have been on the books for decades. Accordingly, the board should not strain to discern the outlines of contentions in such an amorphous petition, nor speculate as to the meaning of a pleading.¹⁰

Viewed in the light of these principles, the amended petition is no less amorphous and imprecise than its predecessor. Section 1 of the Sherman Act prohibits "Every contract, combination . . . or conspiracy, in restraint of trade or commerce among the several States."¹¹ These terms require concerted action between two or more persons, in distinction from Section 2 which is applicable to individual as well as concerted activity.¹²

⁵ *Id.*, pp. 570-573.

⁶ *Id.*, pp. 573-574.

⁷ *Id.*, p. 574.

⁸ *Id.*, p. 575.

⁹ *Id.*, pp. 575-576.

¹⁰ *Id.*, p. 577.

¹¹ 15 U.S.C. § 1.

¹² *Northern Pac. Ry. v. United States*, 356 U.S. 1, 4 (1958); *Report of the Attorney General's National Committee to Study the Antitrust Laws*, p. 30 (1955).

The amended petition seeks to plead a Section 1 Sherman Act case by alleging that the joint venture of KGE and KCPL in building and operating the project would be a combination in restraint of trade (par. 39(c), p. 15). Even the Staff, which generally supports the intervention petition, could not subscribe to this reasoning. We concur with the following statement at page 10 of the Staff's answer and brief:

Aside from the fact that KEC's petition fails to explain how this joint venture would restrain trade, Staff fails to understand how KEC has been adversely affected by KCPL joining KGE in this project. On the contrary, it would appear that the license conditions agreed upon by KCPL have conferred upon KEC numerous potential benefits of coordination which KEC can obtain regardless of whether it elects to participate in the Wolf Creek project. If KEC's interests are not adversely affected by this joint venture, then Staff submits that under 10 CFR §2.714(b), KEC would be precluded from using a joint venture argument as a contention for intervention.

It should be noted that KEC seeks as appropriate relief herein against KGE the inclusion of Proposed License Condition 5 of KCPL, the joint venturer of whom it complains.

Section 2 of the Sherman Act provides that "Every person who shall monopolize, or attempt to monopolize, or combine or conspire with any other person or persons, to monopolize any part of the trade or commerce among the several States, or with foreign nations, shall be guilty of a felony . . ." ¹³ It has been stated that monopoly as such is not illegal *per se*:

This point is recognized in the wording of Section 2 itself—by the use of the active verb "monopolize"; the Act does not prohibit "monopoly." To monopolize is not simply to possess a monopoly: the word implies some positive drive, apart from sheer competitive skills, to seize and exert power in the market. The same point has been expressed in judicial statements in the form that a monopoly which is "merely thrust upon" an enterprise is not illegal. ¹⁴

The Supreme Court has long defined monopoly as "the power to control market prices or exclude competition."¹⁵ In *United States v. Grinnell Corp.* the court restated this definition:

The offense of monopoly under §2 of the Sherman Act has two elements: (1) the possession of monopoly power in the relevant market and (2) the willful acquisition or maintenance of that power as distinguished from

¹³ 15 U.S.C. §2.

¹⁴ A. D. Neale, *The Antitrust Laws of the U.S.A.* (2d edition, 1970), pp. 92-93. See also Section of Antitrust Law of the American Bar Association, *Antitrust Law Developments* (1975), p. 55.

¹⁵ *American Tobacco Co. v. United States*, 328 U.S. 781 (1946).

growth or development as a consequence of a superior product, business acumen, or historic accident.¹⁶

In order to determine whether monopoly power exists, it is first necessary to define the relevant market in which the power over prices or competition is to be tested, for "without a definition of that market there is no way to measure [a defendant's] ability to lessen or destroy competition."¹⁷ Normally, the market must be identified both in terms of the trade in products or services affected (the product market) and in terms of the geographic areas within which such trade may be limited (the geographic market).¹⁸

The amended petition fails to identify and describe the elements necessary to plead a situation inconsistent with Section 2 of the Sherman Act. For example, the Appeal Board specifically stated the significance and necessity of delineating the relevant market in suit, which "could be any one of a number of possibilities."¹⁹ Despite this clear signal, the relevant product and geographic markets are not pleaded or even alluded to in the amended petition. Does the relevant product market encompass the sale of firm power at retail, firm or as available bulk power at wholesale, transmission services, or the generation or exchange of electric power? Does the geographic market cover the entire state of Kansas where KEC is authorized to operate, or the undefined areas where its 37 member rural cooperatives operate, or some undefined area in southeastern Kansas where KGE operates, or some undefined area in northwest Missouri and northeast Kansas where KCPL operates, or some combination of both areas, or the undefined area where the MoKan Power Pool or some or all of its 7 companies operate? All of these elements are left to conjecture.

Similarly, the amended petition refers in a random manner throughout to the "applicants" in the plural in some places, and to KGE in others.²⁰ There is no clear pleading of the status and relationship of the two applicants in terms of alleged anti-competitive conduct. This imprecision regarding the function of the two applicants was also discussed by the Appeal Board,²¹ and is also ignored in the amended petition.

It is apparent that KEC is attempting to bring itself within the ambit of the *Otter Tail* cases with reference to wheeling.²² However, an examination of those

¹⁶ 384 U.S. 563, 570-1 (1966).

¹⁷ *Walker Process Equip., Inc. v. Food Mach. and Chem. Corp.*, 382 U.S. 172, 177 (1965).

¹⁸ *Brown Shoe Co. v. United States*, 370 U.S. 294, 336 (1962); 1955 Att'y. Gen. Rep. 44.

¹⁹ ALAB-279, NRCI-75/6, pp. 575-6.

²⁰ See Amended Petition, pp. 5-6, 8-11, 12-13, 14-16.

²¹ ALAB-279, NRCI-75/6, p. 575-6.

²² *Otter Tail Power Company v. United States*, 331 F. Supp. 54 (D.C. Minn., 1971), aff'd in part, 410 U.S. 366, 35 L. Ed. 2d 359, 93 S. Ct. 1022 (1973); 360 F. Supp. 451 (D.C. Minn., 1973), aff'd, 417 U.S. 901, 41 L. Ed. 2d 207, 94 S. Ct. 2594 (1974).

cases as well as the original complaint is illuminating. The *Otter Tail* cases involved a civil action for an injunction by the United States against a public utility under Section 2 of the Sherman Act, for refusing to sell electric power at wholesale, and refusing to wheel electric power to municipalities it formerly served at retail. Monopolization of commerce in violation of Section 2 was the basis of the suit. Otter Tail operated an integrated power system ranging from generation to substantial sales at retail. It was interconnected with other electric systems, including the hydroelectric generation of the U.S. Bureau of Reclamation dams. Otter Tail purchased considerable hydro power from the Bureau, and also wheeled hydro power to the latter's preference customers. It was undisputed that the relevant product market was the retail sale of electric power. The geographic market was found to be the 465 towns served by the utility, comprising 91% of the relevant market. Most of the bulk power supply lines (115 Kv.) in the Otter Tail area were owned by the Bureau. Otter Tail transmitted this power over its own subtransmission (34.5 Kv. to 69 Kv.) lines to local retail distribution systems, where it was stepped down for delivery by distribution lines (12.5 Kv. or less) to customers. About two-thirds or 4,036 miles of Otter Tail's total line mileage consisted of 41.6 Kv. subtransmission lines, from which it was found to dominate in the operation of subtransmission lines in the area. When Otter Tail refused to sell bulk power to several municipalities, they found 4 named alternative suppliers, including the Bureau, which were willing and able to furnish wholesale power. Such power could only be delivered over Otter Tail's subtransmission lines, as it was economically unfeasible to build the required subtransmission. Otter Tail both refused to sell wholesale power, and to wheel bulk power from the other available suppliers, thereby completely precluding the municipalities from obtaining bulk power from any source. Otter Tail did not deny that its purpose in refusing to deal with municipalities desiring to establish their own systems was to protect itself in its position of selling power at retail to towns in its service area, but urged the adoption of a Rule of Reason justifying its conduct as necessary in order to prevent the erosion of its integrated system. Upon these facts the court found monopolization in the relevant market and intentional anti-competitive conduct to exclude competition, prohibited by Section 2 of the Sherman Act.²³

²³331 F. Supp. 54-61. See Note, *Refusals to Deal by Vertically Integrated Monopolists*, 87 Harv. L. Rev. 1720 (1974); Hale and Hale, *The Otter Tail Power Case: Regulation By Commission or Antitrust Laws*, 1973 Sup. Ct. Rev. 99; Stanton, *The Demise of Traditional Antitrust Law Concepts*, 44 Miss. L. J. 852, 858-60 (1973); Van Cise, *The Supreme Court and the Antitrust Laws: 1972-1973*, 18 Antitrust Bull. 691 (1973); *The Supreme Court, 1972 Term*, 87 Harv. L. Rev. 55 271 (1973); Comment, *Otter Tail and Its Import for Regulated Utilities*, 9 Wake Forest L. Rev. 407, 417-21 (1973); 5 Seton Hall L. Rev. 92, 101-3 (1973); 47 Temple L. Q. 370 (1974).

The complaint in the *Otter Tail* case,²⁴ although drafted under the more lenient pleading provisions of the Federal Rules of Civil Procedure, nevertheless sets forth pertinent facts with a reasonable degree of specificity as follows:

...4. The electric power industry is comprised generally of three functional levels: production, transmission and distribution. Production encompasses the conversion into electric power of energy obtained from combustion of fossil fuels, from moving water, or more recently, from atomic reaction. Transmission refers to the transportation of electric energy via a network of high voltage lines from points of generation to distribution areas. Distribution involves the delivery and sale of electric current to ultimate consumers. Although most large electric utilities, including Otter Tail, perform all three functions, some companies perform only one or two of such functions. For example, the Bureau of Reclamation of the Department of Interior (hereinafter "the Bureau") and many electric cooperatives restrict their activities to the production and transmission of electric power. Also, many municipal power systems and electric cooperatives engage solely in distribution of electric energy to ultimate consumers.

5. Otter Tail operates an integrated electric power system in western Minnesota, northeastern South Dakota and eastern North Dakota. It maintains generation facilities having a capacity of approximately 280,000 kilowatts. In addition, the company purchases substantial amounts of electric power produced by the Bureau.

6. Otter Tail has 5,900 miles of transmission lines which blanket its tri-state area of operations. These lines cross state boundaries and carry power produced both by Otter Tail and the Bureau. Although various electric cooperatives have transmission lines within the tri-state Otter Tail area, Otter Tail's network of high voltage lines is the dominant factor in the transmission of power in the area. Bureau-generated electric power is transmitted ("wheeled") by Otter Tail to certain Bureau customers pursuant to an agreement between the Bureau and Otter Tail. In addition, Otter Tail has agreements with various electric cooperatives under which each party agrees to wheel electric power over its lines for the other. In 1966, Otter Tail wheeled a total volume of 523,704,610 kilowatt hours of electric power, from which it derived revenues of \$508,613.

...8. Otter Tail distributes electric power at retail in approximately 464 towns, which constitute the vast majority of towns in its service area. (Electric power distribution in rural areas within Otter Tail's service area is performed principally by electric cooperative; however, the latter are

²⁴ Reprinted in Prelicensing Antitrust Review Hearings, 91st Cong., 1st Sess., Pt. 1, pp. 78-9 (1969).

restricted by law from distributing electric power within towns.) In 1967 Otter Tail sold 867,621,740 kilowatts of electric energy in the 464 towns, from which it derived revenues of \$25,179,979.

9. In 1966 the municipal electric power systems of 18 towns located within the Otter Tail service area purchased all or part of their electric power requirements at wholesale from the Bureau, 122,864,314 kilowatt hours of electric energy were wheeled over Otter Tail transmission lines part of the distance between Bureau generation facilities and the municipal systems.

The *Otter Tail* pleading contrasts rather starkly with this amended petition. Here there is no description of the nature or extent of KGE's transmission system, nor any allegation that it is engaged in the transmission business or has the capability so to do. At page 10 of the amended petition it is alleged that the "Applicants have created and maintained their monopolistic or dominant positions in a manner inconsistent with the antitrust laws, specifically Sections 1 and 2 of the Sherman Act." This purely conclusory allegation is not explained in any way, nor is there any description of how a monopolistic position in any market was created or maintained, or by whom. Since the following paragraph states that KEC generates no electricity and does not compete with either applicant, there apparently was no anti-competitive conduct specifically directed toward KEC. The cooperative has no transmission or generation, and apparently has never been a customer or competitor of either applicant. The meaning or basis of this paragraph is left to conjecture.

The amended petition uses such terms as "power exchange market" and "wholesale power supply market" in describing what it would be excluded from by KGE.²⁵ However, these terms or their meaning are nowhere explained. As used in the industry, a power exchange market has been described as the method, usually by pooling, whereby two or more integrated utilities exchange a cluster of services to achieve coordination. It is not a market as such, wherein a small utility can simply buy wholesale or bulk power. Rather, all of the pool members exchange as available such things as surplus capacity, economy energy, dump hydro energy, seasonal power, and diversity exchange power. In addition, they may engage in the staggered construction of generating units, coordination of transmission facilities, equalized reserve sharing, development of maintenance outage schedules, and the sharing of spinning reserves. Obviously if KEC has no other generation or transmission, it has no services to pool or to exchange in a power exchange market, and hence the allegation is meaningless in this case.

It does not appear that KGE has ever refused to sell wholesale power, as in Otter Tail. Rather, paragraph 35 of the amended petition (p. 13) asserts that "in such circumstances, KEC might not be able to purchase supplemental power on competitive terms, since it would have no option but to purchase that power from KGE at KGE's price." This allegation wholly fails to state that there are

²⁵ Amended Petition, pp. 13, 15.

any other bulk power suppliers willing or able to sell wholesale power to KGE, as was the situation in *Otter Tail*. It also ignores the effect of the approval of KGE rates by the appropriate regulatory agencies. A mere statement of what the cooperative "might" not be able to do is insufficient. To the same effect is the assertion at page 15 that KGE "could" utilize its monopoly in transmission to bar KEC from the unidentified power exchange market. This falls somewhat short of the reasonable probability standards regarding contravention of the antitrust laws, as set forth in the Joint Committee on Atomic Energy report reflecting the legislative history of the 1970 amendments.²⁶

KGE has not refused all wheeling. It has offered to sell an 8% ownership interest in the nuclear facility to KEC, and to wheel such generated power to the cooperative. In addition, it has agreed to wheel in or supply bulk power to KEC when the nuclear plant is inoperative, and to wheel in bulk power to the extent that KEC's share of the nuclear-generated power is wheeled out in any calendar year. This provision was deemed sufficient by the Attorney General to preclude any anti-competitive consequences, and hence no preclearing antitrust review was recommended in the letter of advice to the Commission. In addition, as noted above by the Staff, the conditions agreed to by Kansas City Power & Light Company confer upon KEC "numerous potential benefits of coordination." Accordingly, the situation of KEC differs materially and substantially from that which was obtained in *Otter Tail*.

Taking into consideration the guidelines enunciated by the Appeal Board remanding the matter to this board, it must be concluded that the Amended Petition of Kansas Electric Cooperatives, Inc. for Leave to Intervene, and Request for Antitrust Hearing has not corrected the deficiencies outlined by the Appeal Board, nor does it comply with the Commission's Rules of Practice, specifically 10 CFR §2.714.

It is THEREFORE ORDERED that such petition be denied.

THE ATOMIC SAFETY AND
LICENSING BOARD

Margaret M. Laurence, Member

Andrew C. Goodhope, Member

Marshall E. Miller, Chairman

Dated at Bethesda, Maryland,
this 9th day of September, 1975.

²⁶ H. R. Rep. No. 91-1470, reprinted in U. S. Code Cong. Serv. 4994-5, 5011 (1970).

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

LBP-75-53

ATOMIC SAFETY AND LICENSING BOARD

John M. Frysiak, Chairman
Frank F. Hooper, Member
Gustave A. Linenberger, Member

In the Matter of

Docket Nos. 50-440
50-441

DUQUESNE LIGHT COMPANY,
OHIO EDISON COMPANY,
PENNSYLVANIA POWER COMPANY,
THE CLEVELAND ELECTRIC
ILLUMINATING COMPANY, and
THE TOLEDO EDISON COMPANY

September 9, 1975

(Perry Nuclear Power Plant,
Units 1 and 2)

Upon application for preconstruction permit authorization to install structural foundations (LWA-2), and upon consideration of new information concerning issues dealt with in previous partial initial decisions (LBP-74-69 and LBP-74-76), Licensing Board issues a supplemental partial initial decision on site suitability and environmental matters, and on safety issues related to activities under an LWA-2, making factual determinations requisite for the issuance of an LWA-2 subject to a further showing that certain anomalous geologic structures discovered after the close of the evidentiary hearing do not affect the suitability of the site, and imposing certain conditions. Board also denies Staff's motion to hold intervenor in default on the need-for-power issue.

TECHNICAL ISSUES DISCUSSED: pressure relief underdrain system (permanent dewatering system)

SUPPLEMENTAL PARTIAL INITIAL DECISION— SITE SUITABILITY AND ENVIRONMENTAL MATTERS

I. BACKGROUND

1. Pursuant to an Atomic Safety and Licensing Board (Board) Partial Initial Decision¹ and Supplemental Partial Initial Decision,² the U. S. Atomic Energy Commission issued a Limited Work Authorization (LWA-1)³ to The Cleveland Electric Illuminating Company (CEI) as agent for Duquesne Light Company, Ohio Edison Company, Pennsylvania Power Company, The Cleveland Electric Illuminating Company and The Toledo Edison Company (Applicants) to conduct limited construction activities within the scope of 10 CFR 50.10(e)(1) at the site of the Perry Nuclear Power Plant (PNPP) located on Lake Erie in Lake County, Ohio.

2. Thereafter, on December 4, 1974, Applicants filed a Motion for Determination pursuant to 10 CFR 50.10(e)(3) for authorization to install structural foundations, including any necessary subsurface preparation for structures, systems and components that were subject to the provisions of Appendix B to 10 CFR Part 50 (LWA-2).⁴

3. On December 9, 1974, Applicants submitted Amendment No. 22 to the PNPP's Preliminary Safety Analysis Report (PSAR). The Amendment proposed a change to a prior design criterion to design safety-related buildings and structures to withstand the effects of the hydrostatic pressure resulting from a groundwater level of 618 feet, mean sea level (msl). Concurrent with changing this design value, the Applicants proposed the installation of a pressure relief

¹Partial Initial Decision—Environmental and Site Suitability, LBP-74-69, RAI-74-9, 538 (September 18, 1974).

²Supplemental Partial Initial Decision—Site Suitability and Environmental Matters, LBP-74-76, RAI-74-10, 701 (October 20, 1974).

³See letter dated October 21, 1974, from Roger Boyd of the Atomic Energy Commission's Directorate of Licensing to Mr. Harold L. Williams, Cleveland Illuminating Company. The LWA-1 scope of work was supplemented by Mr. Boyd's letter of November 8, 1974, to Mr. Williams. The authorized activities included preparation of the site, installation of temporary construction support and service facilities, and construction of certain structures, systems and components which were not subject to the provisions of Appendix B to 10 CFR Part 50. The complete scope of LWA-1 work is set forth in Appendix A to this decision. [Appendix A is omitted from this publication but is available at the Commission's Public Document Room, Washington, D. C.]

⁴See Appendix B to this Decision. [Appendix B is omitted from this publication but is available at the Commission's Public Document Room, Washington, D. C.]

underdrain system⁵ within the excavation of the plant structure to be used during the lifetime of the Perry Plant in order to maintain the groundwater level permanently below elevation 568.0 feet, msl.

4. On January 20, 1974, the Acting Director, Office of Nuclear Reactor Regulation of the Nuclear Regulatory Commission⁶ (NRC) issued an Order to Show Cause⁷ why all work activities under the LWA-1 should not be suspended pending completion of the NRC's review and evaluation of the environmental and site suitability considerations raised by Amendment No. 22 to the PSAR. The Order temporarily suspended all work activities under the LWA-1.

5. Subsequently, on January 24, 1975, the NRC Staff filed a Motion to Reopen the Record on Environmental and Site Suitability Matters, alleging that Amendment No. 22 proposed "novel hydrological and plant design features that might have affected the issuance of the LWA-1, if the change had been known at that time".⁸

6. Applicants replied to the NRC Staff's Motion to Reopen the Record on February 4, 1975, requesting that the Board deny the NRC Staff's motion. In a separate filing, Applicants answered the Order to Show Cause contending that inasmuch as the NRC Staff did not challenge the site suitability other than with respect to the permanent dewatering system, suspension of all LWA-1 work activities was unjustified; and because of the partial completion of some activities at the time of the Order, the suspension could cause environmental and safety hazards. Applicants filed a motion with the Board requesting that the Board issue an order directing the Acting Director to lift immediately the temporary suspension of all LWA-1 work, with the exception of the authority to excavate the lower till on the Perry site.

7. On February 4, 1975, the Coalition for Safe Electric Power (Coalition) filed a motion supporting the NRC's Staff Motion to Reopen the Record on Environmental and Site Suitability Matters and filed a countermotion also to reopen the record with respect to the need for power. The Coalition contended that, in light of announced changes in construction schedules of CAPCO generating plants and lower short-term reported electricity sales, a reopening of the record was warranted on the need for additional generating capacity.

⁵ Also referred to herein as the "permanent dewatering system", "dewatering system", and "underdrain system".

⁶ In accordance with the Energy Reorganization Act of 1974, 88 Stat. 1233, the Atomic Energy Commission has been abolished and its regulatory responsibilities have been assumed by the Nuclear Regulatory Commission.

⁷ 40 *Fed. Reg.* 3807 (January 24, 1975). The Show Cause Order indicated that based on a preliminary review of Amendment No. 22, the NRC Staff had questions concerning the structural integrity and performance characteristics of the proposed dewatering system. The NRC Staff also advised that the use of the permanent dewatering system might give rise to a number of environmental considerations which had not been previously reviewed and evaluated by either the NRC Staff or the Licensees.

⁸ NRC Staff's Motion, page 4, para. 5.

8. Pursuant to the Board's January 30, 1975 Notice and Order for Prehearing Conference,⁹ a meeting was held between representatives of the Applicants, the NRC Staff and the Coalition on February 12, 1975, to determine the issues to be heard and proposed schedule with respect to: (a) the Order to Show Cause, (b) the NRC Staff's Motion to Reopen the Record on Environmental and Site Suitability Matters, and (c) Applicants' Motion for Determination Pursuant to 10 CFR 50.10(e)(3). Applicants agreed to withdraw their Motion to Lift Order of Acting Director, Office of Nuclear Reactor Regulation, Temporarily Suspending All LWA-1 Work. In addition, Applicants agreed to provide a witness to address the effect of schedule changes in CAPCO Units and 1974 sales of electricity on the need for the PNPP. Applicants agreed to provide informal discovery to the Coalition on the need for power matters.

9. On February 18, 1975, the Acting Director issued a Modification of Order to Show Cause which in part lifted the suspension of work activities. The Acting Director concluded that none of the environmental impacts discussed in the Order to Show Cause would change the ultimate conclusion of the benefit-cost balance for PNPP, based upon the affidavit of Lewis G. Hulman attached to the NRC Staff's Motion to Supplement the "Commission's Staff's Motion to Reopen the Record on Environmental and Site Suitability Matters", and based upon a worst case analysis.¹⁰

10. Subsequently, on February 24, 1975, the Acting Director issued a Further Modification of Order to Show Cause reinstating authorization for site excavation for facility structures down to the lower till. The Acting Director noted that the NRC Staff had concluded that the design criteria and preliminary design of the Applicants' proposed underdrain system (a) may be considered to be generally acceptable; and (b) would hydrologically limit any significant environmental impacts to the site itself.¹¹

11. On February 28, 1975, the Board issued a Prehearing Conference Order that approved the following specific issues stipulated to by the Parties on February 12, 1975, as reiterated at a prehearing conference on February 19, 1975:

- (a) The environmental, site suitability, and safety issues associated with the Applicants' proposed permanent dewatering system;
- (b) Whether, pursuant to 10 CFR 50.10(e)(3), there are any unresolved safety issues relating to the activities described in Attachment A to

⁹40 *Fed. Reg.* 5410 (1975).

¹⁰40 *Fed. Reg.* 8261 (1975).

¹¹40 *Fed. Reg.* 8607 (1975). In orders issued on February 18 and 24, 1975, the Acting Director reinstated all LWA-1 activities, except for the excavation for facility structures down to the lower till.

Applicants' December 4, 1974, Motion for Determination Pursuant to 10 CFR 50.10(e)(3), that would constitute good cause for withholding authorization to conduct such activities; and,

(c) The effect, if any, of schedule changes in CAPCO units and 1974 sales of electricity on the need for the Perry Units.

12. The Advisory Committee on Reactor Safeguards (ACRS) issued a letter report to the NRC on May 12, 1975, on its review of the PNPP's proposed underdrain system. The report stated that the ACRS believed that the proposed system is acceptable and can be constructed without undue risk to the health and safety of the public.

13. On June 19, 1975, the Director of the Office of Nuclear Reactor Regulation issued an Order Rescinding Order to Show Cause,¹² which reinstated the only outstanding LWA-1 work activity, excavation into the lower till. This decision was based on the NRC Staff's conclusion that the proposed dewatering system is acceptable and that its incorporation into the design of the Perry facility does not affect the suitability of the Perry site.

14. On June 2, 1975, the Board issued a Notice and Order for Evidentiary Hearing to be held on June 23, 1975.¹³ Pursuant to the published notice, the evidentiary hearing took place in Cleveland, Ohio, on June 23-24, 1975. During the course of the hearing, the Applicants amended their December 4, 1974 Motion for Determination Pursuant to 10 CFR 50.10(e)(3) by deleting the request for authority to carry out items C.1.b, C.1.c, C.1.d and C.1.e (listed at Appendix B) pertaining to the Reactor Building.¹⁴

15. The record of the hearing includes direct testimony of witnesses for Applicants and the Staff. The Coalition and the Ohio Power Siting Commission submitted no direct testimony, but did cross-examine the witnesses. Four limited appearance statements were made and responses to concerns raised therein were made part of the record.¹⁵ The following exhibits were received into evidence:

Applicants' Exhibits:

Exh. 16—Letters from the Applicants to the Staff with the following dates: January 31, 1975, March 13, 1975, March 27, 1975, April 3, 1975, April 21, 1975, April 29, 1975, May 15, 1975, May 16, 1975 and May 29, 1975, 2 vols., Tr. 2686-2687, 2705, 2804-2805;

Exh. 17—Pages of the PSAR and Amendment No. 23 to the PSAR referred to in Applicants' Direct Testimony on the Perry Nuclear Power Plant Units 1 and 2, Pressure Relief Underdrain System. Tr. 2687-2688, 2804-2805.

¹²40 *Fed. Reg.* 27303 (June 27, 1975).

¹³40 *Fed. Reg.* 24377 (1975).

¹⁴Tr. 2562-2564.

¹⁵Tr. 2661-2663, 2693, 2704, 2793-2794.

16. On August 28, 1975, the Board was advised by letter from the NRC Staff Counsel that on August 25, 1975, the NRC Staff was informed by the Cleveland Electric Illuminating Company that in excavating the Perry facility under the LWA-1, two anomalous structures in the underlying bedrock were found: (1) a thrust fault in the shale that extends for an undetermined distance found under the proposed location for the reactor building, and (2) "folding" in the Chagrin shale under the proposed location of the Unit 2 reactor building. Counsel allowed that NRC Staff believes that these features may affect both the foundation design and the design of the dewatering system, although, at the present time, there is not sufficient information available to determine the impact, if any, of these features.

17. On September 2, 1975, the Board initiated a conference call to inquire into the significance of the two reported anomalies to the issuance by the Board of its decision on the Applicants' request for the LWA-2.

18. Counsel for the Applicant stated his view that the anomalies may be relevant to the LWA-1 but not to the requested LWA-2. He allowed further that the investigation of the anomalies would be an appropriate subject for consideration at the forthcoming hearing on health and safety issues.

19. Counsel for the NRC Staff agreed with Applicants' Counsel that there seemed to be no reason why the Board could not proceed with the issuance of its LWA-2 decision. He indicated that the NRC Staff would not issue the LWA-2 until it had completed its investigation of the anomalies.

21.* Counsel for the Ohio Power Siting Commission indicated that inasmuch as the State had not taken a position on the dewatering or site suitability issues based on seismic concerns, it takes no position on the appropriateness of the Board's forthcoming decision in light of the reported anomalies.

22. The representative of the Intervenor Coalition for Safe Electric Power noted that the Coalition had not had time to evaluate the reported anomalies, but that, in view of the NRC Staff's commitment to investigate the reported anomalies, it had no objection to the Board's issuing a decision on LWA-2 at this time.

II. FINDINGS OF FACT

A. Impact of Applicants' Proposed Pressure Relief Underdrain System Upon Environmental, Site Suitability, and Safety Considerations

23. Applicants' proposed pressure relief underdrain system (also referred to as the permanent dewatering system) is described in Amendment No. 22 to the Applicants' PSAR, submitted on December 9, 1974; in PSAR Amendment No. 23, an updated, more complete description, submitted on March 5, 1975; in

*There is no paragraph 20.

Applicants' Underdrain Testimony following Tr. 2660; and in Staff's Supplement 2 to the PNPP SER (April 1975), following Tr. 2769.

1. Environmental Effects of the Permanent Dewatering System

24. Four potential environmental concerns were identified by the Staff's review of the Applicants' proposal to use an underdrain system to permanently lower the groundwater table in the primary plant building area during construction and throughout the plant lifetime:

(a) Groundwater drawdown influence could possibly extend offsite and affect nearby wells;

(b) Vegetation could possibly be affected by a permanently lowered groundwater table;

(c) Continual release of collected groundwater to the surface drainage system could possibly affect vegetation, biota, water quality, erosion, and sediments; and

(d) The rate of shoreline erosion along Lake Erie could possibly be affected by a permanently lowered groundwater table.¹⁶

25. Relative to item (a) above, the Applicants performed pumping tests designed to determine the size of the area around the plant that would be affected by the dewatering system. The results of those tests indicated that the groundwater level will not be affected beyond 300 feet from the plant structures.¹⁷ In addition, the Staff independently analyzed the effect on groundwater flow at the hydrologic boundaries of the site (Lake Erie to the north, a major stream diversion to the southwest, and a minor stream diversion to the east). The groundwater flow field, drainage system, and therefore, the excavation will be influenced and essentially bounded by these hydrological features. The Staff's and Applicants' analyses also confirmed that there will be no significant effects at offsite wells or at the site boundaries.¹⁸ As additional protection, in order to detect effects in excess of those expected, the Applicants have made a commitment to install piezometer arrays to check the drawdown of the water table at distances up to 1000 feet (where possible) in four different directions from the perimeter of the plant.¹⁹ Subject to the condition of the above commitment, the Board finds that there will be negligible drawdown effects at offsite wells and at the site boundaries.

¹⁶ Staff Supplemental Testimony on Environmental Effects of the Permanent Dewatering System, by Lewis G. Hulman (hereafter Hulman Testimony) following Tr. 2752, p. 1.

¹⁷ Applicants' Underdrain Testimony, p. 19.

¹⁸ Testimony of Staff Witness Lewis G. Hulman, following Tr. 2752 (Hulman Testimony), p. 5.

¹⁹ Applicants' Underdrain Testimony, p. 21.

26. Regarding item (b) above, the limited zone of influence of the underdrain system is likely to affect only vegetation in the immediate vicinity of the plant facilities. Most of the plant site vegetation in the plant construction area has been removed during site grading. A few trees along the bluff overlooking the lake may be exposed to a lowered water table. However, those trees are already exposed to a lowered water table due to the effects of the bluff.²⁰ In addition, the trees along the bluff are distant enough from the construction area such that they should be unaffected by drawdown. Applicants plan to revegetate the disturbed site area upon completion of construction. Any plantings for areas near the buildings can either be irrigated or selected with the lower groundwater table in mind.²¹ Therefore, the Board finds that dewatering will not adversely affect the vegetation onsite.

27. Because of subsequent design changes to the underdrain system, item (c) above has been mooted. Groundwater collected in the underground sumps is now destined to be discharged into the upper gravity flow system for ultimate discharge into Lake Erie.²²

28. Turning to item (d) above, it is noted that the bluffs that form the shoreline at the plant site are currently being eroded, primarily by a process of undercutting due to wave action and ice scour followed by slumping of the overlying material due to shear failure.²³ The influence of the permanently lowered groundwater table at the plant should be insignificant at the present location of the shoreline.²⁴ The bluff is presently receding at an average estimated rate of less than two feet per year. Applicants propose to implement shore protection measures if and when the edge of the bluff recedes to within 250 feet of safety or other necessary structures²⁵ (presently the closest safety class structure is 430 feet from the bluff).²⁶ A lowered groundwater table at the bluff would result in a reduced seepage rate through the face of the bluff and so delay incipient failures.²⁷ Although the Staff's witness Hulman was uncertain whether the effect on shoreline erosion due to the drawdown of groundwater by the underdrain system would be harmful or beneficial, he did indicate that there would be no measurable change in shoreline erosion attributable to the drawdown of groundwater due to the underdrain system.²⁸ Thus, with regard to environmental concern (d), above, the Board finds that the effect of the

²⁰ Applicants' Underdrain Testimony, p. 21.

²¹ Hulman Testimony, p. 6.

²² Hulman Testimony, p. 2.

²³ Applicants' Underdrain Testimony, p. 24.

²⁴ Hulman Testimony, p. 6.

²⁵ Partial Initial Decision, LBP-74-69, RAI-74-9, p. 574.

²⁶ Hulman Testimony, p. 6.

²⁷ *Id.*, p. 7; Applicants' Underdrain Testimony, p. 25.

²⁸ Tr. 2755.

permanently lowered groundwater table on the rate of shoreline erosion along Lake Erie should be negligible.

29. Since the underdrain system was not specifically considered at the time of the environmental hearing, the Board has reconsidered the overall cost-benefit analysis for the PNPP with the dewatering system included. The overall environmental impact of the underdrain system is found by the Board to be insignificant, as noted in the foregoing. The additional cost of the PNPP due to the underdrain system will be \$37.2 million.²⁹ This is a small (approx. 3%) additional cost compared to the estimated cost for both units of \$1.234 billion.³⁰ This cost is balanced against the principal direct benefit of 16.9 billion kilowatt hours of electricity per year.³¹ Based on the above facts, the Board finds that the addition of the permanent underdrain system does not significantly alter the conclusion that the benefits of the PNPP far exceed the expected environmental costs.³²

2. Site Suitability and Safety Issues Associated with the Underdrain System

30. The Staff, in Supplement No. 2 to the PNPP SER, concluded that the underdrain system is acceptable assuming satisfactory resolution of five outstanding items pertaining to said system:

- (a) Adoption of a design basis groundwater level of 594 feet, msl,³³
- (b) Specification of limiting permeability and strength requirements for the porous concrete blanket,³⁴
- (c) Assurance of protection against potential explosions in the dewatering system;³⁵
- (d) Assurance of protection against clogging of the porous concrete blanket and degradation of the foundation materials,³⁶ and,
- (e) Radiation monitoring of the effluent from the permanent dewatering system.³⁷

31. With respect to issue (a), it was necessary to select an appropriate design basis groundwater level in order to assure that a postulated seismic event would not produce dynamic instability. The most severe of the postulated accidents

²⁹ Exhibit 16, letter of January 31, 1975 at Attachment 1, Table 2, Tr. 2803.

³⁰ Tr. 2802.

³¹ *Ibid.*; FES, p. 10-8.

³² LBP-74-69, RAI-74-9, p. 570.

³³ Supplement No. 2 to the SER, following Tr. 2769, Section 2.4.5.2.

³⁴ *Ibid.*

³⁵ *Id.*, Section 2.4.5.5.

³⁶ *Id.*, Section 2.4.5.10.

³⁷ *Id.*, Section 11.5.2.

that could overload the capacity of the underdrain system occurs as a result of a massive spill caused by a circulating water pipe failure in the turbine pedestal area of the turbine building. During the spill or immediately after it, an earthquake is postulated to occur, fracturing the turbine building walls and floors and allowing the water to enter the underdrain system.³⁸ This accident would present a hazard if the water level exerted sufficient pressure on seismic Category I buildings, during a seismic event, to create dynamic instability. Such pressures will be prevented by limiting the total volume of water that can spill into the turbine building, thereby limiting the maximum possible height of water and the maximum hydrostatic head. Initially, the Staff conservatively determined that a design basis groundwater level of 594 feet, msl, would be required.³⁹

Applicants subsequently proposed to limit in two ways the volume of water that could possibly spill in such an accident. First, Applicants propose to install two seismic Category I valves in series in the piping system that provides makeup water to both of the cooling tower basins. Each valve, powered from separate power supplies, is designed to close automatically in the event of a failure in the circulating water system.⁴⁰ In addition, the Applicants propose to limit, by design, the amount of water in the circulating water system to 5,712,000 gallons for each reactor unit. These two modifications will limit the volume of water that could flood into the turbine building, in the event of a massive failure, to an amount that would limit the maximum water level to Applicants' design elevation of 590 feet, msl.⁴¹ Additionally, by limiting the design basis groundwater level to 590 feet, msl, instead of 594 feet, msl, as originally proposed, the factors of safety against upsetting during a seismic event are increased.⁴² The Staff confirmed this estimate using a detailed analytical model, which also indicated that the maximum water level around the safety related structures would not exceed 590 feet, msl, for the postulated design basis accident.⁴³ Based on the considerations set forth above, the Board finds that the design basis groundwater level of 590 feet, msl, proposed by the Applicants, is appropriate and acceptable.

32. With respect to issue (b), Applicants have specified that the porous concrete blanket will have a minimum permeability of 3 feet per minute and a

³⁸ *Id.*, Section 2.4.5.2.

³⁹ *Ibid.*

⁴⁰ Supplemental Testimony on LWA-2 Activities and Effects on Site Suitability of the Permanent Dewatering System of M. D. Lynch, following Tr. 2771 (hereafter "Lynch Supplemental Testimony"), pp. 18-19.

⁴¹ *Id.*, pp. 19-21.

⁴² Tr. 2791-2793; compare Supplement No. 2 to the SER, Table at 27 with Exhibit 16, letter of January 31, 1975, at Table 1.

⁴³ Lynch Supplemental Testimony, pp. 20-21.

minimum compressive strength of 1000 psi. Applicants' testing program showed that these values could be obtained.⁴⁴ The minimum permeability value of 3 feet per minute would be sufficient to cope with the maximum amount of water expected in a design basis accident. Permeabilities as high as 12.8 feet per minute have been obtained as the results of laboratory testing. A minimum value of 3 feet per minute provides additional conservatism, since the actual average value will be higher.⁴⁵ The 1000 psi compressive strength value exceeds the maximum design loading by a safety factor on the order of 2 to 1.⁴⁶ Applicants have agreed to submit the results of field tests to the Staff, confirming that the above limiting design criteria for the concrete blanket will be equalled or exceeded.⁴⁷ Therefore, the Board finds that the minimum specifications of 3-feet per minute, permeability, and 1000 psi, compressive strength, for the porous concrete blanket are acceptable.

33. Issue (c) considers the possible accumulation of volatile gases in the underdrain system. Methane gas is known to accumulate in poorly ventilated tunnels and restricted volumes in excavations into shale in the region of Ohio that includes the site of the PNPP.⁴⁸ An explosion from this potential source of volatile gas could possibly render the dewatering system inoperative.⁴⁹ Applicants have committed that the active pumping components within the underdrain manholes will be qualified to operate in the presence of volatile air/fuel mixtures, including methane. In addition, operating procedures will require that all manholes and gravity discharge pipes be monitored for methane prior to entry by personnel, and be ventilated by portable equipment, if necessary.⁵⁰ The Board finds that this commitment offers acceptable assurance of protection against potential explosions and protection to personnel in the underdrain system due to the accumulation of methane.

34. As to issue (d), the underdrain system will be draining groundwater continuously through the various hydrogeological formations (i.e., the lacustrine soil, the glacial tills and the underlying Chagrin shale). Hence, the Staff, their consultants (the U. S. Corps of Engineers), and the Applicants reviewed the potential for clogging of the porous concrete by the movement of fine, dispersed material from the surrounding geological formations. These reviews also included the consideration of physicochemical alteration effects on the surrounding strata and the deterioration of the Chagrin shale, which could result in piping and void

⁴⁴ Applicants' Underdrain Testimony, p. 8.

⁴⁵ Lynch Supplemental Testimony, pp. 22-23.

⁴⁶ Tr. 2702-2703; see Exhibit 16, letter of January 31, 1975, S-19-20.

⁴⁷ Lynch Supplemental Testimony, p. 23.

⁴⁸ Tr. 2714.

⁴⁹ Lynch Supplemental Testimony, p. 24.

⁵⁰ Applicants' Underdrain Testimony, p. 16.

formations in these materials and cause a decrease in the foundation support capability of the lower till and the Chagrin shale.⁵¹ Applicants conducted extensive testing of the Chagrin shale to determine its dispersion potential. The testing generally indicated that the rock was nondispersive, although the results of one test were inconclusive; and in a chemical test on shale that had been ground up into soil, some dispersive characteristics were indicated.⁵²

35. Because of the Staff's concern with the dispersion potential of the Chagrin shale, Applicants have proposed to utilize special construction methods to assure that the shale does not become subject to dispersion.⁵³ The special construction methods will provide assurance that a minimum amount of Chagrin shale surface area will be exposed and disturbed and that any deterioration of the Chagrin shale will be minimized.⁵⁴ The special construction methods will thereby minimize the potential for clogging of the porous concrete.⁵⁵ In addition, Applicants have agreed to institute a long-term monitoring program of the Chagrin shale foundation to assure that the condition of the shale does not deteriorate over the life of the plant.⁵⁶ In the event that the inspections or testing should indicate that clogging of the porous concrete has occurred, it would be possible to remedy this situation by flushing the concrete blanket with water introduced into the blanket through the manholes.⁵⁷ The Board finds from the foregoing that, with the indicated precautions, there is acceptable assurance against clogging of the porous concrete blanket and degradation of the foundation materials.

36. The final item, (e) above, which the Staff considered as outstanding in Supplement No. 2 of the SER, relates to radiation monitoring of the effluent from the dewatering system. Although there are no direct paths between radioactive liquids and the underdrain system, postulated multiple failures, such as a failure of a radioactive waste holdup tank coupled with through cracks in the concrete foundation of the Radwaste Building, could hypothetically release radioactive liquids into the lower dewatering subsystem.⁵⁸ Applicants will provide continuous radiation monitors in each of the two discharge headers of the pumped discharge system to monitor the effluent prior to discharge into the gravity discharge system. Additionally, the Applicants have committed to

⁵¹ Supplement No. 2 to the SER, Section 2.4.5.10; Lynch Supplemental Testimony, p. 25.

⁵² Tr. 2680-2682, 2724.

⁵³ Applicants' Underdrain Testimony, p. 15; Lynch Supplemental Testimony, p. 26.

⁵⁴ *Ibid.*

⁵⁵ Lynch Supplemental Testimony, p. 27.

⁵⁶ Applicants' Underdrain Testimony, p. 15; Lynch Supplemental Testimony, p. 26; Tr. 2723.

⁵⁷ Lynch Supplemental Testimony, p. 27; Tr. 2684.

⁵⁸ Applicants' Underdrain Testimony, p. 23; Supplement No. 2 to the SER, Section 11.5.2.

providing means for automatically stopping the nine pumps in the pumped discharge system, if the levels of activity at the monitoring points exceed a value to be specified in the PNPP Technical Specifications.⁵⁹ Stopping the pumps will provide time for location of the source of the radioactive leak, possible decontamination, and some radioactive decay.⁶⁰ Even with a worst case accident (the simultaneous failure of the largest tank in the Radwaste Building, a crack in the concrete foundation that releases the water to the underdrain system, and a failure of the circulating water system that raises the level of the water in the underdrain system such that it would flow through the gravity drain system), the resulting dilution factor would be such that the concentration of radioactivity released to Lake Erie would be a very small percentage of the allowable concentrations that are specified in 10 CFR Part 20.⁶¹ The consequences to humans or to the ecosystem of the lake would be insignificant. The Board, therefore, finds that, with the Applicants' commitments, there is an acceptable assurance that there will be adequate monitoring of potential radioactive releases; that remedial measures may be possible; but that any release of radioactivity from the discharge of the underdrain system into Lake Erie would be well within applicable NRC limits.

37. Based on a careful review of all of the evidence of record, the Board finds that there are no unresolved environmental concerns or safety issues associated with the proposed pressure relief underdrain system. The Board, in Reply to the Staff's Motion to Reopen the Record, reconfirms its original finding that there are no hydrological factors that would preclude a finding of site suitability.⁶² The Board also finds that there is no reason for further suspension of the work on the underdrain system. The Board further finds that there are no unresolved environmental or safety issues associated with the underdrain system that affect the requested LWA-2 activities, as modified, and which would constitute good cause for withholding authorization of these activities. The Board made numerous technical inquiries into the design, operation and testing of the proposed underdrain system for PNPP.⁶³ Based upon this information and other detailed information on the underdrain system that is contained in the evidentiary record, the Board finds that the PNPP can be safely constructed and operated using the permanent dewatering system.

⁵⁹ Applicants' Underdrain Testimony, p. 23; Lynch Supplemental Testimony, p. 29.

⁶⁰ Applicants' Underdrain Testimony, p. 23.

⁶¹ *Ibid*; Tr. 2786-2789.

⁶² Partial Initial Decision, LBP-74-69, RAI-74-9, p. 574.

⁶³ See Tr. 2697, 2708-2709, 2779-2785 (design criteria); Tr. 2693-2697 (flow path of water); Tr. 2690-2693, 2703-2704 (possibility of clogging); Tr. 2700-2703 (strength of porous concrete); Tr. 2713-2714 (methane gas); Tr. 2698, 2713-2714, 2765-2766, 2785-2789 (possibility of radioactive release; Tr. 2755-2757 (environmental effect)).

However, in view of the fact that certain anomalous features have been found in the bedrock underlying the site of the proposed PNPP facility (see paragraph 16, *supra*), the Board considers that the findings of this paragraph could possibly be rendered invalid. Hence, the Board will require a showing by the Applicants that the cited anomalies do not constitute a compromise to these findings.

B. Whether, Pursuant to 10 CFR Section 50.10(c)(3), There Are Any Unresolved Safety Issues Relating to Activities Described in Applicant's Motion to Conduct LWA Activities

38. By letter dated December 4, 1974, the Applicants requested a limited work authorization (LWA-2) to conduct certain activities including authorization to construct structural foundations and exterior walls to grade. [A complete list of requested activities is found at Appendix B, which is omitted from this publication but is available at the Commission's Public Document Room, Washington, D. C.] Some of the work activity proposed is subject to the provisions of Appendix B to 10 CFR Part 50, and thereby subject to the provisions of §50.10(e)(3). This section states that authorization shall be granted by the Director of Nuclear Reactor Regulation only after the Board has determined that there are no unresolved safety issues relating to these work activities that would constitute good cause for withholding authorization.

39. Supplement No. 1 to the SER listed fourteen outstanding safety-related issues for which a satisfactory resolution was still required prior to a decision for issuance of construction permits for the proposed Perry facility.⁶⁴ The Staff presented testimony addressing each of these safety-related issues, indicating what effect, if any, the resolution of each issue would have on the requested work activities.⁶⁵ The Staff concluded that, with one exception,⁶⁶ there were no unresolved safety issues that would constitute good cause for withholding authorization for the presently outstanding requested LWA-2 activities.⁶⁷ The Board concurs with the Staff's uncontroverted testimony that these fourteen issues do not constitute good cause for withholding authorization of the presently requested LWA-2 activities, as modified.

⁶⁴Supplement No. 1 to the SER, following Tr. 2769.

⁶⁵Lynch Supplemental Testimony, pp. 9-17.

⁶⁶The Staff identified an unresolved safety issue with respect to the design dynamic loadings on the Mark III containment suppression pool and structures within the suppression pool. This is a generic problem that is the subject of extensive testing by the vendor. [Lynch Supplemental Testimony, p. 30] The loadings in the containment suppression pool could affect the design of the Reactor Building. The only LWA-2 activities that could be impacted by this problem are items C.1.b. through C.1.e. which are associated with the Reactor Building. As noted at paragraph 14, Applicants, for the time being, have withdrawn those items from the LWA-2 request. [Tr. 2562-2564]

⁶⁷*Id.*, p. 36, as corrected at Tr. 2770.

40. All safety-related activities will be subject to The Cleveland Electric Illuminating Company's quality assurance (hereafter "QA") program. Both the Staff and Applicants presented testimony describing Applicants' QA program.⁶⁸ The Board also inquired into numerous aspects of the Applicants' QA program.⁶⁹ NRC's Office of Inspection and Enforcement (OIE) has conducted several inspections of the Applicants' QA program development and implementation. The Staff concluded that the Applicants' QA program and organization are acceptable based on the favorable reports of the OIE field inspections.⁷⁰ The Board concurs with the Staff and finds that there are no unresolved QA matters that would constitute good cause for withholding authorization of the requested LWA-2 activities, as modified.

C. The Effects, if Any, of Schedule Changes in CAPCO Units and 1974 Sales of Electricity on the Need for the Perry Units

41. In its Partial Initial Decision, the Board found the load forecasts of the Applicants as projected by the Applicants' extrapolation models and confirmed by an econometric model sufficient to demonstrate a need for the electricity to be produced by PNPP.⁷¹ In its findings, the Board observed that a reserve margin of 17% to 21% was needed to meet original demand, including demand in Applicants' service area.⁷² In adopting Applicants' witness Guth's econometric projections, the Board noted that even the lowest rate of projected growth would only defer the need for PNPP by one year relative to the Applicants' originally projected date of need for Perry Unit #1, i.e., April 1979, to meet acceptable reserve margins.⁷³

42. The issue of the effect, if any, of schedule changes in CAPCO units and 1974 sales of electricity on the need for the Perry units was raised by the Coalition for Safe Electric Power in a counter motion filed on February 4, 1975 in support of the Staff's motions to reopen the hearing record. During the Hearings on June 23-24, this issue was addressed by the testimony of Applicant's witnesses Masters and Guth. The Staff and Intervenors did not present testimony on this subject and proposed findings on the issue were filed only by the Applicant and OPSC.

43. In its proposed findings, the NRC moved that the Coalition, pursuant to 10 CFR §2.754(a), be held in default on this issue and that the record not be

⁶⁸ Testimony of Applicants' witness, John G. Marjenin, following Tr. 2729; Lynch Supplemental Testimony, p. 34-36.

⁶⁹ Tr. 2735-2749.

⁷⁰ Lynch Supplemental Testimony, pp. 35-36.

⁷¹ LBP-74-69, RAI-74-9, p. 549.

⁷² *Id.*, p. 546.

⁷³ *Id.*, p. 549.

reopened on the need for power issue. The NRC Staff reasons that the Coalition has failed to identify the specific evidence and reasoning in support of its motion.

Though we sympathize with the NRC Staff's position, we note that the Coalition is a group of lay persons not skilled in court procedures. We deny the NRC Staff's motion and address ourselves to the issue.

44. Witness Masters testified that in late 1974 and in 1975, CAPCO companies announced a number of scheduling changes in plant construction arising from difficulties experienced in obtaining adequate financing. By delaying construction of certain coal fired and nuclear plants, CAPCO minimized its capital outlay during 1974-1975. In the revised schedule, Beaver Valley #2 was deferred rather than Perry #1 because capital requirements for Perry #1 were less than for Beaver Valley for 1974-1975, and Perry would eventually provide 349 MW more capacity. Rescheduled dates are: 1980 for Perry #1 and 1982 for Perry #2.

45. The above deferrals together with unanticipated construction delays have eroded projected CAPCO reserves considerably below projections made at the Evidentiary Hearing in 1974.⁷⁴

46. Testimony of Applicants' witness Guth addressed the question of the influence of the reduced 1974 sales upon projected demand. It was Guth's opinion that the lower 1974 demand arose from a combination of (1) mild weather, (2) a 20 to 25 percent increase in residential electricity rates, and (3) a decline in real personal income.⁷⁵ Guth forecast a return to normal economic growth some time between 1975-1977. He predicted that electric rates will increase through the forecast period but not as fast as in the recent past.⁷⁶ He also predicted that there will be a substitution of electrical energy for fossil fuels by commercial, industrial and residential users during the period of his forecast for the plant.⁷⁷ Guth concluded that the 1974 experience was not inconsistent with his econometric model presented in 1974 and that his predictions of an average growth rate of from 4.5 to 6.0 percent will hold despite a decline in peak load of 800 MW during 1974.⁷⁸

47. Guth's predictions were questioned during cross-examination by the OPSC. This examination challenged the basis of Guth's predictions of a return to normal economic conditions and also the values for cross-elasticity (effect of competing fuels) and own price elasticity (effect of increased electric rates) used in his model for forecasting growth.⁷⁹ Although Guth testified that the 1974

⁷⁴Masters, Table 2 and 8.

⁷⁵Guth, Tr. 2593-2596.

⁷⁶Tr. 2596.

⁷⁷Tr. 2596-2597.

⁷⁸Tr. 2597-2598.

⁷⁹Tr. 2616-2632.

experience would change some of the values used in his model,⁸⁰ he felt that his forecast range was reasonable for future planning.⁸¹

48. In responding to questions by the Board, Guth indicated that he had not made a new forecast for CAPCO but that CAPCO's revised forecast of 5.5 percent growth per year fitted within his previously predicted range of 4.5 to 6.0 percent.⁸²

49. In the opinion of the Board, many of the uncertainties in forecasting future power needs that were brought out in the examination of witness Guth will be taken into account if Guth's lower and more conservative projections are used; that is, by using a 4.5 percent average growth rate starting from the peak load of 1974. This projection would delay need for the plant for only one year (1981).⁸³ This seems to be a reasonable minimal projection and provides an adequate basis for starting construction under the Applicants' revised schedule. To project the need for the plant later than 1981 would require a combination of unfavorable future economic conditions and reduced demand which were not anticipated by testimony in this proceeding.

50. The Board concludes that the reduced peak demand in 1974 does not invalidate the finding of a need for the PNPP on its current schedule.

III. CONCLUSIONS OF LAW AND DECISIONAL CONDITIONS

51. The Board has reviewed the entire record of this proceeding, including all of the proposed findings of fact and conclusions of law submitted by the Parties. All of the proposed findings and conclusions submitted by the Parties which are not incorporated directly or inferentially in this Supplemental Partial Initial Decision are herewith rejected as being unsupported in law or fact, or as being unnecessary to the rendering of this Initial Decision.

52. These Supplemental Conclusions are additions to the Conclusions of Law contained in the Licensing Board's Partial Initial Decision dated September 18, 1974,⁸⁴ and Supplemental Partial Initial Decision dated October 20, 1974.⁸⁵ The Board concludes that based on the evidence of record and its review of the proposed permanent dewatering system, there is still reasonable assurance that, subject to the conditions set forth below, the proposed site is a suitable location for a nuclear power reactor of the general size and type proposed from the standpoint of radiological health and safety considerations under the Atomic

⁸⁰ Tr. 2639.

⁸¹ Tr. 2648.

⁸² Tr. 2645.

⁸³ *Id.*, 2646.

⁸⁴ LBP-74-69, RAI-74-9, p. 538.

⁸⁵ LBP-74-76, RAI-74-10, p. 701.

Energy Act of 1954, as amended, and rules and regulations promulgated by the NRC thereto.

53. The Board concludes that the environmental review of the proposed dewatering system indicates that the environmental impact of the dewatering system would be negligible and that the dewatering system does not materially affect the results of the cost-benefit analysis in the Final Environmental Statement and the Partial Initial Decision. This conclusion is subject to Applicants' commitment to monitor the drawdown of the water table, as indicated in paragraph 25, *supra*.

54. The Board further concludes that the Applicants have shown good cause why the limited work activities authorized previously by the Acting Director should not be suspended. With respect to Applicants' Motion for Determination Pursuant to 10 CFR §50.10(e)(3), dated December 4, 1975, as amended by Applicants' withdrawal of the request to conduct certain activities related to the Reactor Building (paragraph 14, *supra*), the Licensing Board concludes that there are no unresolved safety issues relating to the activities described in Appendix B hereto (as amended), which would constitute good cause for withholding authorization to conduct such activities. These conclusions are subject to the following conditions:

(a) Limitation of available water in the event of a major accident accompanied by a seismic event (paragraph 31, *supra*);

(b) Satisfactory field tests confirming minimum values for the permeability and compressive strength of the porous concrete blanket (paragraph 32, *supra*);

(c) Satisfactory design of pumping components and monitoring for methane to eliminate potential hazards (paragraph 33, *supra*);

(d) Imposition of special construction methods and subsequent inspections to assure minimum deterioration of the Chagrin shale (paragraph 35, *supra*); and

(e) Installation of radiation monitors in the underdrain system (paragraph 36, *supra*).

The foregoing conclusions and the continued validity of the Board's previous site suitability determination are further conditioned by the requirement for a subsequent showing before the Board by the Applicants that the recently discovered bedrock anomalies at the Perry site (see paragraph 16, *supra*) do not overturn said conclusions.

55. The Licensing Board concludes that based on the evidence of record concerning events since the Partial Initial Decision and Supplemental Partial Initial Decision relative to the need for PNPP capacity in the CAPCO service area, there is a demonstrated need for power which justifies the construction of the Perry plant on its present schedule.

IV. ORDER

WHEREFORE, in accordance with the Atomic Energy Act of 1954, as amended, and the Rules of Practice of the Commission, and based on the findings and conclusions set forth herein, IT IS ORDERED that the Director of Nuclear Reactor Regulation is authorized to permit the Applicants to undertake, as required, any further site excavations for the limited purpose of determining the extent, if any, to which recently discovered bedrock anomalies might invalidate this Board's prior determination of the suitability of the proposed PNPP site. Assuming a satisfactory resolution of this matter before the Board and subsequent thereto, IT IS ORDERED that the Director of Nuclear Reactor Regulation should not terminate or suspend work activities previously authorized with respect to Perry Nuclear Power Plant Units 1 and 2. The Board also ORDERS that the Director of Nuclear Reactor Regulation is authorized to permit the conduct of the activities described in Appendix B [Appendix B is omitted from this publication but is available at the Commission's Public Document Room, Washington, D. C.] hereto (as amended by Applicants' withdrawal of items C.1.b. through C.1.e) with respect to the Perry Nuclear Plant, Units 1 and 2, consistent with the terms of this Decision.

IT IS FURTHER ORDERED, in accordance with 10 CFR §§2.760, 2.762, 2.764, 2.785 and 2.786 that this Decision shall constitute the final Decision of the Commission on October 9, 1975, which is thirty (30) days after the date of issuance of this Decision, subject to any review pursuant to the above cited Rules of Practice. Exceptions to this Decision may be filed within seven (7) days after service of this Supplemental Partial Initial Decision and a brief in support of such exceptions may be filed by any party within fifteen (15) days (twenty

[20] days in the case of the Staff) thereafter. Within fifteen (15) days of the filing and service of the brief of appellant (20 days in the case of the Staff), any other party may file a brief in support of, or in opposition to, such exceptions.
IT IS SO ORDERED.

**FOR THE ATOMIC SAFETY AND
LICENSING BOARD**

Frank F. Hooper, Member

Gustave A. Linenberger, Member

John M. Frysiak, Chairman

Issued this 9th day of September, 1975
at Bethesda, Maryland.

[Appendix A (Scope of LWA-1 Work), Appendix B (Requested Activities), and Appendix C (List of Exhibits) are omitted from this publication but are available at the Commission's Public Document Room, Washington, D. C.]

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

LBP-75-54

ATOMIC SAFETY AND LICENSING BOARD

John B. Farmakides, Chairman
Lester Kornblith, Jr., Member
John F. Wolf, Member

In the Matter of
**VIRGINIA ELECTRIC AND
POWER COMPANY**
**(North Anna Power Station,
Units 1 and 2)**

**Construction Permit
Nos. CPPR-77
CPPR-78**

September 10, 1975

APPEARANCES

Michael W. Maupin and James N. Christman, Esqs., on behalf of the Licensee Virginia Electric & Power Company.

James E. Ryan, Jr., Esq., Assistant Attorney General, on behalf of the Commonwealth of Virginia.

William Rodgers, Esq., on behalf of the Intervenor, the North Anna Environmental Coalition.

William Massar, Louise Powell, Daniel T. Swanson, and David E. Kartalia, Esqs., on behalf of the Nuclear Regulatory Commission.

Upon order for licensee to show cause why its construction permits should not be suspended or revoked for alleged material false statements made in conjunction with its permit application, Licensing Board rules (1) that certain material false statements were made by the licensee; (2) that those statements did not warrant revocation or suspension of the construction permits, but did warrant the imposition of specified conditions; and (3) that civil monetary penalties, to be paid out of the net profits of the licensee and not to be considered by the licensee as an operating expense or a cost of doing business, should be imposed.

ATOMIC ENERGY ACT: DUTIES OF APPLICANTS

The requirements of the Atomic Energy Act, the Commission's regulations to protect the public health and safety, and a judicial decision enforcing another statute, dictate that an applicant's reporting duties are nondelegable. In carrying out those duties, an applicant is charged with the knowledge its agents and independent contractors acquired within the scope of their employment or service.

ATOMIC ENERGY ACT: DUTIES OF APPLICANTS

In exercising its reporting duties, an applicant is held, at a minimum, to the standard of care of an ordinary prudent and diligent man in similar circumstances.

ATOMIC ENERGY ACT: MATERIAL FALSE STATEMENT

The meaning of the phrase "material false statement" used in Section 186 of the Atomic Energy Act is defined by the ordinary meaning of each of the words used therein, read in light of the clear mandate of Congress to protect the public health and safety. Read in that light, the phrase refers to a communication, written or oral, likely to influence the determination of a matter, which communication is not true.

ATOMIC ENERGY ACT: MATERIAL FALSE STATEMENT

Section 186 of the Act applies not only to written and oral statements but also to omissions of material information.

ATOMIC ENERGY ACT: MATERIAL FALSE STATEMENT

Section 186 of the Act contemplates that a material false statement results if, in the light of all the circumstances, an applicant or licensee fails to make a timely disclosure of information which is important for purposes of the safety review of its submission.

ATOMIC ENERGY ACT: MATERIAL FALSE STATEMENT

A showing of scienter is not required to establish that a statement is "false" under Section 186 of the Act.

ATOMIC ENERGY ACT: MATERIAL FALSE STATEMENT

There is no requirement of "reliance" in determining the materiality of a false statement under the provisions of Section 186 of the Act. One principal criterion for determining whether a statement is "material" is whether a

reasonable staff member would, or should, consider it in reaching a conclusion or in determining a course of action; it is not important whether or not the statement ultimately played a role in his decision.

ATOMIC ENERGY ACT: MATERIAL FALSE STATEMENT

The materiality of a false statement should be judged in terms of the impact of such a statement upon an expert but not upon an average citizen.

ATOMIC ENERGY ACT: MATERIAL FALSE STATEMENT

An incorrect statement submitted to the Commission is not necessarily a material false statement in violation of Section 186 of the Act where the supporting information is timely submitted to the staff for its independent review.

ATOMIC ENERGY ACT: DUTIES OF APPLICANTS

In order for an applicant and the Commission to discharge their respective duties and obligations with respect to the public health and safety, documents submitted in support of an application must adhere to the highest standards of accuracy.

RULES OF PRACTICE: BURDEN OF PROOF

The matter of which party bears the evidentiary burden becomes a significant question only when evidence is evenly balanced, or if the trier is in doubt about the facts. (See *Midland*, ALAB-283.)

LICENSING BOARD: DELEGATED AUTHORITY OR JURISDICTION

Where the Commission designates a Licensing Board to assume jurisdiction over a proceeding, and delegates to the Board the power to revoke outstanding construction permits, the Board necessarily has been granted all pertinent authority which the Commission could have exercised, including the necessary authority to identify, address, and resolve issues, and to impose civil penalties or other sanctions less than revocation or suspension, if appropriate.

ATOMIC ENERGY ACT: SANCTIONS

While willfulness or "scienter" is not an element of a material false statement as used in Section 186 of the Act, it may be considered for purposes of determining the severity of a sanction imposed for violation of that section.

INITIAL DECISION

I

A. PRELIMINARY STATEMENT AND BACKGROUND

1. On October 17, 1973, the Director of Regulation of the Atomic Energy Commission¹ ordered the Virginia Electric and Power Company (Licensee) to show cause why further activities under Construction Permits No. CPPR-77 and CPPR-78 for North Anna Units 1 and 2 should not be suspended pending completion of an investigation and evaluation of a geologic fault matter.

2. Pursuant to said Order, the Licensee requested a hearing. The North Anna Environmental Coalition (Coalition) petitioned to intervene under Section 2.714 and was duly admitted. The Commonwealth of Virginia (Commonwealth) also petitioned to participate, and was admitted under Section 2.715(c).

3. It was early recognized, and the parties so agreed at a pre-hearing conference on February 11, 1974, that the public health and safety issues stemming from the geologic fault matter² were separate and distinct from other issues involving certain allegations by the Coalition of "material false statements" made by the Licensee. By stipulation dated February 28, 1974, the parties agreed to postpone consideration of the latter issues (which they identified as the "disclosure issue") pending issuance of a forthcoming investigative report by the Directorate of Regulatory Operations on the geologic fault matter. That report,³ issued on March 25, 1974, concluded that no violation of the Commission's regulations had occurred. Thereafter, the Coalition requested the Commission to order a hearing on said disclosure issue and, in accordance with their February 28 agreement, the other parties interposed no objections.

¹The Nuclear Regulatory Commission succeeded the Atomic Energy Commission pursuant to the Energy Reorganization Act of 1974 (Act of October 11, 1974, P.L. 93-438, 88 Stat. 1233, 42 USC A §5801). For convenience, we use the term "Commission" interchangeably; titles of Commission officials are those in use at the time the event being discussed occurred.

²The health and safety issues of the geologic fault matter affecting North Anna Units 1, 2, as well as Units 3 and 4 were consolidated by order of the Board during the show cause proceeding, with agreement of the parties. These issues were resolved in an initial decision issued on June 27, 1974. *In the Matter of Virginia Electric & Power Co. (Show Cause)*. 7 AEC 1183, affirmed NRCI-75/1, 10. The Decision concluded, *inter alia*, that the geologic fault at the North Anna site is not capable within the meaning of 10 CFR Part 100, Appendix A, and that further activities under the construction permits should not be suspended.

³*RO Investigation Report Nos. 50-358/73-14; 50-339/73-13, 50-404/73-7; 50-405/73-7. J. Ex. 40.*

4. By Order dated May 28, 1974 (*In the Matter of Virginia Electric & Power Company*, North Anna Power Station, Units 1 & 2, RAI-74-5 819), the Commission granted the petition of the Coalition for a public hearing on the question of whether or not the construction permits for the above-captioned facility should be suspended or revoked for alleged material false statements related to certain geologic faulting at the licensed North Anna site made by the Licensee in required submissions to the Commission. *Inter alia*, the Commission designated this Board to: "...assume jurisdiction over the proceeding" ... "take whatever action it deems necessary to appropriately establish the specific issues ... [and] ... issue a notice of hearing."

5. Following several telephone conference calls among the Board and parties, a proposed stipulation of *issues* was presented by the parties at a scheduled prehearing conference held on July 23, 1974. The stipulation was reviewed and approved by the Board in its Prehearing Conference Order of August 1, 1974.⁴ Thereafter, certain limited additional discovery was permitted.⁵ The parties also agreed on a stipulation of *facts* dated November 18, 1974, which the Board reviewed and approved in its Order of November 29, 1974. By the terms of the stipulation of facts, the Coalition withdrew 5 allegations of material false statements, leaving 19 alleged material false statements for resolution.⁶

6. After the issues were formulated, the Board issued on October 21, 1974, a "Notice of a Public Hearing on the Disclosure Issue" (39 *Fed. Reg.* 38017), setting forth the pertinent events to date and the issues in the case. The notice further provided opportunity to any person whose interest would be affected by the proceeding, to petition for leave to intervene. However, no petitions were received and the parties remained as before.

7. Pursuant to an agreed upon schedule, evidentiary hearings were held on January 29 and 30, 1975. In addition, the Board called for an evidentiary session on February 13, 1975 to clarify the record with respect to certain *in camera* material submitted by the Staff. Subsequently, the *in camera* request was withdrawn and the material was made available on the open record.⁷

⁴The Board's Prehearing Conference Order including the stipulation of issues and the Coalition's list of "Specification of Alleged Material False Statements" which was also appended thereto, is attached herewith as Appendix A [Appendix A is omitted from this publication but is available at the Commission's Public Document Room, Washington, D.C.].

⁵Most of the discovery was completed in connection with the geologic fault matter. See n. 2, *supra*.

⁶Accordingly, the Coalition's specifications 3, 5, 6, 8, & 9 stand withdrawn. The remaining specifications are identified as statements 1, 2, 4, 7, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, and 24 of the Coalition's specifications as contained in the Board's Prehearing Conference Order of August 1, 1974.

⁷By letter dated January 24, 1975, Staff counsel transmitted to the Board and parties, copies of the material which had been deleted and presented *in camera* (see Joint exhibit 34). This letter also withdrew the Staff's *in camera* request. It should be noted that the Board did not rely on this material initially submitted *in camera*, for any of its findings.

8. On April 4, 1975, the Board issued an interlocutory Memorandum and Order for the purpose of providing notice that it had found 12 material false statements, and for calling the second phase of the proceeding to consider appropriate remedies and sanctions. In that order the Board briefly presented its rulings with respect to each of the legal issues affecting its decision and as to the material false statements found so as to permit a meaningful development of the record on remedies and sanctions. Thereafter, evidentiary hearings were held on May 28, 29, 1975 on issues involving remedies and sanctions.

9. The record in this proceeding consists of all the material pleadings filed herein, all the evidence offered and received, including all the manuscripts of testimony presented at the evidentiary hearing, as corrected by Order Correcting Transcripts, dated July 25, 1975; the Board's August 1, 1974 Order as shown in Appendix A, including the stipulation of issues of the parties; all the exhibits shown in Appendix B; the Stipulation of Facts by All Parties (S.F.) and the evidentiary record compiled in the Show Cause hearing and incorporated into the record by Paragraph 5 of the said stipulation of facts.

10. In making the findings and conclusions herein, the Board reviewed and considered the entire record of the proceeding and all the proposed findings of fact and conclusions of law submitted by the parties. All of the proposed findings of fact and conclusions submitted by the parties which are not incorporated directly, or inferentially, in this Initial Decision are herewith rejected as being unsupported in law or fact, or as unnecessary to the rendering of this Initial Decision.

II. LEGAL ISSUES

11. The Board is faced with the issue of the responsibility of the Licensee to disclose and supply material information to the Commission, and the issue of what is a material false statement within the meaning of Section 186. We will first address the issue of responsibility and then the matter of what constitutes a material false statement.

A. THE NON-DELEGABLE DUTY OF THE APPLICANT

12. In Section 2(c) of the Atomic Energy Act of 1954, as amended (Act), the Congress specifically found that "the regulation and utilization of source, by product, and special nuclear material must be regulated in the national interest and in order to provide for the common defense and security *and to protect the health and safety of the public.*" (Emphasis supplied).

It is a stated purpose of this Act in Section 3(e) that:

Source and special nuclear material, production facilities, and utilization facilities are affected with the public interest, and regulation by the United States of the production and utilization of atomic energy and of the facilities used in connection therewith is necessary in the national interest to assure

the common defense and security and to *protect the health and safety of the public*. [Emphasis supplied]

Section 182 of the Act (42 U.S.C. 2232) calls for and prescribes the content and form of the application, and otherwise sets forth the following requirements:

(a) Each application for a license hereunder shall be in writing and shall specifically state such information as the Commission, by rule or regulation, may determine to be necessary to decide such of the . . . qualifications of the applicant as the Commission may deem appropriate for the license.

13. The rules and regulations of the Commission implementing the act require each applicant for a construction permit to prepare and submit a preliminary safety analysis report (PSAR) to include:

The *minimum information to be included* should consist of the following:

(1) A description and safety assessment of the site on which the facility is to be located with appropriate attention to features affecting facility design. [Emphasis supplied.]⁸

This report is to be submitted for the Commission's assistance in evaluating the site from the standpoint of public health and safety.

14. That the use of atomic energy involves the public health and safety and places a duty on a Licensee under the Act was clearly stated in the Hamlin Case⁹ where on appeal, the Circuit Court, affirming the decision of the Commission in the case, said:

. . . we can imagine no area requiring stricter adherence to rules and regulations than that dealing with radioactive materials, from the viewpoint of both public health and material security.

Similarly, the Commission had earlier observed in the *Matter of X-Ray Engineering Co.*, 1 AEC 553, 555 (1960):

Our statutory obligations to protect the public health and safety is not subject to the conditions precedent that actual injuries occur Our regulations require meticulous attention to detail to assure the adequate protection of the public health and safety

15. In the light of the Congressional findings, the purpose of the Act, the requirements assigned to applicants by the Act and under the rules and regulations of the Commission, there is no merit in the Licensee's plea that its officers had no knowledge that the statements discussed herein were material false statements. If the Licensee were permitted to avoid responsibility because its agents or its independent contractors failed to inform it of material

⁸ 10 CFR 50.34(a)(1).

⁹ *Hamlin Testing Laboratories v. U. S. Atomic Energy Commission*, 357 F. 2d 632 (1966).

information, it could thwart the purpose of this Act. As the Act implies, the public health and safety is too vital to the national interest to permit such an avoidance. Thus, the requirements of the Act and the Commission's regulations thereunder to protect the public health and safety, can be enforced only if the applicant's reporting duties are non-delegable. This rule was applied in the case of *Snyder v. Southern California Edison Co.*, 44 Cal. 2d 793, 285 P. 2d 912 (1955), where it was held that the State's regulatory scheme prohibited a utility from escaping liability for negligence on the grounds that the negligence was committed by an independent contractor. The court said:

Thus, where an activity involving possible danger to the public is carried on under public franchise or authority, the one engaging in the activity may not delegate to an independent contractor the duties or liabilities imposed by the public authority.¹⁰

16. Accordingly, the Board finds that the Licensee was on notice of its responsibilities under the Act; and was under a non-delegable duty to disclose to the staff within a reasonable time the information which Stone and Webster, Dames and Moore and Mr. Engleman had regarding geologic conditions at the site.

17. Under its non-delegable duty, the Licensee's claim that it believed the statements in question to be true is irrelevant and does not relieve it of its duties under the Act. Likewise the Licensee's arguments that it has no responsibility for the actions of its independent contractors (*i.e.*, Dames & Moore) is irrelevant, as is its arguments as to the limited responsibility of its agents and employees (Stone & Webster and Mr. Engleman).

18. In addition to the fact that the Licensee is subject to non-delegable duties under the Act, it is also charged with whatever knowledge its agents acquired in the course of carrying on its business at the site. *Curtis Collins & Holbrook Company v. United States*, 262 U.S. 215, 222 (1923). The Coalition asserts that under well-settled rules of agency, the knowledge gained by its agents within the scope of their employment is attributable to their principal. *Meader v. Trent Brook Ice & Feed Co.* 96 Comm. 454, 114 A 668 (1921). See also Restatement of Agency, Sec. 2, 14, 1958. The Board agrees.

19. In this regard, the Board finds that Mr. Engleman, the Licensee's employee, and its "eyes and ears"¹¹ at the site was charged with the responsibility of reporting to his superiors any adverse conditions at the site. Mr. Engleman, a graduate engineer, was an agent of the Licensee with approximately 20 years of job experience¹² to whom the Licensee properly delegated considerable responsibility to act as "Mr. Vepco" at the site.¹³

¹⁰ *Id.*; see also Am. Jr. 2d, Independent Contractors, Sec. 39 (1968).

¹¹ Tr. 319.

¹² J. Ex. 37 p. 5.

¹³ Tr. 178-9, 184-187, 193-195, 306.

20. In the regular course of the Licensee's business, Mr. Engleman acquired knowledge from three geology professors that they believed that there was a geologic fault at the site.¹⁴ While Mr. Engleman may not have reported the fact to his superiors, the Licensee is nevertheless chargeable with such knowledge. So too, as we have previously stated, the Licensee is chargeable with the information possessed by Stone & Webster, or Dames & Moore relating to the presence of a chlorite seam and its potential significance. In view of its responsibility to protect the public health and safety, and because it was already on notice as to the information possessed by Stone & Webster and Dames & Moore regarding the possible presence of a geologic fault at the site, this additional information should have been received with concern, and the Licensee exercising at a minimum the standard of care that ordinarily prudent and diligent men would exercise under similar circumstances, should have reported this information (the belief of three professors as to the presence of a geologic fault) to the AEC staff, and then taken appropriate steps to investigate and evaluate the matter further. See *Briggs v. Spaulding*, 141 U.S. 132, (1921); *O'Connor v. First National Insurance Corp.*, 177 S.E. 852, 857 (1935).

21. If, as contended by the Licensee, Mr. Engleman did not have appreciation of the significance of what he was told by the geology professors sufficient to place him on notice as to the possible presence of a geologic fault (and to submit this information to his employer), then the responsibility rests with the Licensee for failure to properly instruct its employee and for failure to position an employee at the site qualified to understand the significance of foreseeable issues, such as those related to the geology of the site, etc.

B. MATERIAL FALSE STATEMENTS (SECTION 186; 42 USC 2236)

22. Threshold questions were raised by the parties as to the elements comprising a "material false statement" within the meaning of Section 186 of the Atomic Energy Act of 1954 as amended (Act) (42 USC 2236),¹⁵ and presented as follows:

1. Do any of the specified declarations or omissions constitute a "statement" within the meaning of 42 U.S.C. § 2236?

2. If it constitutes a "statement", was it "false", when made, within the meaning of 42 U.S.C. § 2236?

In stating their positions on this issue, the parties will be free to argue that:

(a) Knowledge of falsity, negligence, intent to deceive, disregard for the truth, or some other state of mind is or is not necessary on the part of the person who made the statement and,

¹⁴J. Ex. 40, p. 7-8; J. Ex. 34, p. 75; Tr. 124, 130, 135, 145, 181, 200-201, 445.

¹⁵Section 186 specifically provides, in part:

(a) Any license may be revoked for any material false statement in the application or any statement of fact required under Section 182. . . .

(b) VEPCO is or is not chargeable with the knowledge, negligence, or state of mind of the person who made the statement.

3. If it constitutes a "statement" that was "false", was it "material" within the meaning of 42 U.S.C. §2236?

4. If it was a "material false statement" within the meaning of 42 U.S.C. §2236, what sanction, if any, is appropriate?

23. The parties have argued at length as to the legislative history and intent of Congress in its choice of the key words "material false statements". In the opinion of the Board, the ordinary meaning of each of the words in the key phrase "material false statement" is persuasive and controlling when read in light of the clear mandate of Congress to protect the public health and safety.¹⁶

24. Thus, the ordinary meaning at law for "material" is to describe evidence which is likely to influence the determination of a matter. In *Tzantarmas v. U.S.* 402 F. 2d 163 (1968), a material statement was found to be one which could effect or influence the exercise of a governmental function. The ordinary definition¹⁷ of "false" is to describe that which is not true or correct, erroneous. A "statement" is ordinarily defined as a written or oral communication setting forth facts, arguments, demands or the like. In a general sense it is an allegation, a declaration of matters of fact. These terms, especially when read in light of the non-delegable duty of the Licensee as discussed in our opinion above, express the intent of Congress to refer to a communication, written or oral, likely to influence the determination of a matter, which communication is not true.

25. Accordingly, after careful review and consideration of the legislative history available and the briefs of the parties, we find that the meaning of the key phrase "material false statement" in Section 186 is defined by the ordinary meaning of the words used as defined above, and is not ambiguous when read in light of its legislative history.

26. The question of whether or not the word "statement" as used in Section 186 applies to omissions was also raised. The bulk of the specifications or statements at issue here are expressions of various and sundry facts found in the application documents, and are therefore statements within the definition set out above. However, the allegations in specifications 22, 23, and 24 are not whether written communications of alleged facts are false under Section 186, but rather whether omissions or non-disclosure of certain material facts can constitute a violation under that section. It seems clear to this Board that a failure to include material information in a submission to, or filing before, the Commission is so critical to the Commission's need for a full disclosure of information on which to base its independent safety review that it may comprise a false and misleading statement. See *In re Caesars Palace Securities Litigation*,

¹⁶ See paragraphs 12, 40, herein.

¹⁷ *Webster's Third New International Dictionary*, unabridged, G. & C. Merriam Co.

360 F. Supp. 366, 386, fn. 19 (SDNY, 1973). In view of the Act's direct mandate with regard to the public health and safety¹⁸ an applicant or a licensee is accountable for an omission of material facts which are important to a health or safety review. The Commission, in turn, has the responsibility under the Act to protect the public health and safety in connection with the privileges, duties and obligations promulgated by the Act. It has clearly, and forcefully stated its need for truthful and accurate information in order to discharge its responsibilities for the public health and safety: "... nothing less than candor is sufficient."¹⁹ In view thereof, we conclude that Section 186 applies not only to written and oral statements but to omissions as well.

27. With respect to the matter of timeliness, the Board agrees with the Staff's position "... Section 186 must be read as contemplating [that] a material false statement results if, in the light of all the circumstances, an applicant or licensee fails to make a timely disclosure of information which is important for purposes of the safety review of its submission." It would be an incongruous situation, indeed, if an applicant or licensee responsible for disclosing material information that may have impact on the public health and safety, fails to do so in a timely manner, and for one reason or another does not disclose the information until it has become "stale", or relatively meaningless. Such a situation would seriously undermine the capability of the Commission to discharge its public health and safety responsibilities.

28. The elements of "scienter" and "reliance" as raised by the parties also must be resolved in considering the key phrase "material false statements." In this regard, the Licensee argued that "scienter" is a necessary element of the term "false" as used in Section 186; and that "reliance" is a necessary element of the term "material." We will consider each in turn.

29. Proof of scienter was necessary at common law to indict and prove crimes. Statutory law crimes have been held to require a showing of scienter even where the statute had failed to include it.²⁰ Therefore, the Licensee argues that its officials, who signed the application documents, believed that the statements contained therein were true, and therefore scienter must be proven to establish that a statement is "false" within the meaning of Section 186 of the Act. We disagree.

30. Section 186 does not, on its face, require a showing of scienter as an element needed to bring a material false statement within its scope. That the omission of scienter from 186 was deliberate, can be read from the fact that Congress expressly included scienter as a necessary element of the statutory offense in other Sections²¹ which provided for the imposition of criminal

¹⁸ See Sections 2, 3, 182, of the Atomic Energy Act of 1954, as amended.

¹⁹ *In the Matter of Hamlin Testing Laboratories, Inc.* 2 AEC 423, 428 (1964).

²⁰ See *United States v. Balint*, 258 U.S. 250 (1922).

²¹ See Sections 222, 223, 224, 225, and 226 of the Atomic Energy Act of 1954, as amended.

penalties. The legislative history of Section 186 shows no intent by Congress to require a showing of scienter as a prerequisite to the enforcement of this Section. In this connection, at the public hearings held in May 1954, on the bills²² to amend the Atomic Energy Act of 1946,²³ the provisions of Section 186 were analyzed and debated. Several witnesses urged the incorporation of a requirement for scienter. Other witnesses urged that revocation be limited to "any material false statement." Following the hearing, the words in Section 186 were changed from the proposed "any false statement" to "any material false statement." Thus, we conclude that the Congress accepted the recommendations for a showing of materiality but turned down those on requiring a showing of scienter. In its brief, the staff aptly summarized the situation as follows:

In other words, because the validity of the Commission's review of safety consideration could be affected by the reliability of statements made to it by an applicant, the Congress decided to require applicants to meet the *standards of accuracy rather than merely the standards of good faith.*

31. Moreover, in view of the ultimate purpose of Section 186 of the Atomic Energy Act to protect the health and safety of the public, and the holding of the Supreme Court that a showing of scienter is not a necessary element of those statutes the purpose of which is to protect the health and safety of the public, *United States v. Wisenfeld Warehouse Co.*, 376 U.S. 86 (1964); *United States v. Dotterweich*, 320 U.S. 277, 281 (1943); *United States v. Balint*, 258 U.S. 250 (1922), we find that the element of scienter is not included in the meaning of a material false statement.

32. The Licensee contends that policy considerations do not support the interpretation that scienter is not a necessary element because the policy behind Section 186 is deterrence and one cannot deter innocent acts. We do not agree. While it is true that one cannot deter innocent acts, one can, to some extent, deter innocence by encouraging greater effort by a Licensee to be sure that he has (and reports) accurate and full information.

33. Accordingly, in view of our findings above, the Board concludes that a showing of scienter is not required as an element of proof of a material false statement under Section 186 of the Act.

34. The issue of reliance is raised by the Licensee in its argument that a "material" statement in a submission to the Commission is one that would change the behavior of a reasonable geologic expert on the Commission's staff in some way. The Licensee suggests that the statement would have to be such as

²²House Bill HR 8862 (and companion Senate Bill Sec. 3323). See hearings before the Joint Committee on Atomic Energy on S. 3323 and H.R. 8862 83 Cong. 2nd Sess. (1954).

²³Under the draft of the proposed 1954 Act, the license might be revoked for "any false statement" in an application or statement of fact. See staff of Joint Committee of Atomic Energy, 83 Cong. 2d Sess. "A Proposed Act to Amend the Atomic Energy Act of 1946," Joint Comm. Print 1954.

would induce the reasonable staff member to undertake a significant amount of further investigation. The Board rejects this argument.

35. From a reading of the plain meaning of the words used in Section 186, the Board finds no requirement for an element of reliance in determining materiality under the provision of this Section; nor can any such requirement be inferred. The legislative history of Section 186 does not support such a requirement. In the Board's opinion, one principal criterion of whether a statement is material is whether a reasonable staff member would, or should, consider it in reaching a conclusion or in determining a course of action; it is not important whether or not the statement ultimately played a role in his decision. In that sense, he need not have placed reliance on the statement in order for it to be material. On the other hand, it is not material if the information was so trivial that it would not have led him to any serious consideration of it. For the above reasons, we find no requirement of "reliance" in determining the materiality of a false statement under the provisions of Section 186.

36. The Board rejects the Coalition's contention that the Board must find that a false statement is "material" if a reasonable professional or citizen would attach importance to it in evaluating the suitability of a site for a nuclear power station. The Coalition's view is that the Act protects two audiences—the experts on, or employed by, the Commission's staff, and the general public—in their separate requirements for accurate information in applications to construct nuclear power plants. It contends that for this reason definition of materiality must anticipate the impact of misrepresentation on a reasonable citizen, and anticipate a review by a reasonable citizen who uses due diligence in reviewing and evaluating an application.

37. We find no provision in the Act that requires the scientific and technical business of the agency to be conducted in the layman vocabulary rather than in the precise vocabulary of the particular field of science involved. The Act does not, and realistically cannot, save the average citizen from resort to technical experts when engaging in the scientifically complex area involved in the licensing of nuclear power plants. To require the scientific expert to forego the preciseness of scientific and technical vocabulary and to communicate on the level of a layman vocabulary is unacceptable, and counter productive. The view of the Coalition, if adopted, would place an unreasonable burden on applicants, licensees, and staff. The additional time required to prepare submissions on highly technical matters in such a way as to be properly understood by the "reasonable" citizen as well as by the expert, and the attendant additional cost (which in all probability would be eventually absorbed by the consumer and taxpayer), are not justified. And of course, the subjective test of whether or not it was understandable to the reasonable layman would create an intolerable litigious situation.

III. FACTUAL ISSUES

A. GENERAL

38. A chronological overview of the events leading to the October 17, 1974, Order to Show Cause may be briefly summarized as follows:

a. The geology of the North Anna site was first investigated in 1968 by Dames & Moore, Consulting Engineers to the Licensee. In a report dated January 13, 1969, Dames & Moore concluded, *inter alia*, that no geologic fault adversely affected the intended use of the site.²⁴

b. Under the then applicable regulations of the Commission, the Licensee proceeded to prepare the site. In the course of site excavation, a set of "small thrust faults" and "shears" were noted. These features were not considered to be significant in terms of the stability and seismicity of the site. Nevertheless, they were disclosed and reported to the staff on March 21, 1969.²⁵

c. In 1969 Stone & Webster discovered a chlorite seam while excavating the containment pit for Unit No. 1. It investigated the seam and concluded it was not a fault.²⁶

d. Following application to the Commission, and after a public hearing, Construction Permits Nos. CPPR-77 and CPPR-78 were issued to the Licensee on February 19, 1971, authorizing construction of North Anna Nuclear Power Station, Units 1 and 2.²⁷

e. Application for two additional reactors, Units 3 and 4 had also been filed by the Licensee. These units were to be constructed adjacent to reactor Units 1 and 2. With respect to Units 3 and 4, the same siting procedure was followed: namely, Dames & Moore undertook site studies in 1971, found the site to be suitable for Units 3 and 4, and so recommended. Stone & Webster then performed the site preparation. In connection with this application, the Licensee filed a PSAR for Units 3 and 4 dated September 15, 1971, which included a report on Environmental Studies dated August 18, 1971. (J. Ex. 18). An evidentiary hearing was held before an Atomic Safety & Licensing Board and the subsequent decision of the Board found in favor of the construction of Units 3 and 4.²⁸

²⁴J. Ex. 1 at 11A-19.

²⁵J. Ex. 1 at 11-A-7; S.F. 30; S.F. 14.

²⁶Stipulation 53-60, 63-71.

²⁷See *In the Matter of Virginia Electric and Power Company* (North Anna Units 1 and 2), 4 AEC 544 (1971).

²⁸See *In the Matter of Virginia Electric and Power Company* (North Anna Units 3 and 4), LBP-74-56, RAI-74-7, 126 (July 18, 1974).

f. On April 16, 1973, during the excavation of Units 3 and 4, Stone & Webster noted a geologic feature involving a chlorite seam in the containment pit for Unit 3. Investigation of this chlorite seam was undertaken and continued until May 14, 1973, at which time a determination was made by the Licensee and its consultants that the feature was a geologic fault. This determination was reported to the Commission staff on May 17, 1973 and led in due time to the October 17, 1973 Order to Show Cause.

39. In addition to the overview set forth above, consideration of the case at hand is aided by a summary of those requirements imposed on applicants for authorization to construct and operate a nuclear power plant. These requirements are found in, (a) the Atomic Energy Act of 1954, as amended; (b) the Rules and Regulations of the Commission (particularly 10 CFR Part 50, part 100) and, (c) the interpretations and precedents of Commission decisions.

40. As we have stated above, the Atomic Energy Act of 1954 (42 U.S.C. 2011) *et seq.*, requires the regulation of the processing and utilization of nuclear material and of facilities for the production and utilization of atomic energy in the public interest and to protect the public health and safety. The Act provides the Commission wide authority to undertake whatever regulations are needed to protect the national security and the health and safety of the public.²⁹ Issuance of a permit or license for construction and operation of a nuclear power plant is precluded under Section 103(d) of the 1954 Act (42 U.S.C. 2133(d)), if, in the opinion of the Commission, it would be inimical to the health and safety of the public. Section 182 requires a finding that the health and safety of the public will be adequately protected. (42 U.S.C. 2232). Thus, the Act mandates the exercise of great care for the protection of the public health and safety on the part of anyone utilizing atomic energy.

41. The Commission, in its rules and regulations, has carried out the statutory mandate by requiring explicit and detailed information from applicants seeking a license or permit to construct a nuclear power plant. It would appear obvious that an informed judgment by the Commission regarding the protection of the public health and safety is dependent upon, and can only be effective, if the data developed and furnished by the applicant are accurate and complete. In summary, the regulatory system requires complete and accurate information if it is to function as intended.

42. The issue of site suitability is the subject of rules and regulations issued by the Commission. Requirements thereunder have changed as the design and complexity of the plants have increased, and as the needs of the staff for more detailed information upon which to base an increasingly deeper safety review grew. To aid in determining the materiality of the alleged false statements in this

²⁹ (S. Rept. No. 1699, 83rd Cong., 2d Sess. 10-11 (1954)).

case the Board received information relating to the type and extent of guidance available to applicants and licensee.³⁰

43. In 1966, a Section 50.34 (10 CFR Part 50) similar to the section quoted in paragraph 46 below, was available for guidance. In addition, "A Guide for the Organization and Contents of Safety Analysis Reports," (SAR) was issued by the Staff to assist applicants in writing their SARs. The following is the entire section on geology and seismology:

Hydrology, Geology and Seismology. The Commission is interested in the relationship of these factors to design and operating limitations. The extent of evaluation of the surface terrain and subsurface layers of earth should be consistent with the importance of these matters to the plant design and operation. In general, hydrology, from a safety viewpoint, has not been a predominant factor influencing plant design. Similarly, geological formations beneath the facility in general play the same role in the architectural engineering of the structures for reactors as for any major industrial facility, and hardly justify exhaustive treatment in facility design reports to be submitted to the Commission. Except for the unusual situation in which local hydrology or geology have particular influence on design, a great deal of information with respect to these matters need not be submitted in the Safety Analysis Report. A common practice has been the inclusion, in total, of survey reports of geological experts brought in by an applicant to determine site characteristics as a basis for further design. Such exhaustive reports should be referenced, but a summary with pertinent conclusions will, in general, suffice for the Safety Analysis Report. Emphasis should be on geological information explaining the need or the basis for any unusual design criteria because of geological anomalies.

It is expected that the seismic history of a site will be examined. The extent of evaluations submitted in the Safety Analysis Report and the amount of supporting information should be roughly proportional to the probability of a seismic event and to the intensity of its effects. The Uniform Building Code Seismic Probability Map (1958) provides an appropriate index to probability and intensity. The information submitted should provide explanations for such design requirements that may have been established because of seismic considerations.

The following are illustrative of matters which have been treated in submittals of information supporting and explaining design requirements established because of consideration of site surface and subsurface conditions:

³⁰ See letter, Louise C. Powell to Board, dated February 14, 1975. In addition to the documents cited, Staff Counsel stated: "In addition to the formal guidance. . . licenses . . . receive further guidance . . . by way of written questions, meetings with Staff experts, and frequent telephone communications." Such guidance has not been considered here unless it became part of the record.

Geology

- (1) Nature of and results of test borings at the site.
- (2) Ion exchange and filtering characteristics of the soil (particularly where liquid radioactive holdup tanks may be buried).
- (3) Geological faulting of subsurface layers.

Seismology

- (1) General seismic history.
- (2) Locations of geological faults with respect to site.
- (3) Tsunamis history, if any.

44. In 1969, after Section 50.34 had been slightly revised, the following guidance existed:

(a) Section 50.34(a)(1) required that the PSAR include:

A description and safety assessment of the site on which the facility is to be located, with appropriate attention to features affecting facility design. Special attention should be directed to the site evaluation factors identified in Part 100 of this chapter [Emphasis supplied.]

(b) Section 50.34(b)(1), with respect to the Final SAR, required "All current information . . . which has been developed since issuance of the construction permit, relating to site evaluation factors identified in Part 100 of this chapter."

(c) Section 100.10 (Part 100) contained a list of factors including the following, on which information was required:

. . . (c) Physical characteristics of the site, including seismology, meteorology, geology and hydrology.

(1) The design of the facility should conform to accepted building codes or standards for areas having equivalent earthquake histories. *No facility should be located closer than one-fourth mile from the surface location of a known active earthquake fault.* [Emphasis supplied.]

(3) Geological and hydrological characteristics of the proposed site may have a bearing on the consequences of an escape of radioactive material from the facility. *Special precautions should be planned if a reactor is to be located at a site where a significant quantity of radioactive effluent might accidentally flow into nearby streams or rivers or might find ready access to underground water tables.*

(d) Where unfavorable physical characteristics of the site exist, the proposed site may nevertheless be found to be acceptable if the design of the facility includes appropriate and adequate compensatory engineering safeguards.

45. On November 25, 1971, the Commission published for comment and interim guidance, a proposed change to §100.10(c)(1) (10 CFR Part 100), and a

proposed new Appendix A to Part 100.³¹ The proposed amendment substituted for the § 100.10(c)(1) quoted above, the following:

(1) Appendix A, "Seismic and Geologic Siting Criteria for Nuclear Power Plants," sets forth the principal seismic and geologic consideration which guide the Commission in its evaluation of the suitability of proposed sites for nuclear power plants.

46. The scope of Appendix A includes two major areas of investigation: the determination of the quantitative design basis for vibratory motion due to earthquakes and the determination whether and to what extent a facility need be designed for surface faulting. These topics were dealt with in Sections IV(a) and IV(b) respectively. The introductory paragraph of Section IV provides the following guidance:

The geologic, seismic, and engineering characteristics of a site and its environs shall be investigated in sufficient scope and detail to (1) provide reasonable assurance that they are sufficiently well understood to permit an adequate evaluation of the proposed site, and (2) provide sufficient information to support the determinations required by these criteria and to permit adequate engineering solutions to actual or potential geologic and seismic effects at the proposed site. The size of the region to be investigated and the type of data pertinent to the investigations shall be determined by the nature of the region surrounding the proposed site. The investigations shall be carried out by a review of the pertinent literature and/or field investigations and shall include the steps outlined in (a) through (c).

The next two subsections then go on to describe the necessary investigations. Three subparagraphs of Section IV(b), "Required investigation for surface faulting" are of sufficient relevance to quote:³²

(1) Determination of the lithologic stratigraphic, and structural geologic conditions of the site and the area surrounding the site, including its geologic history;

(2) Determination of geologic evidence of fault offset at or near the ground surface at or near the site;

(3) For faults greater than 1000 feet long, any part of which is within 5 miles of the site, determination of whether these faults are active faults.

47. In February 1972, the Staff issued a "Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants." This was a revised version of

³¹ 36 *Fed. Reg.* 22601. The final adopted version of Appendix A differs, in some respects, from that discussed here. Since it was published *after* all of the alleged false statements were uttered, it is not relevant and is not discussed herein.

³² The sections can be found in their entirety at 36 *FR* 22602-3.

the 1966 guide.³³ The description of material to be included in the SAR was increased and injunctions against excessive information were entirely eliminated. The relevant information was listed in four sections covering basic geologic and seismic data, vibratory ground motion, surface faulting, and stability of subsurface materials. The second and third of these sections closely followed proposed Appendix A.

48. But even more guidance relative to the case at hand was available to applicants for nuclear power plants, and specifically, to the Licensee here, both as to reporting requirements, and as to the seriousness in which seismic issues were held by the Commission. As to the former, in 1960, the Commission stated its concern that "our regulations require meticulous attention to detail to assure adequate protection to the public health and safety." *Matter of X-Ray Engineering Co.*, 1 AEC 553, 555. As stated earlier, the Circuit Court affirming the Commission decision in *Hamlin Testing Laboratories v. U. S. Atomic Energy Commission*,³⁴ stated:

We can imagine no area requiring stricter adherence to rules and regulations than that dealing with radioactive materials, from the viewpoint of both public health and national security.

The Supreme Court, affirming on appeal, the Commission's promulgated standards noted and recognized the Commission's ruling that "... public safety is the first, last and a permanent consideration in any decision on the issuance of a construction permit or a license to operate a nuclear facility." *Power Reactor Development Co. v. International Union of Electricians*, 367 U.S. 396, 402 (1961).

49. As to the seriousness attached by it to seismic matters, the Commission discussed in the *Malibu* decision,³⁵ the major importance of geological structures and seismic matters to the design of a plant and to the suitability of a proposed site. In the matter of the proposed *Bodega* nuclear power plant, the seismic issue became the controlling factor because of the proposed location of the plant near the San Andreas fault, and was sufficient cause for the Commission to reject the design. As a result, the application was abandoned.³⁶ While the seriousness of a fault issue on the west coast may be of an order of

³³Eight months later in October 1972, a third version, Revision 1, was issued. In this revision the section on basic geologic and seismic data was expanded and the section on stability of subsurface materials was expanded to include engineering matters as well as the previously included geologic matters. The other two sections were essentially unchanged.

³⁴See n. 9, *supra*.

³⁵*Dept. of Water & Power of the City of Los Angeles, Malibu Nuclear Power Plant*, Unit No. 1, 3 AEC 122 (1966).

³⁶*In the Matter of Pacific Gas & Electric Co. (Bodega Head Nuclear Power Plant, Docket 50-205)*. See "Summary Analysis by the Division of Reactor Licensing," as published on October 26, 1964 by the AEC Division of Regulation.

magnitude greater than the relatively far less active east coast area, nevertheless, the materiality of a potential fault as a critical element in an application for a nuclear power plant is an issue which has equal application to eastern as well as western sites.

50. In view of the above findings, the Board finds that the reporting requirements for geological and seismic matters were clear to the Licensee. The Act, the Commission's rules and regulations, and pertinent case law as well as previous Commission actions on matters involving seismic issues, all provided guidance to the Licensee. While the guidance may have become more specific and detailed commencing on November 25, 1971 with the issue of the Commission's proposed change to 10 CFR 100.10(c)(1) and Appendix A to Part 100, nevertheless, even before this was issued, the guidance was clear that matters involving seismic issues constituted information that should be reported to the Commission.

51. Certainly, the question of *what to report* is an issue as to each potential reportable item. Obviously, an applicant must generate and submit large amounts of information to the Commission's staff. It is plain that the information to be transmitted must first be evaluated by the applicant to determine what should be reported to the Commission. Necessarily, in such evaluation, good judgment must be used in determining what is material and should be reported, and what need not be reported. But we are not here concerned about trivial information, nor trivial subject matter. On the contrary, we are considering information relating to a subject matter which, in and of itself, could resolve adversely the entire matter of site suitability. In other words, material information relating to the presence of a geologic fault should have been reported to the Commission promptly, for the latter's independent safety review, and would have been so reported by an ordinary prudent man. Such a serious matter of public safety cannot be answered unilaterally by the Licensee.³⁷ As we have stated, the Licensee did in fact report geologically significant information in 1969, but for its own reasons, it failed to continue the practice.

52. Thus, in the Board's opinion, the requirement to report information relating to the presence of a matter of major importance such as a geologic fault was always clear to the Licensee from a fair reading of the Act, the Commission's rules and regulations, or the Commission's decisions, taken separately, or together. This opinion is confirmed by the clear import of the Licensee's own actions in reporting the geological information in 1969 to the staff for its independent safety review.

³⁷ Especially in a way that permits the commitment and expenditure of substantial financial and natural resources before the unilateral decision is communicated to the staff.

53. Before proceeding to consider each statement, we would note that the general facts of this case may be summarized as follows: the Licensee violated Section 186 of the Act as to 12 statements, in that it knew, or should have known of the presence of a geological fault; knew, or should have known, that a seismic or geological fault question arising as to the suitability of the site was of major importance; knew, or should have known, that the Act, the rules and regulations of the Commission, and the cases decided thereunder by the Commission required full and complete reporting of any material information bearing on an application for construction permits; knew, or should have known, of its non-delegable duty to report material information; and knew of its duty to conduct itself and its affairs with a high degree of care required of one conducting a business impacting on the public health and safety—and yet knowing all of this, it failed to properly and fully report to the staff in a timely manner material information related to the presence of a geological fault (which, at that time, may or may not have been “active” or “capable”) so that the staff could have conducted its own independent investigation in a prompt manner.

B. SPECIFICATIONS [STATEMENTS]

54. For convenience, the specifications³⁸ (hereinafter identified as “statements”) of the Coalition have been divided by the parties into six categories: (a) those statements related to the 1968-69 site investigations, *i.e.*, Nos. 1, 2 and 4; (b) those statements related to specific faulting and other conditions at the site, *i.e.*, Nos. 7, 10, 11, 13 and 14; (c) those statements related to Neuschel’s Lineament, *i.e.*, Nos. 12, 15; (d) those statements made in 1973, *i.e.*, Nos. 16-21; (e) the statement relating to the Roper report, *i.e.*, No. 22; and (f) those statements related to disclosures at public hearings, *i.e.*, Nos. 23 and 24. We will adhere to this delineation in our findings below.

(a) Statements 1, 2, and 4 (1968-69 site investigations)

Statement 1—January 13, 1969:

The nearest known fault to the site is located slightly southwest of the town of Mineral. If projected along the areal strike, the nearest approach of this fault would be about 4½ miles to the northwest of the power station site

³⁸ As stated earlier, we will continue to refer to the specifications by the numbers assigned in the Coalition’s “Specification of Alleged Material False Representations, dated July 12, 1974 and attached as Appendix A to the stipulation of issues which in turn was attached to the Board’s Prehearing Conference Order dated August 1, 1974. Also as stated earlier, statements 7, 10, 11 and 12 appeared in the PSAR for Units 3 & 4, filed on September 15, 1971 and in a report by Dames & Moore dated August 8, 1971 (J. Ex. 18). In view of the consolidation of cases by Board with agreement of parties, no distinction is made between statements relating to Units 1 & 2, and those to Units 3 & 4.

. . . . [Dames & Moore Report, Site Environmental Studies, Units 1 & 2, Appendix A to PSAR, J. Ex. 1, p. 11-A-13.]

55. The Coalition contends that Statement 1 is a false material statement (1) because "it places the 'nearest known fault' to the site southwest of the town of Mineral when in fact minor faulting at the site was known" and (2) because of the "omission of any explanatory discussion regarding the suspected structural discontinuity at the site which was the subject of weekly reports to VEPCO and a significant increase in the scope of the site investigation" (Coalition's Identification of Documents and Further Specifications of Material False Statements dated October 21, 1974).

56. In the Board's opinion, the critical and controlling factor is that the features referenced were disclosed to the staff and to the public in a timely manner in 1969, and gave the Staff an opportunity to conduct its own independent review and investigation.³⁹ An incorrect statement submitted to the Commission is not necessarily a material false statement in violation of Section 186, where the supporting information was timely submitted to the staff for its independent review. The Board recognizes that the "shears" and "small thrust faults" were not considered to be significant in terms of stability and seismicity of the site.⁴⁰ With respect to the Coalition's contentions regarding the structural discontinuity involving Boring 10, the Board notes that the discontinuity had been investigated and negated.⁴¹

Statement 2—January 13, 1969:

The site is apparently free of faulting and structural anomalies Based on the results of our geologic studies, it is our opinion that there is no geologic feature of the site or surrounding area which adversely affects the intended use of the site. [Dames & Moore, Site Environmental Studies, Appendix A to PSAR, J. Ex. 1, p. 11-A-19.]

57. The Coalition argues that Statement 2 is false because it states that the site "is apparently free of faulting and structural anomalies" when both minor faulting and "a possible structural anomaly were disclosed by the site investigation" (Further Specifications, pp. 1-2). All the other parties except the Coalition are in agreement that this is not a false statement. For the same reasons stated above with regard to Statement 1, we conclude that Statement 2 is not a material false statement within the meaning of Section 186.

³⁹ Joint Exhibit 1, plate II-A-7. S.F. 30.

⁴⁰ Testimony of J. Briedis, pp. 1-7; S.F. 30.

⁴¹ *Id.*, Briedis, pp. 7-8.

Statement 4—March 1, 1969:

No known or suspected faults are present in the strata underlying the site. The closest known major faults are located near the Culpeper Triassic Basin, approximately 20 miles WNW of the site. [PSAR 1 & 2, Part B.]

58. The Coalition argues that statement 4 is false because of the known presence of minor faulting and the doubts raised by boring 10.⁴² All the other parties except the Coalition agree this is not a false statement. For the same reasons as stated above with regard to statement 1, we conclude that Statement 4 is not a material false statement within the meaning of Section 186.

(b) Statements 7, 10, 11, 13, & 14 (Specific faulting and other conditions at the site).

59. Stone & Webster, the Licensee's prime contractor for the construction of the facilities, was responsible for geotechnical monitoring for the North Anna Units 1 and 2 containment as the excavations progressed.⁴³ All pertinent information and data possessed by Stone & Webster, including internal communications, were available to the Licensee.⁴⁴ In February 1970, Mr. William Swiger, Stone & Webster's Senior Consulting Engineer, was contacted at his Boston office by Mr. David McKittrick, Stone & Webster's Geotechnical Engineer assigned to North Anna, and asked to visit the North Anna site in order to examine the excavations for Units 1 and 2, because of concern about the stability of the excavation walls as it might affect safety of the workmen.⁴⁵ On February 5, 1970, Mr. John Briedis employed as a geologist by Stone & Webster in company with Mr. McKittrick, inspected the site; Mr. Briedis again inspected the site on February 25 in company with Mr. Swiger. Upon arriving at the site on February 25, 1970, Mr. Swiger observed that a substantial portion of the material above the slide plane had been removed, and that cracks were visible along the side of the remaining walls.⁴⁶ Mr. Swiger also observed a chlorite seam that was parallel to bedding and foliation⁴⁷ and discussed it with Mr. Robert Henry, then the Stone & Webster field geologist at the North Anna site. During these discussions, consideration was given to the possibility that the feature at the site was a fault. As a consequence, Mr. Swiger requested Mr. Briedis to investigate the chlorite seam since faulting was sometimes associated with seams of that type.⁴⁸

⁴² See Further Specifications of the Coalition, p. 3.

⁴³ S.F. 51.

⁴⁴ *Id.*

⁴⁵ S.F. 53.

⁴⁶ *Id.*

⁴⁷ *Id.*; J. Ex. 25, p. 14.

⁴⁸ S.F. 54, 62.

60. On his second visit to the site, Mr. Briedis noted that the chlorite seam was the cause of the slide, and expended three days mapping the site excavation. He also seriously considered the possibility of the existence of a fault; and discussed such possibility with the three other officials of Stone & Webster.⁴⁹ This information was not communicated to the Licensee,⁵⁰ nevertheless, as discussed above, the Licensees are chargeable with such knowledge. This information was not communicated to the Commission staff.

61. On February 27, 1970, Mr. Briedis took rock samples from the chlorite seam to the office of the State Geologist of Virginia for analysis. At this time, State Geologists Richard Good, James Conley and Thomas Gathright advised Mr. Briedis that the slicken-sides, cataclasts and chlorite contained in these rock samples might be indicative of a fault.⁵¹ This information was not communicated to the Commission staff.

62. On February 23, 1970, Dr. John Funkhouser, a Professor of Geology at John Tyler Community College, after making an appointment for an inspection with Mr. Herbert Engelman, Jr., the Licensee's resident engineer in charge at the site, visited and inspected the excavation of Units 1 & 2 with two students. On March 23, 1970, Dr. Funkhouser returned to the site with Dr. Bruce K. Goodwin, Professor of Geology, College of William and Mary; Dr. Stephen Cadwell Clement, Associate Professor of Geology at the same college; and additional students.⁵² After an examination of the rock at the excavation (the pit), these independent geologists agreed that the chlorite seam identified a fault. Dr. Funkhouser or Dr. Goodwin advised Mr. Engelman of the presence of a "major fault" when they came out of the pit.⁵³ Apparently, Mr. Engelman did not report what he was told to his supervisors,⁵⁴ however, as discussed above, this does not relieve the Licensee of its duties or responsibilities. This information was not communicated to the Commission's staff.

63. Prior to the initiation in June 1971, of Dames & Moore's boring program for the site studies for Units 3 and 4, the chlorite seam problem and the construction difficulties it caused in Units 1 and 2 were explained to Dames & Moore by Mr. Briedis. Subsequently, the boring program of Dames & Moore, was revised by Stone & Webster, and re-designed to encounter the chlorite zone.⁵⁵ The Dames & Moore field operations for Units 3 and 4 commenced on June 2,

⁴⁹ S.F. 53; S.F. 62, 63, 64, 65.

⁵⁰ S.F. 66.

⁵¹ S.F. 69.

⁵² J. Ex. 34, J. Ex. 40; S.F. 74.

⁵³ J. Ex. 39, p. 75; J. Ex. 40. In his affidavit, Dr. Funkhouser stated that he remembered "the amount of shock" that Mr. Engelman "registered" when "we" informed him about the fault on Dr. Funkhouser's second visit to the site—March 23, 1970 (J. Ex. 34, p. 34).

⁵⁴ J. Ex. 40, p. 9.

⁵⁵ S.F. 75. This chlorite zone is also referred to as zone A.

1971 and concluded in early July 1971. Dames & Moore prepared two progress reports covering these activities and sent them to the applicant.⁵⁶ Progress Report #1, dated June 16, 1971 reported, *inter alia*, that in Boring 630 an "altered zone" was observed in the range of 44½ feet of 56 feet below the ground surface.⁵⁷ The report also stated that "extra borings may be required to confirm that the anomalous conditions are localized and not part of a significant adverse geologic structure"⁵⁸ (Emphasis supplied.) In Progress Report #2, dated June 29, 1971, there was further discussion about an "altered zone"⁵⁹ disclosed by the borings and the possible need for additional borings.⁶⁰ Two larger-diameter borings were drilled in the reactor areas to investigate the presence of the chlorite layers and "altered zones." The logs for these borings (numbered 644 and 645) are reported and the location shown in Dames & Moore's "Report, Site Environmental Studies, North Anna Power Station, Proposed Units 3 and 4, Louisa County, Virginia, Virginia Electric and Power Company," dated August 18, 1971.⁶¹

64. On July 13, 1971, Mr. Charles Livingston of Dames & Moore visited the Virginia Division of Mineral Resources and showed Mr. Thomas Gathright, a Staff Geologist from VDMR, some gneiss cores which had recently been taken from the North Anna project area. Mr. Livingston asked Mr. Gathright for his opinion as to the origin of the chlorite zones in those cores and in the excavation for the reactor site. Mr. Gathright stated that the chlorite zone may be of fault origin.⁶²

65. In the context of our general findings above relative to the group of statements regarding faulting at the site, the Board finds as follows:

Statement 7, September 15, 1971:

The closest known fault is located near Mineral, Virginia. 7.5 miles WSW of the site. Faulting of rock at the site is neither known nor is it suspected. Surface mapping, boring data, and the excavation for Units 1 & 2 all indicate continuity of strata. [PSAR, 3 & 4, Part B, Vol. 1, p. 2-52.]

66. The Staff, the Commonwealth and the Coalition assert that the statement is false because the Licensee is chargeable with the knowledge of Mr. Engelman that a fault was suspected by three professors of geology and because of the knowledge that a fault was suspected during the 1970 investigation. The Staff and Coalition assert that the Licensee is chargeable with

⁵⁶ S.F. 77.

⁵⁷ J. Ex. 42.

⁵⁸ S.F. 78.

⁵⁹ J. Ex. 43. The "altered zone" was also zone A.

⁶⁰ S.F. 79.

⁶¹ J. Ex. 18; S.F. 82.

⁶² S.F. 81.

the knowledge of the Licensee's contractor Dames & Moore that a fault was suspected during the Units 3 and 4 boring program.

67. The Licensee's position is that the suspicion of faulting by Stone & Webster during the 1970 investigations was entirely resolved and that at the time the statement was made faulting was not suspected, and that Dames & Moore reached a similar conclusion with respect to their 1971 investigation. With respect to Mr. Engleman, the Licensee takes the position that Mr. Engleman was not impressed with the significance of what was told him and lacked the expertise that should have led him to recognize the significance. However, this position of the Licensee in no way excuses it from its duty and responsibilities as discussed in our opinion above. It was the Licensee's duty to know this type of information, and it could not escape such duty by placing a representative at the site who assertedly did not understand the significance of the presence of a geological fault. The Board concludes for the reasons stated in our opinion above that the Licensee is chargeable with the knowledge of its contractors and employees including Engleman, Stone & Webster, and Dames & Moore.

68. The Licensee also argues that at the time the statement was made, a fault was not suspected by the Licensee or by its contractors since the geologic matter had been resolved and found not to be a fault. Thus, it was no longer "suspected" of being a fault. However, we reject the presumption that the Licensee can make a unilateral decision as to a material matter of such major importance and not report the information to the Commission. Whether or not a geologic fault is present, and if so, whether or not it was "active" is certainly such a matter and any information related thereto should have been immediately reported to the staff.

69. The second sentence of the statement represents that faulting of rock at the site was not known or suspected by any of the Licensee's geologists (employees or agents) or any other competent geologist known to it. The statement was false when made because the evidence is clear that its agent and prime contractor, Stone & Webster, had discovered a chlorite seam in the excavation of Units 1 and 2 in February of 1970,⁶³ and considered very seriously the possibility that the chlorite seam was in fact a fault. As noted above, Mr. Briedis discussed the possibility of the presence of a fault with other Stone & Webster geologists and engineers.⁶⁴ He took rock samples from the chlorite seam to the State Geologist of Virginia for analysis; and he was duly advised by Virginia Staff Geologists Conley and Gathright on February 27, 1970, that analysis of the rock samples indicated the possible presence of a fault.⁶⁵ This information was not communicated to the staff.

70. On March 23, 1970, Drs. Funkhouser, Goodwin and Clement on their second visit to the North Anna site pointed out to the Licensee's representative,

⁶³S.F. 53, 54.

⁶⁴S.F. 56, 65.

⁶⁵S.F. 69.

Mr. Engleman, what they all believed to be a fault in the excavation of Unit 1.⁶⁶ Indeed, either Dr. Funkhouser or Dr. Goodwin asked Mr. Engleman if he realized that the fault, which they had pointed out to him, was "a major fault."⁶⁷ Although Mr. Engleman is not a geologist, he was assigned to the site as the resident engineer and was, in effect, the Licensee's "employee in charge" of the excavation site.⁶⁸ It was patently within the scope of Mr. Engleman's employment to recognize the significance of this type of information, and to report to his superiors the information conveyed to him by Dr. Funkhouser and the other professors of geology who accompanied Mr. Engleman into the pit. The Licensee is chargeable with this knowledge; should have known that a fault was "suspected"—at least—by three geologists; should have recognized the significance of this information as a matter of potentially major importance, especially since the information both conflicted with some experts findings, and confirmed the findings of others; and should have taken steps to communicate this information to the Commission.

71. As stated earlier, the boring program of Dames & Moore for site studies for Units 3 and 4, as revised by Stone & Webster, was re-designed to encounter the chlorite seam.⁶⁹ The Dames & Moore field operations for Units 3 and 4 commenced on June 2, 1971 and concluded in early July 1971. In June of 1971 Dames & Moore directly reported to the Licensee that an "altered zone" had been disclosed in Boring 630.⁷⁰ The report said:

... This altered zone may be an ancient shear zone. ... Presently we believe extra borings may be required to confirm that the anomalous conditions are localized and not part of a significant adverse geologic structure. These borings could include both vertical borings and angle borings which would be drilled at approximately 45° to the horizontal. These borings could delineate the possible existence or non-existence of similar zones of deformation in the reactor area.⁷¹

Thus, the Licensee was directly informed by its consultant that there was need to make extra borings in order to rule out the possibility of "a significant adverse geologic structure." In addition, its consultant Dames & Moore was informed, in July of 1971, by a State geologist whose opinion was sought on the matter that the chlorite zone (which became known in 1973 as Zone A) might be of fault origin.⁷²

⁶⁶J. Ex. 40, pp. 7-8.

⁶⁷Id., p. 7.

⁶⁸Id., p. 9.

⁶⁹S.F. 75.

⁷⁰S.F. 78, J. Exs. 42 and 43.

⁷¹S.F. 78.

⁷²S.F. 81.

72. Even if a fault was no longer suspected when the statement was made because of the Licensee's conclusion that the chlorite seam and altered zone indicated a geologic feature not related to a fault, nevertheless the statement was clearly false because the Licensee failed to report any of the events and concerns which we've noted above. This failure to report precludes an adequate evaluation and health and safety review by the Commission.

73. Accordingly in view of our findings above we conclude that statement 7 is a material false statement within the meaning of Section 186.

Statement 10, August 18, 1971:

The nearest known fault to the site is located slightly southwest of the town of Mineral. If projected along the areal strike, the nearest approach of this fault would be about 4½ miles to the northwest of the power station site. [Dames & Moore Report, Site Environmental Studies, Units 3 and 4, J. Ex. 18, p. II-A-14.]

74. The Coalition contended that this statement was false when made because: (1) small faults or "shears" were known to exist at the site since 1968, and (2) "faulting at the dam site . . . was known."⁷³ The Licensee's contractor Stone & Webster performed the geologic studies at the dam site and made a report thereon which shows that there was faulting at that site.⁷⁴ This consisted of small shears healed by silicification which are typical of folded old rock.⁷⁵ This existence of faulting at the dam site was not reported to the Staff until January, 1974.⁷⁶ The Board finds that such information relating to the existence and nature of the faults at the dam site was material to the suitability of the site and seismic design of the facility, and that the Licensee's failure to timely disclose it constitutes a material false statement. Accordingly, the Board finds that statement 10 is a material false statement within the meaning of Section 186.

Statement 11, August 18, 1971:

The site is apparently free of faulting and structural anomalies Based on the results of our geologic studies, it is our opinion that there is no geologic feature of the site or surrounding area which adversely affects the intended use of the site. [Dames & Moore Report, Site Environmental Studies, Units 3 and 4, J. Ex. 18, p. II-A-20/21.]

75. In view of the developments in 1970 and the investigation by Dames & Moore of the "altered zone" in mid-1971,⁷⁷ discussed above, statement 11, read in its entirety, is understood to express the final opinion held by the Licensee

⁷³ See Specifications pp. 5 and 7.

⁷⁴ S.F. 34.

⁷⁵ *Id.*

⁷⁶ S.F. 35.

⁷⁷ S.F. 78-82.

based upon and after evaluation of the geologic studies conducted on its behalf. However, such statement and opinion of the Licensee ignores the unfavorable indications of faulting expressed by the State Geologist of Virginia, and the comments and views of three other geologists—Drs. Funkhouser, Goodwin and Clement. In view of the Licensee's duty to the public health and safety, such information cannot be ignored since it directly affects the Commission's evaluation of the statement made to it. Thus, the statement does not reflect all the material facts bearing on the situation on which it reports. For these reasons, and in view of our findings above, the Board finds statement 11 to be a material false statement within the meaning of Section 186.

Statement 13, March 15, 1972:

The closest known fault is located near Mineral, Virginia, 7.5 miles WSW of the site. Faulting of rock at the site is neither known nor is it suspected. Surface mapping, boring data, and the excavation for Units 1 and 2 all indicate continuity of strata. [Environmental Supplements 1, 2, 3, 4; pp. 2-32.]

76. For the same reasons as set forth in our findings with respect to Statement 7, we find statement 13 to be a material false statement within the meaning of Section 186.

Statement 14, March 15, 1972:

The site is apparently free of faulting and structural anomalies. [Environmental Supplement II, p. II-A-20/21.]

77. For the same reasons as set forth in our findings with respect to Statement 11, above, we find Statement 14 to be a material false statement within the meaning of Section 186.

(c) Neuschel's Lineament

78. Specifications 12 and 15 relate to Neuschel's Lineament, *i.e.*, a postulated major northeast-trending fault identified in a new tectonic map in 1969 and announced by Mr. Sherman H. Neuschel of the U. S. Geological Survey in 1970.⁷⁸ The submission of Plate II-A-2 of the Dames & Moore Report⁷⁹ which contains a regional tectonic map of the site omitting Neuschel's Lineament⁸⁰ led to these specifications as filed by the Coalition.

Statement 12, August 18, 1974:

Plate II-A-2 is a regional tectonic map omitting Neuschel's Lineament. [Plate II-A-2 in the Dames & Moore Report, Site Environmental Studies, J. Ex. 18.]

⁷⁸ Bulletin of the Geological Society of America, December 1970; S.F. 84, 85.

⁷⁹ J. Ex. 18.

⁸⁰ S.F. 86.

79. Two regional tectonic maps were filed with the Commission on August 18, 1971 and March 15, 1972. They did not contain a showing of Neuschel's Lineament, which, is asserted, should have been displayed on the maps because it is required for the presentation of an accurate map reflecting the regional tectonic features surrounding the site.

80. In this connection on July 1, 1969, Joseph Fischer of Dames & Moore received a copy of a new tectonic map (Reed) showing a "major northeast-trending fault a few miles east of the site."⁸¹ Thus the Licensee is charged with the knowledge of Neuschel's Lineament. In the opinion of the Board such a feature would have significance to an evaluation of the suitability of a site and to the seismic design of the facility and should not have been omitted from the maps submitted to the staff.

81. The argument that such a postulated feature was already known to the Staff is irrelevant since the Licensee may not assume that such material information is already known, and then conclude unilaterally that it need not be submitted. As we've discussed above, reliance is not a necessary element of falsity under Section 186. The Licensee has a duty to supply accurate and complete information to the Commission, which it failed to do when it supplied a regional tectonic map without including a feature which it knew to be a "major northeast-trending fault a few miles east of the site."⁸² In addition the Licensee argues that the submission was taken from a previously existing tectonic map of the U.S.,⁸³ which one should not expect to be updated with postulated tectonic features. We reject this argument. The Commission had a right to assume that the data submitted reflected an accurate current evaluation of all tectonic features and their relationship to the suitability of the site. A postulated feature of the significance of Neuschel's Lineament is material to the suitability of the site and should have been disclosed on the tectonic map submitted. Moreover, we see no reason for its absence. Accordingly, we find this statement to be a material false statement within the meaning of Section 186.

Statement 15, March 15, 1972:

Plate II-A-2 is D&M Regional Tectonic Map omitting Neuschel's Lineament [Environmental Supplement II.]

82. For the same reasons as stated above in our discussion of Statement 12, the Board finds Statement 15 to be a material false statement within the meaning of Section 186.

⁸¹ S.F. 83, 84, 85.

⁸² *Id.*

⁸³ Plate II-A-2 states on its face that its tectonic features were taken from the "Tectonic Map of the United States" prepared by the United States Geological Survey and the American Association of Petroleum Geologists, 1962.

(d) Specifications made in 1973 (i.e., Specifications 16-21)

83. Generally, as to Specifications 16-21, the Board finds that on April 16, 1973, Mr. Robert A. Pastuszak, a geologist for Stone & Webster, observed an apparent offset of a pegmatite vein along a chlorite seam in the Unit 3 excavation which indicated possible faulting to him. Mr. Pastuszak promptly communicated with his office in Boston concerning it.⁸⁴ On April 17, 1973 his immediate superior, Mr. Lyndon Rosenblad examined the site and likewise concluded as to the existence of possible faulting. Mr. Rosenblad then discussed the matter with other Stone & Webster employees and asked Mr. Briedis to visit the site. As of April 20, 1973, there was disagreement between Mr. Pastuszak and Mr. Briedis as to whether that feature evidenced movement along a fault.⁸⁵

84. On April 25, 1973, the southwest wall of Unit 3 was excavated and Mr. Pastuszak noticed a similar apparent offset of another dike along the chlorite seam. In a conference call with the Boston office of Stone & Webster, Mr. Pastuszak expressed the view that he strongly believed a fault existed at the site. On April 30, 1973, the Licensee was informed of the matter and its representative (along with others) viewed the excavations. Dames & Moore was then asked by the Licensee to meet with Stone & Webster in the field and to embark upon an in-depth survey of the chlorite seam problem.⁸⁶

85. On May 2, 1973, a meeting was held at the site, attended by personnel of the Licensee, Stone & Webster, and Dames & Moore. All participants agreed that an independent outside consultant should be retained to evaluate the chlorite seam problem. Accordingly, Dr. Donald U. Wise, a structural geologist at the University of Massachusetts, a specialist in the structural geology of the Piedmont was so retained.⁸⁷

86. On Monday, May 14, 1973, representatives of the Licensee Dames & Moore, Stone & Webster, and Dr. Wise met at the site to further consider the chlorite seam feature problem and concluded that it was in fact a fault.⁸⁸ The Staff was contacted on May 17 and told that a fault had been found at the site⁸⁹ (an attempt to reach the staff by telephone on May 15 was unsuccessful).

⁸⁴S.F. 110.

⁸⁵*Id.*

⁸⁶*Id.*

⁸⁷S.F. 117.

⁸⁸*Id.*, This feature was also identified as Zone A.

⁸⁹S.F. 119.

Statement 16—July 18, 1973:

Borings drilled at the site indicate continuity of strata and inspection of soil and rock showed no adverse effects indicative of geologically recent or active faulting. [FSAR 1 & 2, page 2.5.2.7d, dated 7/18/73.]

87. This statement was made after the chlorite seam (now known as Zone A) had been recognized by a consensus of geologists as a fault.⁹⁰ In view of the borings made which penetrated the zone, Mr. McWhorter, a Dames & Moore geologist, testified⁹¹ that since Zone A is a stratigraphic entity one could conclude that there are no discontinuities of strata along Zone A. On the basis of the evidence of record, we agree and so find. In addition, it should be noted that the Staff had been advised of the information developed during April and May 1973 by the Licensee and was thus able to make its own independent investigation and review. Accordingly, the Board finds Statement 16 was not a false statement within the meaning of Section 186.

Statement 17—January 3, 1973:

Faulting of rock at the site is neither known nor is it suspected. Surface mapping, boring data, and the excavation for Units 1 and 2 all indicate continuity of strata. [FSAR, Part B, Vol. 1 at p. 2.5-6.]

88. For the same reasons as set forth in our findings above relating to Statement 7, the Board finds that Statement 17 is a material false statement within the meaning of Section 186.

Statement 18—July 18, 1973:

Faulting of rock strata at the site is not known. All available information tends to confirm the continuity of strata. The closest known fault is located 4.5 miles NW of the site, as evidenced by mine exposures near Mineral, Virginia . . . [FSAR 1 & 2, Part B, Vol. 1, p. 2.5.3.2.]

89. This statement, made in July of 1973, is found to be a material false statement within the meaning of Section 186, for the reasons set forth above in our discussion of Statement 7, and also because Zone A was known to be a definite fault no later than May 14, 1973.⁹² Contrary to the argument of the Licensee, it was material statement because it was clearly significant for purposes of safety review.

90. The fact that the Licensee had reported the presence of a fault to the Commission on May 17, 1973, does not affect the materiality of Statement 18 since, as we have found earlier above, reliance by the Staff is not relevant to a determination of materiality. The statement was made approximately two months after the Licensee had determined that there was a fault at the site. Such

⁹⁰ S.F. 117.

⁹¹ McWhorter testimony, p. 4.

⁹² S.F. 117; see par. 86, *supra*.

error in these circumstances (including the fact that an Atomic Safety & Licensing Board was developing a record on Units 3 and 4) should have been corrected immediately. In order for an applicant and the Commission to discharge their respective duties and obligations with respect to the public health and safety, it would seem patent that documents such as the PSAR and the FSAR must adhere to the highest standards of accuracy. Arguments that this statement is not material and thus not a false statement under Section 186 because the Staff (See Show Cause Hearing Tr. 2502-01) "knew what was going on", are unacceptable. As we have pointed out above, the Licensee has a clear and unequivocal duty to report information accurately and timely. This standard cannot be compromised, especially as to a primary source document such as the FSAR. In any event, as the staff correctly points out, other government experts, not connected directly with the Commission's review, may be misled by statements which they do not know to be false, and thus the Commission may be deprived of valuable input had they known the true facts.

Statement 19—July 18, 1973:

There is no zone requiring detailed investigation of the faulting of rock strata. (FSAR 1 & 2, Part B, Vol. 1, p. 2.5.3.7.)

91. The Board finds that this statement is not false within the meaning of Section 186. As shown in Appendix A to 10 CFR Part 100 the expression used is a term of art referring to a zone around a capable fault. There was no evidence of a *zone* having faulting or discontinuity of *rock strata*, at the time the statement was made, sufficient to require a detailed investigation.⁹³ This statement is correct and when read by a reasonably skilled geologist, would not have been misleading.

Statement 20—January 3, 1973:

The bedrock is competent, hard and crystalline metamorphic rock which is insoluble and free of any solution or collapse features. . . . No significant residual stress conditions are apparent in the bedrock. The site area is free of any known faulting. There are no predominant deformational features present other than the normal situation of jointing associated with metamorphic rocks of this geologic age. [PSAR 1 & 2, Part B, Vol. 1, p. 2.5-13/14.]

92. The Board agrees with the Licensee and finds that this statement is not a material false statement because there is no evidence of any solution or collapse feature; nor of a significant residual stress condition in the bedrock.⁹⁴ While stress measurements were attempted unsuccessfully, they failed due to reasons

⁹³ McWhorter testimony, p. 4.

⁹⁴ See McWhorter testimony, p. 5.

not bearing on the geologic fault matter. The term "predominant deformational feature" is not an explicit geological term and would not be applicable to Zone A.⁹⁵ We conclude that statement 20 does not mislead or fail to make a full disclosure within its scope and is not a false material statement within the meaning of Section 186.

Statement 21—July 18, 1973:

A study of the recent land forms in the site area does not reveal any adverse features such as faulting, slides, areas of instability or brecciation that could have been caused by these shocks or from earlier earthquake shocks. [FSAR 1 & 2, Part B, Vol. 1, p. 2.5.2.3.]

93. The statement is restricted to adverse features in *recent* land forms. Based on the evidence of record, we agree with the Licensee that the statement is true and accordingly the Board finds this statement is not a material false statement within the meaning of Section 186.

(e) Roper Report

Statement 22—October, September 1973:

Failure to provide the AEC Staff with a copy of the Roper report during the course of review of the North Anna site.

94. Dr. Paul Roper, an authority on the general structural geology of the Piedmont geologic province,⁹⁶ was retained as a consultant by Dames & Moore from approximately June 1973 to November 1973. He prepared three written reports. Two of these were received by Dames & Moore in May 1973 and the third in July 1973.⁹⁷ They were not transmitted to the Staff,⁹⁸ or apparently to the Licensee.⁹⁹ The Licensee had a duty to disclose the information contained in the Roper report to the Staff because it knew of the presence of a fault, and so communicated to the staff on May 17, 1973; it knew that the staff was reviewing the matter;¹⁰⁰ that an Atomic Safety and Licensing Board was considering the suitability of the site as a factor in the evidentiary hearings on Units 3 and 4 (May 7–10, 1973); that Dr. Roper was recognized as a foremost authority on the general structural geology of the Piedmont; and that his reports

⁹⁵ *Id.*

⁹⁶ S.F. 123.

⁹⁷ Tr. 603-604.

⁹⁸ S.F. 121-125.

⁹⁹ *Id.*

¹⁰⁰ As indicated earlier the staff on October 17, 1973, issued an order to show cause why the construction permits of the Licensee should not be suspended, modified or revoked because of the geological fault matter discussion.

indicated the possibility that the fault might be reactivated.¹⁰¹ Accordingly, its failure to transmit this report to the staff was a material false statement within the meaning of Section 186.

95. We do not accept the argument that for various reasons, Dames & Moore may have decided not to submit the report to the Licensee. One such reason is based on the assertion that submitting the reports was unnecessary since the background information contained therein was "synthesized"¹⁰² into the Dames & Moore report.¹⁰³ As to this point, we note that Dames & Moore employed two other consultants who prepared reports in the course of the investigation, which reports were in fact submitted to the staff.¹⁰⁴

(f) Disclosures at Public Hearings (Specifications 23–24)

96. The public hearing on the Licensee's application for construction permits for North Anna Units 1 and 2 was held before an Atomic Safety and Licensing Board on November 23–25, 1970. At that hearing no information or testimony was offered or presented with respect to the discovery of the chlorite seam in February of 1970 and the consideration given thereto by Messrs. Briedis, Swiger, and Henry. The interpretation of the chlorite seam as a potential fault, and other related information as discussed above was not presented.¹⁰⁵ The first phase of the public hearing on the application for construction for North Anna Units 3 and 4 was held by an Atomic Safety and Licensing Board on May 7–10, 1973. As noted earlier, there was no discussion or mention at this hearing of faulting or suspected faulting at the site, except for the discussion of shears.¹⁰⁶

Statement 23:

Failure to adduce evidence regarding adverse foundation conditions discovered in Unit 1 on or about February 1970 at the Public Hearing for Construction Licenses for Units 1 and 2 on November 23–25, 1970.

97. The Licensee had the burden of proof¹⁰⁷ with respect to its application for construction permits for Units 1 and 2 and presented evidence on health and

¹⁰¹ S.F. 124.

¹⁰² The concerns of Dr. Roper were not specifically retained.

¹⁰³ S.F. 125.

¹⁰⁴ S.F. 126.

¹⁰⁵ S.F. 107. See Further Specifications of the Coalition at p. 13.

¹⁰⁶ J. Ex. 18, 19.

¹⁰⁷ The Licensee argues that the burden of proof in the instant proceeding is on the Coalition. We do not reach this issue however since the matter of which party bears the evidentiary burden becomes a significant question only when evidence is evenly balanced, or if the trier is in doubt about the facts. *In the Matter of Consumers Power Co.* (Midland Nuclear Power Plant Units 1 and 2) ALAB-283 NRCI-75/7 18, July 30, 1975. This is not the case here, since the operative facts were largely presented through stipulation of the parties and are not in dispute.

safety matters at the hearing held on November 23–25, 1970. In reliance on the evidence presented at the hearing, the Atomic Safety and Licensing Board issued an Initial Decision, finding the site to be suitable and authorizing the issuance of construction permits.¹⁰⁸ Since the Licensee has a duty to communicate any material information which may affect the public health and safety to the Commission for the latter's independent safety review, its failure (a) to inform the staff and (b) to adduce evidence before the Licensing Board of the discovery of a chlorite seam, and of the serious consideration given to the possibility that the seam was a fault, constituted a non-disclosure and omission of information so important as to give rise to a material false statement within the meaning of Section 186.

Statement 24:

Failure to adduce evidence regarding discovery of a fault at the site on or about April and early May 1973 at the Public Hearing for Construction Licenses for Units 3 and 4 on May 7–10, 1973.

98. While some geological evidence on shears was presented at the evidentiary hearing on Units 3 & 4 conducted by a Licensing Board on May 7–10, 1973, the Licensee did not present any evidence with respect to the suspected faulting.¹⁰⁹ We need not reiterate all the facts set forth above which also have application here. In summary, on April 15, 1973, the Unit 3 excavation showed an apparent offset along a chlorite seam which indicated possible faulting.¹¹⁰ Dames and Moore was asked by the Licensee to meet with Stone and Webster to survey "the chlorite seam problem."¹¹¹ On April 26, the experts strongly believed that fault existed.¹¹² Following a meeting on May 2, 1973, an independent outside consultant was retained to evaluate the chlorite seam problem.¹¹³ On May 7, 1973, the first day of the Licensing Board's evidentiary hearings, Dr. Ellwood, who was in charge of the Dames & Moore team investigating the chlorite seam problem, reported to Mr. Briedis that Dames & Moore's preliminary mapping indicated that "some" movement had taken place along the chlorite seam.¹¹⁴ On May 9, while the evidentiary hearing was still in progress, a Stone & Webster engineer in a letter to the Licensee, confirmed that geologic mapping of the exposed rock surfaces within the Units 3 and 4 containment excavation revealed several noteworthy features and recommended that the Commission be advised of the geologic findings. None of this information was communicated to the Board which was siting and conducting the proceedings.

¹⁰⁸ *In the Matter of Virginia Electric and Power Co.*, 4 AEC 544, 1971.

¹⁰⁹ S.F. 109.

¹¹⁰ S.F. 110.

¹¹¹ *Id.*

¹¹² S.F. 111; J. Ex. 119.

¹¹³ S.F. 113; J. Ex. 51.

¹¹⁴ S.F. 114.

99. The Licensee asserts that its delay in advising the Board is no different than that of the Staff, which, after having learned of the existence of a fault, waited approximately 75 days before advising the Board on August 3, 1974. Such argument is irrelevant. Failure of the Staff to report the faulting immediately to the Board does not excuse the Licensee. The burden of presenting a complete application is on the Licensee. Whatever error the Staff made in not reporting to the Board immediately does not excuse the Licensee's failure to do so. Accordingly, and also for the reasons set forth above in our discussion of Statement 23, we find Statement 24 to be a material false statement within the meaning of Section 186.

IV. REMEDIES AND SANCTIONS

100. In view of the presence of twelve material false statements as found and discussed by the Board, *supra*, and pursuant to announced procedure, the second phase of this proceeding was ordered to consider remedies and sanctions.¹¹⁵ This phase raised several issues relating to the appropriate remedy, and to the scope of the Board's jurisdiction.

101. As to the extent of the Board's jurisdiction, it was agreed that the Commission itself had the authority and power to revoke, suspend or modify a license (42 USC 2236, 10 CFR 50.100) and could impose civil penalties (42 USC 2282). However, while the Licensee acknowledges¹¹⁶ that this Board has authority to impose civil penalties, and may revoke or suspend the construction permits involved, it maintains that the Board cannot *modify* the permits because the Commission had referred only to revocation or suspension on its May 28 Order. Insofar as our actions herein below may amount to a modification of the license the Board disagrees with that position.

102. The Commission's May 28, 1974 Order designated this Board not only to "... assume jurisdiction over this proceeding," but also to:

... take whatever action it deems necessary to appropriately establish the specific issues for consideration at the hearing, and shall issue an appropriate notice of hearing in the *Federal Register*.

In view of this action of the Commission, read in the light of the fact that the power to revoke—which the Commission clearly delegated to the Board—includes the lesser penalty of modification or other limitation,¹¹⁷ we find that the Commission's Order delegated to this Licensing Board, charged with rendering the Commission's Initial Decision on the matter, all the pertinent authority which the Commission itself could have exercised. This includes the

¹¹⁵ See Memorandum and Order of this Board dated April 4, 1975.

¹¹⁶ Licensee's Brief of May 15, 1975.

¹¹⁷ *Reynolds v. State Board of Equalization* 173 P. 2d 551, 553 (Sp. Ct. Cal, 1946).

necessary authority to identify, address and resolve the issues found, and to impose civil penalties, or other sanctions less than revocation or suspension, if appropriate.

103. When it approved the stipulation of issues, the Board construed par. 4 thereof as consistent with the Board's finding in par. 102 above, and stated in its Order of August 1, 1974:

In view of the stipulation of issues, the requirements of Sections 186 and 234 of the Act, and the requirements of Section 50.100 of the Rules (10 CFR 50.100), *evidence as to the type and extent of remedy required, if any*, should violation of applicable rules be proven, would appear to be necessary for an adequate record. Unless reason to the contrary is shown, the Board intends to first consider the question of the existence of material false statements, and then, if necessary, reconvene a second evidentiary session devoted to the question of remedy if material false statements are found. [Emphasis supplied.]

This order clearly contemplates an entire range of remedies or sanctions, if a material false statement was found. No objection was filed to it, or motion made for its resettlement. In view of our findings above, we reject the Licensee's argument and hereby find that this Board has the necessary jurisdiction to impose the remedies and sanctions set forth herein. Moreover, to construe the Commission's May 28 order as limiting the Board's remedy authority to revocation or suspension would be tantamount to suggesting prejudgment on the part of the Commission. We reject such interpretation.

104. The matter of whether Section 9 of the Administrative Procedure Act or Section 2.200 of the Rules apply to the proceeding was not in dispute. However since it was raised by the Staff and Coalition, the Board finds as follows. The Licensee received full notice of the matter and issues pending against it, commencing with the October 17, 1973, Order to Show Cause, the Staff's March 25, 1975, Report, the Commission's May 28, 1974, Order and this Board's August 1974, Prehearing Conference Order including the Stipulation of Issues.¹¹⁸ At no time did the Licensee object to the conduct of the proceeding on the bases of Section 9 of the Administrative Procedure Act or the provisions of Section 2.200 *et seq.* of the Commission's Rules of Practice. Accordingly, the Board finds that the provisions of Section 9(c) of the Administrative Procedure Act,¹¹⁹ and the provisions of Section 2.200, *et seq.* of 10 CFR have been waived by the Licensee and do not apply to this proceeding.

105. Another issue relates to whether this Board has the power to order affirmative action. The Board agrees with the Coalition that pursuant to the broad delegation from the Commission under 42 USC 2201(c)(o), the Board

¹¹⁸ The issues as set forth in the stipulation of issues were formulated jointly by the parties.

¹¹⁹ Formerly Section 9(b), 5 USC §588(c).

may impose whatever remedy or sanction may be appropriate in the circumstances consistent with the public interest (See, *Federal Trade Commission v. National Lead Co.*, 352 U.S. 419, 428-29 (1957); *NLRB v. Seven-Up Bottling Co.*, 344 U.S. 348-49 (1953)).

106. In arriving at the sanctions and remedies imposed, the Board considered the Enforcement Action Criteria of the Commission dated September 26, 1972, and the revisions thereof dated December 31, 1974; however, the Board found little guidance therein for application to this proceeding, and accordingly, based its findings and ultimate conclusions as to sanctions and remedies on a fair balancing of the circumstances herein, its concerns for the public interest, and the exercise of its discretion toward achieving a fair resolution of the matter.

107. With respect to the issue of willfulness as it may affect the appropriate sanctions and remedies to be imposed, we find as set forth below. While willfulness or "scienter" was not an element of a material false statement in terms of a violation of Section 186, nevertheless it could be a consideration for purposes of determining the severity of a remedy. The Board did not find the presence of evidence in the record sufficient to prove that the material false statements were in fact willful. We found only that the Licensee charged with the knowledge of its contractors, agents and employees, is responsible for not having reported material information to the staff within a reasonable time for the latter's independent evaluation. Had willfulness on the part of the Licensee become apparent during the course of the hearing, the Board was prepared on its own motion, to raise and develop a record on the issue as it related to determining an appropriate remedy or sanction. This was not the case, and therefore the element of willfulness was not a factor adding to the evaluation undertaken by the Board in arriving at its final determination as to sanctions and remedies.

108. One other matter should be noted. The material false statements included statements relating to Units 1, 2, 3, and 4. While the Commission's May 28 Order identified only construction permits CPPR-77 and CPPR-78 (Units 1 and 2), it should be recognized that the Coalition's Motion was directed to all four units (North Anna, Units 1, 2, 3, and 4). It should also be recognized that the health and safety issues relating to the geological fault matter stemming from the Commission's October 17, 1973, Order to Show Cause were consolidated by agreement of the parties.¹²⁰ Also, the disclosure issue stemmed from this October 17 Order and was postponed from the earlier show cause hearing only by agreement of the parties. In view thereof and since no objection was made during the course of the proceeding seeking to limit this proceeding to Units 1 and 2, the Board concludes that the sanctions and remedies imposed on the Licensee herein apply to the permits of all four units, indiscriminately.

¹²⁰ See n. 2, *supra*.

109. The Coalition has recommended¹²¹ that the Licensee's construction permits be revoked; and if not revoked, then the Licensee should be required to undertake certain affirmative actions, and to pay a civil penalty in the amount of \$705,000. In addition, the Coalition further recommended that the Board require the Staff to undertake certain actions which the Coalition assumed would deter further violations not only as to the Licensee but also as to its contractors.

110. The Board finds that revocation or suspension of the construction permit is not warranted under the circumstances herein. The findings of the Licensing Board in the Show Cause proceeding¹²² were that the geological fault zone at the North Anna site is not capable within the meaning of 10 CFR 100, Appendix A, and that there is reasonable assurance that the North Anna units can be constructed and operated without undue risk to the health and safety of the public. Thus, we agree with the recommendation of the Staff and the Commonwealth that none of the material false statements gives rise to a threat to the public health and safety, nor pose a threat to the common defense and security. An equally important reason leading us to conclude that revocation or suspension is not warranted was the need for the power these units will provide to the public as found by the Licensing Board in the proceeding involving units 3 and 4.¹²³ In addition, we do not find concerted, deliberate intention to violate the material false statement provisions of the Act.

111. Generally, the other actions recommended by the Coalition would serve little useful purpose. For example, we see no need for the Coalition's proposal that the Licensee be requested to present a report on its quality control program with regard to the work of its geological consultants, for in any event, the Licensee will be required to establish the sufficiency of its quality control program during the course of its application for an operating license. In addition, in the interim period, the Licensee will be under the continuing observation of the Directorate of Inspection and Enforcement. So too, the Coalition's proposal that the Licensee be placed under a continuing disclosure requirement and to report to the Board on a regular basis with regard to documents pertaining to geological suitability is unnecessary, since the Licensee is already required to report to the Staff of any information which may place the suitability of the site in question. Likewise, the Board finds that the remedies suggested by the Coalition as to actions to be taken by the Staff are unnecessary and not useful in the circumstances of this case. In the discretion of this Board and based on a careful consideration of the entire record, the sanctions and remedies as proposed by the Coalition have not been adopted.

¹²¹ See NAEC's Brief dated May 6, 1975.

¹²² See n. 2, *supra*.

¹²³ See n. 28, *supra*.

112. Both the Staff and Commonwealth have recommended a civil penalty of \$60,000, arrived at by assessing \$5,000 (the maximum for a single violation permitted under 42 USC 2282), for each of the twelve material false statements found by this Board. The Coalition recommends a civil penalty totalling \$705,000; the Licensee insists that no more than a Notice of Violation is appropriate. We are persuaded by the facts in this case, interpreted in view of our findings herein, *supra*, that an appropriate civil monetary penalty is \$60,000. This sum is to be imposed as a sanction to be paid out of the net profits of the Licensee and not to be considered by the Licensee as an operating expense or a cost of doing business. This penalty does not infringe on the rate making authority of other state or federal agencies. It is a regulatory penalty growing out of the violations of the Act and the Commission's regulations as found herein and imposed by this Board under the authority of Sections 186 and 234 of the Act.

113. The Board believes that a monetary sanction standing alone is insufficient. We agree with the Staff, Coalition and Commonwealth that a material false statement goes to the very heart of the regulatory process. It is apparent that other sanctions are needed to prevent recurrence of what appears to be an undue number of infractions and a high rate of civil violations.

114. Based on the evidence of record, including those facts and findings relating to the compliance history of the Licensee,¹²⁴ we find the fact that the Licensee has received two civil penalties out of the total number of eight issued to the entire nuclear power industry by the Commission prior to the hearing (now, three out of nine) is indicative of a situation requiring a sanction greater than the fine imposed. While the Board expresses no opinion as to the overall competency of the Licensee, or as to its responsibilities and competency in the non-nuclear area of its functions, we do find that its adherence to, and understanding of, its duty under the Act and the Commission's rules and regulations does not meet the high standards required. Its public health and safety responsibilities and the degree of care needed to properly discharge them is not clearly understood by every official and employee of the Licensee. We believe that no less than a positive statement from the Licensee's chief executive officer or from its Board of Directors, is needed to announce to all of its employees the Licensee's obligations for the public health and safety as required by the Atomic Energy Act and the Rules and Regulations of the Commission.

115. Accordingly, and in view of the need to achieve a remedy that will not only take into account the position of the parties, but will also recognize fully the public interest, we hereby condition the permits of the Licensee as follows:

(a) The Licensee shall prepare a statement of policy expressing the strong commitment of the Virginia Electric & Power Company to fully discharge all of its responsibilities, duties and obligations arising from its decision to

¹²⁴ Tr. 628-631; Exhibit SX-1, pp. 1-3.

construct and operate nuclear reactors pursuant to the provisions of the Atomic Energy Act and the Rules and Regulations of this Commission, including but not limited to an expression showing an understanding of the need for independent evaluation by the Nuclear Regulatory Staff on all material safety matters affecting the construction and operation of a nuclear reactor. This statement is to be reviewed in light of our findings above by the Nuclear Regulatory Staff, and its concurrence obtained before issuance. The statement is to be issued by a chief executive officer of the Licensee (its President or Chairman of the Board), within 30 days of the date of issuance of this decision.

(b) The Licensee shall prepare a management evaluation and analysis of its entire current organizational structure from the point of view of its effectiveness in implementing the statement of policy required in paragraph (a) above. This report is to be submitted to the Nuclear Regulatory Staff for its review, and for whatever action the Staff considers necessary. The intent of the Board here is to assure that the Licensee's internal management systems, including its quality assurance program, have the management characteristics needed to provide the necessary confidence in the ability of the Licensee to implement the statement of policy.

(c) The Licensee shall analyze and report on its contract policy with those contractors participating in or otherwise involved in the performance of any work or service pursuant to any application, permit, or license pending before, or issued by, the Nuclear Regulatory Commission. This report is to be delivered to the Staff for its information and review within a reasonable time following the issuance of this decision.¹²⁵ The intent of the Board is to assure that contractors employed by the Licensee are committed and clear as to their obligations and responsibilities pursuant to the Act and the Rules and Regulations of the Commission.

(d) One final matter requires attention. In view of the Licensee's high rate of civil penalties assessed against it, the staff is requested to evaluate the Licensee's performance in depth to determine whether additional monitoring of the Licensee is needed beyond that employed in the routine follow-ups to violations and infractions. While the Staff has stated that it has no program for more extensive monitoring of an applicant or licensee who may be identified as one having a high rate of violations and infractions,¹²⁶ it is the opinion of this Board that should the evaluation requested above indicate

¹²⁵ While Section 206 of the Energy Reorganization Act of 1974 may resolve some of the issues relating to the responsibilities and obligations of contractors to the Licensee, nevertheless, it does not appear to resolve all potential issues since Section 206 apparently includes the element of "scienter" whereas Section 186 of the Atomic Energy Act does not. See Tr. 743-745.

¹²⁶ Tr. 646-649.

the need for additional monitoring of the Licensee, then such a program to provide additional monitoring should be promptly established.

V. ORDER

Based on our findings and conclusions herein, and pursuant to Sections 186 and 234 of the Atomic Energy Act of 1954, as amended, and the Energy Reorganization Act of 1974, Part II, it is hereby ordered that:

(1) Construction activities involving North Anna Units 1, 2, 3, and 4, including those undertaken pursuant to CPPR-77 and CPPR-78, should not be suspended or revoked for the violations herein found under Section 186 of the Act.

(2) The Licensee comply with the conditions set forth in paragraph 115, subparagraphs (a), (b), and (c);

(3) The Licensee pay a civil penalty as set forth in paragraph 112 above in the total amount of sixty thousand dollars (\$60,000) within 30 days of the date of the receipt of this order, by check draft, or money order payable to the Treasurer of the United States and mailed to the Director of the Office of Inspection and Enforcement, Nuclear Regulatory Commission, Washington, D. C. 20555.

It is so ORDERED.

THE ATOMIC SAFETY AND
LICENSING BOARD

John Wolf, Member

John B. Farmakides, Chairman

Issued at Bethesda, Maryland
this 10th day of September 1975.

Dissenting Opinion

The opinion of Mr. Lester Kornblith, dissenting in part, is set forth immediately below following the majority opinion.

SEPARATE OPINION OF L. KORNBLITH, JR., DISSENTING IN PART

I find Statements 17, 18, 22, and 24 to be material false statements. I dissent from the opinion of my colleagues with respect to Statement 7, 10, 11, 12, 13, 14, 15, and 23. I concur with their decision as to Statements 1, 2, 4, 16, 17, 18, 19, 20, 21, 22, and 24, but with somewhat different reasoning. For this reason, I address each statement below. Before doing this, however, I will address some of the legal issues.

I. LEGAL ISSUES

I am in general agreement with the conclusions regarding the legal issues in Section II of the decision. With regard to the question of whether willfulness is a necessary element of a false statement, I do not feel that the legislative history of Section 186 is as clear as my colleagues do, and share, at least in part, the views expressed by the licensee on this matter.¹ Nonetheless, I concur with the finding that a showing of *scienter* is not required as proof of a false statement under Section 186 because of the obvious need of the Commission for truthful and accurate information on matters relating to carrying out its responsibility to protect the health and safety of the public.

I agree with my colleagues' view that the Licensee has a "nondelegable duty" to report information relating to site suitability, but do not find it to be relevant to the issues before us. I am not aware of any attempt by the Licensee to delegate the duties imposed upon him with regard to the matters under consideration. The Licensee has taken the position that he has not known all of the information known to his contractors, but, when faced with our determination that he was nonetheless charged with such knowledge, he has not attempted to excuse himself on the basis that it was the contractor's responsibility to report the information.

An entirely different aspect of the question of materiality is, in my view, the most difficult matter involved in this case and is the principal reason the majority and I have reached different conclusions regarding some of the statements. I feel strongly that whether or not a given fact is material must be decided by conscientious professional judgment and that this judgment must be made in the light of circumstances existing at the time. Thus, we must consider the standards by which each of the statements must be judged.

Both the regulations and the guidance provided to Applicants by the Staff have changed profoundly through the years with respect to the amount of information required from Applicants (the changes, as they involve the requirements relevant to this case, are discussed in detail below). For example, a

¹ Licensee's Post-hearing Brief, pp. 19-21.

construction permit for a prototype power reactor was issued in 1956 on the basis of a PSAR about one-fourth of an inch thick. The PSAR for a typical power reactor today is 100 to 200 times as thick. This growth, although partially caused by the increased complication of the plants, is primarily caused by the needs of the Staff for more and more detailed information upon which to base its increasingly deeper safety review. Thus, information that is considered important in 1975 may or may not have been so considered in 1957, 1968, or 1973. Although the statutory requirements have not changed, the Commission's rules have changed and the guidance provided by the Staff has changed.² It is my view that the information provided by the Licensee must be judged by the rules in effect at the time the information was furnished, as interpreted by the Staff guidance. I believe this can be justified both on a common-sense basis and on a strictly legal basis, and I have, accordingly, differed from my colleagues on the standards to be applied in determining whether certain of the statements in contention were false. But before discussing these lines of reasoning it is necessary to look in detail at the rules and guidance as they developed. The various relevant regulations in effect and proposed and the documents developed by the Staff to provide guidance to Applicants and Licensees have been described and quoted in paragraphs 43 through 47 of the majority opinion.³ Two points are worthy of particular notice.

First, the regulations in effect in 1969 (Sections 50.34(a)(1) and 100.10(c) and (d)) and earlier gave scant information to the Applicant on what to include in his PSAR. To help fill this void, the Staff had earlier (1966) published a guide for the assistance of Applicants in preparing this report. The relevant section is quoted in its entirety in the majority opinion (paragraph 43) and constitutes the basic guidance in effect in 1969. Note particularly the fourth and fifth sentences in the first quoted paragraph:

²These changing requirements reflect the growing awareness in the early 1970's on the part of the AEC that its involvement in the design and construction states should be substantially increased. Matter of *Duke Power Company* (Catawba Nuclear Station, Units 1 & 2) CLI-75-9, NRCI-75/8, 180. Nor are changes in a regulatory scheme unusual. Rather, when Congress states a regulatory agency's authority in broad terms (as it has here) it is "to avoid the need of repeated congressional review and revision of the Commission's authority to meet the needs of a dynamic, rapidly changing industry. Regulatory practices and policies that will serve the 'public interest' today may be quite different from those that were adequate to that purpose in 1910, 1927, or 1934, or that may further the public interest in the future". [*Washington Utilities and Transportation Commission v. F.C.C.*, 513 F.2d 1142, 1157 (9th Cir. 1975).]

³The majority, at paragraphs 48 and 49, identifies cases which, it asserts in paragraphs 50 through 52, make the reporting requirements perfectly clear. I disagree. While the cases emphasize the importance of adherence to the rules, they do not assist in defining the specific requirements of the rules we are concerned with.

Similarly, geological formations beneath the facility in general play the same role in the architectural engineering of the structures for reactors as for any major industrial facility, and hardly justify exhaustive treatment in facility design reports to be submitted to the Commission. Except for the unusual situation in which local hydrology or geology have particular influence on design, a great deal of information with respect to these matters need not be submitted in the Safety Analysis Report.

Clearly the Staff is minimizing the importance of detailed geological information except for unusual situations. This conclusion is reinforced by the succeeding sentences:

A common practice has been the inclusion, in total, of survey reports of geological experts brought in by an applicant to determine site characteristics as a basis for further design. Such exhaustive reports should be referenced, but a summary with pertinent conclusions will, in general, suffice for the Safety Analysis Report. Emphasis should be on geological information explaining the need or the basis for any unusual design criteria because of geological anomalies.

As will be apparent from the subsequent discussion, VEPCO did not consider the anomalous conditions that they found, studied, and disposed of, to be an unusual situation having "a particular influence on design" or necessitating "any unusual design criteria". This conclusion was reached by qualified experts and appears to be a reasonable one.

The second point worthy of notice is the change that took place around the end of 1971. In November the Commission published, for comment and interim guidance, a proposed revision of Section 100.10 and a proposed Appendix A to Part 100 which spelled out in substantially more detail than the earlier rules the information to be furnished. This was followed the following February by a revised guide, greatly expanded from the 1966 version. It closely tracked the proposed Appendix A and entirely eliminated the strictures against excessive information.

What conclusions can we reasonably draw from this series of documents? First, the Staff was aware in 1966 that the information in the rules governing what data were to be furnished to the Commission was inadequate for the preparation of PSARs. Second, the Staff tried to fill the gap by issuing a guide that defined what the Staff considered to be adequate information. Third, as time went on, the Staff realized its increasing involvement on design and construction problems and its increasing need for relevant information, resulting in new rules and a new guide requiring substantially more complete information. Even this is not the end of the line, for eight months later the Staff issued a further revision of the guide and in late 1973 the Commission adopted the Appendix A proposed two years earlier but with further changes. Further, the

Staff is continuing to issue Regulatory Guides (1.70 series) which identify additional information needed in SARs and the Staff has indicated its intention to incorporate these into a future edition of the guide.

It is clear that the information needs of the Staff have changed continuously and there is no reason to believe that this situation will be altered. It is apparent that this constantly changing guidance will influence the extent of the information supplied by applicants and licensees and that from a common-sense point of view we must use as a standard in judging the adequacy of any information furnished by applications and licensees the guidance available at the time.

The rules in effect in 1969 and the 1966 "Guide for the Organization and Contents of Safety Analysis Reports" (referred to hereafter collectively as the 1969 guidance) apply to Statements 1, 2, and 4 made in 1969, to Statement 23, made (by omission) in 1970, and to Statements 7, 10, 11, and 12, made in August and September 1971. I have also applied the 1969 guidance to Statements 13, 14, and 15, made in March of 1972, for the reason stated in the discussion of those statements below. The proposed rule change and Appendix issued in November 1971 and the revised Guide published in February 1972 (referred to as the 1971 guidance) have been applied to the remaining Statements, 16 through 22 and 24, made in 1973.

It is clear to me that the 1969 guidance did not require any further or more detailed disclosures than were in fact made to the Staff by the Licensee with respect to Statements 1 through 15. In view of this, the position that these were material false statements would necessarily assume that the proposed amendment of 10 CFR §100.10 (and the guidance that flowed therefrom) has retroactive effect. On the other hand, if the changes are retroactive, it is equally clear that some of those statements were not responsive and must be considered to be material false statements. This situation clearly raises the issue of whether it is appropriate to give retroactive effect to changing Staff requirements embodied not only in regulations but in informal Staff guidance.

Clearly, the regulations here in question represent the Commission's discharge of its function to provide reasonable assurance that a nuclear power plant can be constructed and operated at a proposed site without undue risk to the health and safety of the public. (See Statement of Considerations to Proposed Seismic and Geologic Siting Criteria, 36 *FR* 22601, Nov. 25, 1971.) As recited in the Statement of Considerations, the criteria constituted a proposed amendment to the existing regulation. We are now asked to hold that a licensee properly may be penalized for failing to comply with this proposed regulation before it existed.⁴

⁴To impose a penalty against the Licensee in respect to statements made prior to the amendment of 10 CFR §100.10(c)(1) is also impermissible under the doctrine laid down in *Morton v. Ruiz*, 415 U.S. 199, 39 L.Ed 2d 270 (1974). That case held that a Bureau of Indian Affairs eligibility requirement for certain assistance which had not been promulgated

Footnote 4 cont'd. on page 545.

Similar situations have caused the courts difficulty when they have been asked to approve an *ad hoc* agency action which has the effect of holding unlawful conduct which, when taken, was lawful. Perhaps the leading case is *SEC v. Chenery Corp.*, 332 U.S. 194, 91 L.Ed 1995 (1947). In that case, the Supreme Court upheld an *ad hoc* determination of the SEC which held unlawful the purchase of certain stock by a certain class of persons although there was no statute or regulation which prohibited such purchases. In upholding this determination, the Court noted that such procedures must be utilized when problems arise which the agency could not reasonably foresee and thus provide for in general rules. The Court, however, noted that:

(S)ince the Commission, unlike a court, does have the ability to make new law prospectively through the exercise of its rulemaking powers, it has less reason to rely upon *ad hoc* adjudication to formulate new standards of conduct within the framework of the Holding Company Act. The function of filling in the interstices of the Act should be performed, as much as possible, through this quasi-legislative promulgation of rules to be applied in the future. [91 L.Ed at 2002.]

Similarly, in *Greene v. U.S.*, 376 U. S. 149, 11 L.Ed 2d 576 (1964), in passing upon the government's contention that a regulation adopted subsequent to the maturation and filing of petitioner's claim must govern that claim instead of the regulation then in effect, the Court stated:

Thus the Government's argument necessarily requires that the 1960 regulation be given retroactive application. As the Court said in *Union Pac. R. Co. v. Laramie Stock Yards Co.* 231 U.S. 190, 199, 58 L.Ed 179, 182, 34 S.Ct. 101, "the first rule of construction is that legislation must be considered as addressed to the future, not to the past... [and] a retrospective operation will not be given to a statute which interferes with antecedent rights... unless such be 'the unequivocal and inflexible import of the terms, and the manifest intention of the legislature.'" Since regulations of the type involved in this case are to be viewed as if they were statutes, this "first rule" of statutory construction appropriately applies and under the circumstances, it would be unjustifiable to give the 1960 regulation retroactive effect. [11 L.Ed 2d at 584.]

Footnote 4 cont'd.

in conformity with the Administrative Procedure Act and the agency's own regulations, and which was contrary to representations made by the agency to Congress, could not be employed to deny assistance. In the instant case, any sanction imposed in respect to statements made prior to the aforesaid amendment would punish nonconformance with a standard which similarly had not yet been promulgated in accordance with the Administrative Procedure Act and agency regulations. *Cf. U. S. v. Morton Salt Co.*, 33 U.S. 632, 644; 94 L.Ed 401, 411 (1950); *Marco Sales Company v. FTC*, 453 F.2d 1 (2nd Cir. 1971); *Borak v. Biddle*, 141 F.2d 278 (D.C. Cir. 1944).

It thus appears that, absent a cogent reason, regulations (at least legislative as opposed to interpretive regulations) and *ad hoc* determinations are to be applied prospectively only.⁵ In *SEC v. Chenery Corp.*, *supra*, the Court noted that "... retroactivity must be balanced against the mischief of producing a result which is contrary to a statutory design or to legal and equitable principles. If the mischief is greater than the ill effect of the retroactive application of a new standard, it is not the type of retroactivity which is condemned by law." 91 L.Ed at 2003.

In *Retail, Wholesale and Department Store Union, AFL-CIO v. NLRB*, 466 F.2d 380 (D.C. Cir. 1972), the Court sought to apply the above standard to an attempt by the NLRB to retroactively apply an *ad hoc* determination in a separate case to conduct by an employer which occurred prior to the *ad hoc* determination.

The Court concluded that no reason could be found which would justify retroactive application. In distinguishing *Chenery*, the Court noted that the situation presented to the NLRB was not one which the NLRB had been unable to foresee. "Rather it is a case where the [NLRB] had confronted the problem before, had established an explicit standard of conduct, and now attempts to punish conformity to that standard under a new standard subsequently adopted [footnote omitted]." 466 F.2d at 391. The court went on to note that "[u]nless the burden of imposing the new standard is *de minimis*, or the newly discovered statutory design compels its retroactive application, the principles which underlie the very notion of an ordered society, in which authoritatively established rules of conduct may fairly be relied upon, must preclude its retroactive effect . . .". 466 F.2d at 392.

Is retroactivity required in the instant case? To impose a civil penalty in a situation where the conduct in question was taken in reliance on existing regulatory guidance is a harsh remedy and should only be resorted to in order to avoid "... the mischief of producing a result which is contrary to a statutory design or to legal and equitable principles." *Chenery*, 91 L.Ed at 2003. What "mischief" can be avoided in this case? The record reveals that there has been no intent on the Licensee's part to deceive or mislead the Staff. The record reveals rather that the Licensee sought to comply with, and did comply with, existing guidance. No legal or equitable principles have been brought to my attention which dictate the result reached by the majority.

⁵ Even interpretive regulations are not always retroactive. In rejecting the government's position that an internal revenue regulation should be given retroactive effect, the Supreme Court in *Helvering v. Griffiths*, 318 U.S. 371, 87 L.Ed 843 (1943) noted that this position would tax a multitude of past transactions although there was "... no source of law from which the most cautious taxpayer could have learned of the liability." [87 L.Ed at 863.]

It is clear that, in the course of regulating the nuclear industry, proper regard for the health and safety of the public requires that safety requirements often be applied to existing plants which conformed to existing regulations when licensed. This clearly constitutes retroactive application of regulatory requirements. The justification for this treatment is self-evident. Clearly retroactive application in this context must be resorted to in order to avoid "... the mischief of producing a result which is contrary to the statutory design..." (*Chenery*, 91 L.Ed at 2003) that adequate protection to the health and safety of the public can be provided.

We are not here dealing with a requirement relating to the health and safety of the public which we are asked to retroactively apply to this licensee. Rather, we are concerned with an essentially punitive sanction attached to the licensee's failure to conduct itself in accord with the Commission's regulations. While it may be perfectly proper to require the licensee to comply with safety regulations issued after the date of his license, it strikes me as totally improper to also penalize him for failing to comply with those regulations before they were issued.

I find that, like Judge Friendly, "... a decision branding as 'unfair' conduct stamped 'fair' at the time a party acted..." raises my hackles. "And the hackles bristle still more when a financial penalty is assessed for action that might well have been avoided if the agency's changed disposition had been earlier made known, or might even have been taken in express reliance on the standard previously established." *NLRB v. Majestic Weaving Co.*, 355 F.2d 854 at 860 (2nd Cir. 1966).

In short, on the present record, I can find no reason to penalize conduct which complies with standards in existence when the conduct took place.

II. FACTUAL ISSUES

As I have indicated previously, I concur with the ultimate findings of my colleagues as to certain of the statements. In studying the draft of their opinion, however, I find that there are a number of minor matters on which we differ in logic or interpretation of the facts. Rather than identifying and discussing these individually, it appears to me to be expedient to discuss each of the statements *de novo*, even at the cost of a small amount of repetition. I have done so below.

Statements 1, 2 and 4

All of the parties except the Coalition are in agreement that these are not material false statements. The other two Board members and I share this view. Although I cannot agree in detail with all of the proposed findings of all the parties, I find that those of the Commonwealth are accurate and succinct and adopt them as my own.

Statement 7

This is the first statement on which my view differs from that of my colleagues, as well as those of the Staff, Commonwealth and Coalition and in part that of the Licensee. The Coalition's allegations with respect to the first and third sentence of this statement have been adequately discussed elsewhere.⁶ The key issue here is the second sentence—"Faulting of rock at the site is neither known nor suspected". The Staff and the Commonwealth (and, of course, the Licensee) agree that faulting was not known. The statement that we must determine the truth or falsity of is, then, "Faulting of rock at the site is not suspected." The possible spectrum of interpretations of this runs from "Faulting is not suspected by the person making this statement at this instant of time" to "Faulting is not, never was, and never will be suspected by anyone". Nobody involved in this proceeding has taken a position at either extreme, but the positions do vary. The faulting in question was the chlorite seam that in 1973 was to be recognized as a fault and which was the subject of the earlier part of this proceeding. Before setting out my position, I will briefly summarize the relevant facts.

Excavation for the reactor containment for Unit 1 started late in 1969. This work, as well as all of the other construction work, was carried out by the architect-engineer, Stone and Webster (S&W), or, under its supervision, by its subcontractors. In early February 1970, responsible S&W officials in the home office in Boston were informed by field personnel that a problem existed concerning stability of the excavation walls that might affect the safety of construction personnel and that the field personnel wished to have the condition examined and to get recommendations about the protective measures that should be taken. Home office personnel (Briedis and McKittrick) inspected the condition on February 5. It was decided to remove the material above the slide and carry out additional rockbolting. The site was again inspected by home office personnel (Briedis and Swiger) for several days starting February 25.⁷ During this visit it was apparent that the cause of the slide was a chlorite seam. The seam was examined, three days were spent mapping the excavation, and samples were taken from the seam for x-ray analysis to determine the minerals present. Consideration was given as to whether or not the seam was a fault.⁸ Upon the completion of its investigation, S&W concluded that the seam did not represent a fault.⁹ The fact that consideration was being given to the possibility of faulting was not communicated to the Licensee.¹⁰

⁶ See, for example, Commonwealth's proposed findings on Statements 1 and 16.

⁷ Mr. Briedis in his deposition (Joint Exhibit 29) stated he also visited the site in mid-February. In an interview with Staff investigators on February 27, 1974, he stated that this was incorrect (Joint Exhibit 40, page 25).

⁸ Stipulations 53, 54, 55, 63, 64, 65, 67, 68, 69, 70, and 71; Joint Exhibit 33, pp. 3-5.

⁹ Stipulations 54, 55, 57, and 71.

¹⁰ Stipulation 32.

On February 23, 1970, Dr. Funkhouser, a professor of geology at John Tyler Community College, after making an appointment with VEPCO's resident engineer, Mr. Engleman, visited and inspected the excavation, accompanied by two students. On March 23, 1970, he returned accompanied by two other professors and some different students. The three professors looked at the chlorite seam and agreed among themselves that it was a fault. Dr. Funkhouser has stated in an affidavit, and other members of the visiting party have testified, that one or more of them mentioned the fault to Mr. Engleman, specifically identifying it as a fault. Some witnesses testified that Mr. Engleman reacted strongly to this information; others testified that there was little or no reaction on his part. Mr. Engleman has testified that he has no recollection of any mention of faulting, that he was not aware until recently that they considered the seam to be a fault and that he made no report, oral or written, of the visit to his supervisors. Mr. Engleman had no background in geology.

Dames & Moore (D&M) performed the site studies for Units 3 and 4 in June and July 1971. They were advised of the chlorite zone by Stone and Webster but were unable to observe it directly because the walls of the Units 1 and 2 excavations had been covered with gunite. As a consequence, they planned their exploratory boring program for Units 3 and 4 to encounter the seam. They did encounter the seam and, after study, concluded that it was a feature formed by plastic flow during gneiss formation and folding, rather than by faulting.¹¹

The Staff, the Commonwealth and the Coalition assert that the statement is false because VEPCO is chargeable with the knowledge of Mr. Engleman that a fault was suspected by the professors. Further, they assert that VEPCO is chargeable with the knowledge of S&W that a fault was suspected during the 1970 investigation. Finally, the Staff and Coalition assert that VEPCO is chargeable with the knowledge of Dames & Moore that a fault was suspected during the Units 3 and 4 boring program. The Licensee's position is that the suspicion of faulting by S&W during the 1970 investigation was entirely resolved and that at the time the statement was made faulting was not suspected, and that Dames & Moore reached a similar conclusion with respect to their 1971 investigation. With respect to Mr. Engleman, VEPCO takes the position that he was not impressed with the significance of what was told him and lacked the expertise that should have led him to recognize the significance.

There has been substantial briefing by all parties on the extent to which VEPCO is chargeable with the knowledge of its agents Engleman, S&W, and D&M. I agree with my colleagues that VEPCO is so chargeable. It is important to keep in mind, however, that if it is chargeable with any of the knowledge of its agents, it is chargeable with all of it and with knowledge of what its agents had done to resolve the questions. Although it is chargeable with the knowledge that S&W at one time suspected faulting, it is also chargeable with the knowledge

¹¹ Joint Exhibit 18, p. IIA-17.

that S&W had investigated the seam and determined that it was not indicative of a fault; similarly for Dames & Moore. And although Mr. Engleman may have made VEPCO aware of the professors' views, it was also aware that its own experts, upon whom it placed reliance, had arrived at a contrary opinion. On the other hand, if it was not chargeable with knowledge of its experts' investigations, it was not chargeable with knowledge of the suspected fault, and the statement was not false on the basis that failure to report information not known or chargeable to the Licensee could not constitute a false statement.

Thus, it appears that a fault was not, in fact or on the basis of knowledge with which it was chargeable, suspected by VEPCO or its agents at the time the statement was made. Is the statement then misleading because it did not say that a fault had been previously suspected? I think not. As the Licensee's Post-hearing Brief puts it, "Is Joan of Arc still a suspected witch?" One can argue that, just as a complete biography of Joan of Arc should discuss the suspicions once held that she was a witch, a PSAR should discuss the once-held suspicions that the chlorite seam was a fault. A Staff witness has testified that there has always existed a clear requirement that such matters should be reported.¹² Although admitting that decisions as what was and what was not to be reported involved the exercise of judgment by the Licensee,¹³ he could see no basis for a reasonable judgment that this matter need not be reported. Further, the witness testified that the Licensee's reporting of the 1969 suspicions of Dames & Moore regarding a different suspected fault was evidence that the Licensee understood this to be the "rules of the game."¹⁴ I cannot agree with either of these positions. Remembering that the 1966 Guide purported to give guidance as to how to meet the requirements of §50.34(a)(1), I cannot agree that a clear requirement to report information such as this existed¹⁵ and I cannot find that a reasonable exercise of judgment would necessarily lead to such reporting. I cannot even find a reasonable expectation that such judgment would lead to that conclusion. In addition, I do not agree that the Licensee's verbatim adoption of its consultant's report, which happened to include a discussion of the consultant's transient suspicions, is evidence that the Licensee at that time was aware of what the Staff now views as its 1969 interpretation of the requirements. Simply stated, the requirements were not clear and the Licensee exercised its judgment. By current standards its judgment was wrong, but I cannot find it was wrong based on the 1969 guidance. Thus, I do not consider the statement to be materially false on that account.¹⁶ Finally, we have the question of whether the statement was untrue because someone—

¹²Tr. 720-721.

¹³Tr. 752-755, 757-759.

¹⁴Tr. 722-723.

¹⁵Tr. 721-A.

¹⁶I believe the conclusion would be different under current regulatory requirements.

the professors—did suspect faulting. I do not read the statement as asserting that no single individual in the whole world suspected faulting. I read it as referring to the Licensee and its expert consultants. The Licensee is entitled to place substantially more weight on the investigation results and considered judgment of its experts than on the off-hand observations of casual professional visitors.

On the basis of the above considerations, I find that Statement 7 was not a material false statement.

Statement 10

The principal question involved in consideration of Statement 10 is whether the knowledge of the small silicified faults discovered by S&W at the dam site in 1969 and not reported to the Commission makes the assertion that “The closest known fault is located near Mineral, Virginia, 7.5 miles WSW of the site” false. The Coalition contends that it does. The Staff’s position, with which the Commonwealth seems to agree, does not place any emphasis on the significance of the faults, but relies on the failure of VEPCO to disclose their existence to render Statement 10 false.

During the 1968 prelicensing site investigations by D&M for Units 1 and 2, small set of thrust faults at the reactor site was discovered and perfunctorily reported in the Site Environmental Studies report. Such sets of shears commonly appear in large East Coast excavations and the Staff raised no questions about them during its review of either Units 1 and 2 or Units 3 and 4.¹⁷ There was general agreement among the expert witnesses that this type of feature was not encompassed within the term “fault” as generally used, although it might have been included within the broadest definition of the term. Mr. Briedis stated in his prepared testimony¹⁸ that

In practice, the use of the word *fault* is retained and usually reserved for the specific description of features of large extent related to movements of the earth’s crust along a distinct planar surface. Confusion results if the general and specific uses of the term *fault* are interchanged and used out of context. The term *fault*, as used in the Dames & Moore Site Environmental Studies for North Anna Units 1 and 2, is used in the specific sense as applied to a feature of large extent and deep-seated origin and it was concluded that there was no feature of this nature present.

The Staff agreed. All parties agreed to a stipulation¹⁹ that the Staff witness Dr. Stepp if called would testify as follows:

¹⁷ Stipulation 30.

¹⁸ Joint Exhibit 70, p. 3.

¹⁹ Following Tr. 113.

While we are in general agreement with the testimony, there are minor comments that we would like to make. The statement beginning on page 2, line 12, about the definition of faulting is generally correct, but we do not agree with the implication that the terms "gravity slide", "slumps structure", "displaced joints" and "shear zone" all represent more precise specific descriptions of faulting. Indeed, "displaced joint" implies a joint surface that is itself displaced by movement along another surface and could not be considered a more precise description of a fault. We do agree, however, that discussion of faulting related to nuclear power plant investigations emphasize faults which have regional tectonic significance and deep-seated origin. The distinction drawn between this type of faulting, faulting that is a primary part of the structural tectonic framework, and minor movements along surfaces that originated along joints is entirely appropriate.

Dr. Stepp was later called and affirmed this point, stating "I do agree that I would have read this statement to mean just that, that the nearest *regional* fault would be at Mineral. I would not have read it to preclude small faults at the plant site as indeed they were reported."²⁰ (Emphasis added.)

Stone & Webster had responsibility for geologic studies at the dam site. Their report on these studies, entitled "Geologic Report: Dams, Dikes, and Canals, North Anna Power Station"²¹ was submitted to VEPCO on February 6, 1969, but was not provided to the Staff until requested on January 3, 1974.²³ This report states at page 10 that:

A number of small shears have been encountered in borings taken at the proposed sites of dikes, canals, and the main dam. These faults have invariably been partially or totally healed by silicification and are believed to have occurred prior to, or contemporaneous with, the folding which is observed in the area. Because of the minor nature of the faulting observed in the borings it is interpreted to represent the normal small-scale tearing which typically occurs in areas of folded rocks.

The silicification of fault zones probably occurred during or after the Appalachian Orogeny (230–280 million years ago), since this was the last tectonic activity in the region and the zones do not show any evidence of post-silicification fracturing.

It was agreed by stipulation that these shears were similar to the features earlier discussed at the reactor site.²⁴

²⁰ Tr. 249.

²¹ Joint Exhibit 23.

²² There is no footnote 22.

²³ Stipulation 35.

²⁴ Stipulation 34.

Reduced to its basics, we now have the following situation. In 1968 a minor geologic feature was discovered at the reactor site. A report with a cursory description of it was included in the Units 1 and 2 PSAR submitted in March 1969. No questions were raised concerning it by the Staff. At about the same time, a similar feature was discovered at the dam site five miles from the reactor site. In September 1971, the PSAR for Units 3 and 4 was submitted stating that the closest known fault was at Mineral, 7.5 miles from the reactor site. We are asked by the Staff, the Commonwealth and the Coalition to find that this statement is misleading because it did not disclose this closer minor feature that was admitted to not be a fault as the term was generally accepted. I cannot do this. The rules and guidance by which the Licensee was proceeding in 1971 were identical to those in effect in 1969. The Staff has in effect affirmed its lack of interest in such minor features, which it had implied in the 1969 guidance, by its failure to question the 1969 finding. Now, in retrospect and with the support of more recent changes in the available guidance, the Staff asserts that this information would have been important. The evidence belies this. Such features are common in the Piedmont and can normally be expected to be present. In its February 28, 1974, supplement to its Safety Evaluation,²⁵ the Staff says, with respect to the faults at the dam site, "The twelve minor faults at the dam have not warranted serious consideration because the dam is not a Category I structure . . .". This statement, by the Staff technical experts, deserves more weight than the unsupported assertion of Staff Counsel that the faults "must be assessed in determining whether seismic design and foundation design requirements are adequate."²⁶

On the basis of the above discussion, I find that Statement 10 is not a material false statement.

Statement 11

The Staff's position on Statement 11 is that it was not false on its face but was made false by its failure to disclose the views of the geology professors. This view is shared by the Commonwealth and the Coalition. The Coalition also asserts several additional bases which have been adequately discussed elsewhere. For the same reason that I discussed in connection with Statement 7, I cannot find here that the geology professors' view renders this a material false statement.

Statement 12

The question with respect to Statement 12 is whether or not the map is misleading because it fails to show Neuschel's postulated lineament. The

²⁵ Exhibit SX-1 from Show Cause Hearing, p. 2-9.

²⁶ Tr. 225.

Coalition and the Commonwealth contend it is; the Staff and Licensee say it is not, making the point that the map itself identifies the three sources from which the information shown was obtained. All of these sources predate Neuschel's 1970 postulation of the lineament. On this basis alone, I would have to find that omission of the lineament did not constitute a material false statement. We cannot ignore, however, the fact that both the Staff and its consultant, the USGS, were aware of the feature and did not raise any questions regarding it. The USGS in its final report of July 30, 1970, referred to the feature²⁷ and the Staff reviewer for Units 3 and 4 was aware of Neuschel's article and consulted with him about it.²⁸ Accordingly, in my view Statement 12 is not a material false statement.

Statements 13, 14, and 15

Statements 13, 14, and 15 are identical to Statements 7, 11, and 12, respectively. The latter differ only in that they were made to the Commission six months later. Statements 14 and 15 are photocopies of 11 and 12.²⁹ During the six month interval, however, the proposed Appendix A to Part 100 and the revised guide of February 1972 had been published. These documents, as I have discussed previously, signalled a change in regulatory posture by the Staff and we must consider the effect of this on the question before us.

The PSAR was filed on September 15, 1971. On November 25, 1971, the Commission published proposed Appendix A which, as I have stated previously, describes in much more detail than prior rules the extent of the required investigation by the Applicant and the matters to be considered by the Commission in its evaluation, but does not explicitly address the contents of the Applicant's reports. Sometime after February 1, 1972, the new "Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants" was issued³⁰ and contained such explicit guidance. These two documents, however, are directed not to the Environmental Report, which we are concerned with here, but to the Safety Analysis Report, which had already been submitted. Since geology is primarily a safety matter rather than an environmental one, it appears reasonable to me, and presumably also appeared reasonable to the Applicant, that the treatment in the Environmental Report would not be expected to be any more complete than that in the PSAR. To the contrary, one could reasonably expect a more superficial treatment and the Staff confirmed

²⁷ Stipulation 84.

²⁸ Stipulation 85.

²⁹ Compare Joint Exhibit 18 and Joint Exhibit 64.

³⁰ Although this is marked on its face "Issued February 1972", it is not clear when it was available to applicants. For comparison, the later revision is similarly marked "Issued October 1972", but was announced in the *Federal Register* on November 25 (37 FR 25066).

this expectation in its "Guide to the Preparation of Environmental Reports for Nuclear Power Plants" issued for comment several months later (August 1972). Its guidance on geology reads in its entirety as follows:

2.4 Geology

Describe the major geological aspects of the site and its immediate environs. The discussion should be limited to noting the broad features and general characteristics of the site and environs (Stratigraphy, soil and rock types, faults, seismic history).

This is reminiscent of the 1966 SAR guide and would certainly not lead anyone to expand a PSAR discussion already in the process of being incorporated into an Environmental Report. In view of this, I see no basis for expecting more of the Licensee in its March 15, 1972, submission than in its September 15, 1971, submission, and, consequently, find that Statements 13, 14, and 15, judged by the 1969 guidance, were not material false statements.

Statement 16

We come now to the first of a group of six statements made in 1973. Two of these (17 and 20) were made in the original issue of the Units 1 and 2 FSAR dated January 3, 1973, and filed on April 30, 1973.³¹ The rest were made in a subsequent amendment to the FSAR dated July 18, 1973. All of these statements were made well after the 1971 guidance was available and are subject as well to §50.34(b)(1).³²

Statement 16 was made in Amendment 20 and was part of a response to a question by the Staff. The Coalition's position is that it is a false statement because by that time the chlorite seam had been recognized as a fault. The other parties are in agreement that this is a *non sequitur* and that the strata are in fact continuous, making the statement, on its face, true. The Coalition also argues that the statement is misleading to a reasonable layman. We have already rejected this standard and the other parties agree that the statement is not misleading to a professional geologist. Therefore, I find that Statement 16 is not a material false statement.

Statement 17

Statement 17 was made in the original submission of the Units 1 and 2 FSAR and is dated January 3, 1973. The second sentence of the statement is not a material false statement for the reasons discussed with regard to Statement 16. The first sentence is a reiteration of a sentence that appeared in Statements 7 and 13 and was discussed in detail with respect to Statement 7. On January 3,

³¹ Joint Exhibit 65.

³² §50.34(b)(1) is quoted in the majority decision. It covers the requirements for FSARs and requires updating of previously submitted information.

1973; no more was known about the fault than had been known when the statement had been made earlier. However, in view of the requirements of §50.34(b)(1) and, more importantly, the changes in regulatory guidance, I believe that in this submittal the suspected fault and the investigation of it should have been discussed. For this reason I find that Statement 17 is a material false statement.

Statement 18

Statement 18 appears in Amendment 20 to the FSAR, dated July 18, 1973. It is a portion of a complete revision of the subsection on "Surface Faulting" responsive to a set of questions from the Staff. The statement is a slightly reworded version of Statements 7 and 13, but now the situation is quite different, because as of May 14, 1973, the Licensee and its consultants had concluded that the chlorite seam was in fact a fault. This, of course, makes the statement false on its face and the Licensee admits it.³³ The Licensee's defense is based on the fact that the correct information was in the hands of the Staff at the time the Statement was made and that the statement was thus rendered immaterial. It argues that a false statement cannot be material if the person to whom it is made knows it is false. This question need not be decided to rule on Statement 18. The FSAR is directed to the public as well as to the Staff. Although we have held that the criterion for determining whether or not detailed technical information is misleading relates to a technically qualified recipient, that holding is not relevant here. The question here is whether or not the public is entitled to know of the existence of a suspected significant fault.³⁴ The answer is obvious. Statement 18 is a material false statement.

Statements 19, 20, and 21

Again I find the proposed findings of the Commonwealth to be accurate and succinct and adopt them as my own. I find that Statements 19, 20, and 21 are not material false statements.

Statement 22

After the May 1973 determination by VEPCO and its consultants that the chlorite seam was indeed a fault, VEPCO's consultant Dames & Moore undertook an extensive investigation. As part of this investigation, D&M employed Dr. Roper as a consultant. He prepared three reports bearing on the investigation. Dames & Moore received two of these in May 1973, and the third in July

³³Stipulation 102.

³⁴There was no evidence provided that there was any public announcement of the fault until the August 22, 1973 letter from the Coalition to the then-Chairman of the Licensing Board (Exhibit A to Joint Exhibit 40)

1973.³⁵ Neither the Licensee nor the Staff was provided copies or knew of the existence of the reports. The Coalition obtained a copy of one report during discovery carried out at Dames & Moore's New Jersey office on March 23, 1974, during the hearing. The Staff first learned of the report during cross-examination of a Dames & Moore employee by the Coalition on March 26, 1974.³⁶ Dames & Moore was of the view that some of Dr. Roper's language was excessively strong and conclusory, that he misunderstood the location of the site relative to Neuschel's lineament and that it was unnecessary to provide the report to the Staff since it was background information which was synthesized into the Dames & Moore Report.³⁷ Dames & Moore also employed two other consultants who prepared reports in the course of the investigation. These reports were included in VEPCO's submission to the Staff.³⁸

We have previously held that the Licensee is chargeable with Dames & Moore's knowledge. This includes knowledge regarding the existence (and contents) of the Roper reports.

The Licensee argues that the report is not very important and that when it was finally produced at the Show Cause proceeding it made no difference to the Staff whatever and that the document merely repeats self-evident truths. I find the argument entirely unpersuasive. Under the regulatory conditions that exist today, and they were the same in late 1973, production of such a document as part of VEPCO's August 17, 1973, submittal to the Commission of the D&M report on supplemental Geological Data is clearly to be expected. Accordingly, I find that the failure to produce the Roper report constitutes a material false statement.

Statement 23

The principal issue with respect to Statement 23 is the failure of the Licensee to adduce evidence at the November 1970 hearing regarding the suspected fault. At that time, the S&W evaluation of the fault had been completed and S&W had concluded that the chlorite seam was not a fault. By the same line of reasoning that led to my finding regarding Statement 7, I find that failure to adduce evidence regarding the suspected fault at the Units 1 and 2 construction permit hearing did not constitute a material false statement.

Statement 24

The key issue here is the failure of the Licensee to advise the Board of the suspected fault at the construction permit hearing on Units 3 and 4 during the period May 7-10, 1973. The first observation in the Unit 3 excavation that the

³⁵ Tr. 603-604.

³⁶ Stipulations 120, 121, and 122.

³⁷ Stipulation 125.

³⁸ Stipulation 126.

chlorite seam might show offset was made by an S&W employee on April 16, 1973. Although no other site personnel were informed, S&W home office personnel were promptly advised and an investigation started. By April 20, at least two S&W experts were of the opinion that the feature more probably than not evidenced movement along a fault. On April 25, another indication of offset was observed and the investigation continued. On April 30, a meeting was held at the site at which a VEPCO representative was advised of the problem. At that time some of the S&W experts were of the opinion that the feature was a fault and others took the contrary view. After the meeting, VEPCO engaged Dames & Moore to make an in-depth survey. Another meeting was held at the site on May 2, 1973, with VEPCO, S&W, and Dames & Moore participating. At that meeting it was agreed that VEPCO would retain an independent outside consultant. Dames & Moore indicated that its work at the site would take 4-8 days, commencing on May 3 and that it expected to reach a conclusion within two weeks.³⁹ On May 7, 1973, the construction permit hearing started.

Thus, the situation was that when the hearing started, and during the four days of hearing sessions, a strong suspicion of a fault existed and a major investigation was under way to confirm it. This was important information for the Staff (who were not informed until May 17), for the Board, and the public, and failure to disclose it is entirely unexcusable. This, in my view, is by far the most egregious of the Licensee's offenses. Such blatant disregard of the need of the Commission, its Staff and its Hearing Board to have the information necessary to carry out its duty to protect the health and safety of the public is almost beyond belief and is indicative of, at best, extremely poor and unsound judgment on the part of VEPCO management. VEPCO's arguments in support of its action do not merit any discussion.⁴⁰ I find Statement 24 to be a material false statement of the most opprobrious type.⁴¹

³⁹ Stipulations 110-113.

⁴⁰ The Licensee notes that the Staff having learned of the existence of the fault waited 2½ months before informing the Board. While this offers no exoneration to the Licensee, I consider it to be evidence of extremely poor judgment by the Staff.

⁴¹ I cannot avoid commenting on one further event which although not the subject of one of the allegations is very similar. The Applicant, on May 24, 1973, and the Staff, on June 14, 1973, submitted proposed findings to the Board in connection with the Units 3 and 4 construction permit hearing. The proposed findings of both parties found that the site was suitable and contained no mention of what was by then agreed to be a fault. Although the record of the proceeding was still being held open for the receipt of certain information still forthcoming from the parties, as far as the Board knew the evidence on geological and seismological matters was complete and ripe for decision. What contorted line of reasoning led the parties to continue to keep the Board in the dark concerning the fault is not known, but in my view such action is entirely without justification. Recognizing that the rules of practice restrict proposed findings to "material issues of fact presented *on the record*", I am sure that the resourceful attorneys involved in this case could have devised some stratagem for bringing this vital fact to the attention of the Board.

III. REMEDIES AND SANCTIONS

I fully share the views of the majority with respect to remedies and sanctions to the extent that they are consistent with my finding of four, rather than twelve, material false statements. Because of this difference, I cannot, of course, agree with their finding on the amount of civil penalty to be assessed.

I agree that a civil monetary penalty of \$5000 is appropriate for each of material false statements 17, 18, and 22. As I have stated previously, I find the failure to report the suspected fault at the May 7-10, 1973, hearing to be the most serious of the material false statements. I find this offense to be a continuing one from May 7, 1973, when the hearing began, until the Board was advised of the fault by the Staff on August 3, 1973.⁴² On the basis of \$5000 per day, and subject to the statutory limitation of \$25,000 during any 30-day period, I find the penalty of \$75,000 to be appropriate with respect to Statement 24 for the period May 7, 1973, until August 3, 1973. The civil monetary penalty I would impose would be in total, \$90,000.

ATOMIC SAFETY AND
LICENSING BOARD

Lester Kornblith, Jr., Member

[Appendixes A and B are omitted from this publication but are available at the Commission's Public Document Room, Washington, D.C.]

⁴²The Licensee had not notified the Board during this period.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

LBP-75-55

ATOMIC SAFETY AND LICENSING BOARD

Ivan W. Smith, Chairman
Leonard W. Weiss, Member
John M. Frysiak, Member

In the Matter of
**PUBLIC SERVICE COMPANY
OF OKLAHOMA**
(Black Fox Generating Station,
Units 1 and 2)

Docket No. P-531A

September 16, 1975

Upon petition for leave to intervene and request for antitrust hearing, Licensing Board finds petition defective in that it fails to (1) set forth under oath or affirmation and with particularity the antitrust basis for the petitioner's contentions, (2) describe a situation inconsistent with antitrust laws, and (3) set forth with specificity the legal theory and factual basis supporting the relief sought.

Petition dismissed without prejudice to the submission of an amended petition.

**MEMORANDUM AND ORDER ON PETITION TO
INTERVENE AND REQUEST FOR ANTITRUST HEARING**

Pursuant to Section 105(c) of the Atomic Energy Act, as amended, the Attorney General submitted a letter of advice on the antitrust aspects of this application. The letter was published in the *Federal Register* on July 7, 1975 (40 *Fed. Reg.* 28507). In response to said publication and accompanying notice, the Grand River Dam Authority (GRDA), Vinita, Oklahoma, telegraphed its petition for leave to intervene and request for hearing on August 5, 1975, pursuant to Section 10 CFR 2.714. On the same date, GRDA sent a letter confirming the telegram adding additional information. The Secretary of the Nuclear Regulatory Commission received an undated petition from GRDA on August 21, 1975. This Board has been constituted to rule upon GRDA's petition for leave to intervene and request for hearing.

In its letter of advice, the Department of Justice (the Department) observed that the Public Service Company of Oklahoma (Applicant) intends to construct

the Black Fox Nuclear Generating Station in northeastern Oklahoma, which facility will consist of two nuclear units each with an electrical output of 1150 megawatts. The Department observed that the Applicant is a member of the Southwest Power Pool together with the petitioner GRDA and other entities. In the course of its antitrust review, the Department received allegations that the Applicant has used its dominant position in generation and transmission of electrical power to restrain the competitive opportunities of smaller systems. These allegations are denied by the Applicant.

However, to eliminate any question as to alleged anticompetitive conduct, the Applicant has formalized its policies in a "Statement of Bulk Power Supply Policy" and has agreed that the provisions of the statement may be incorporated as conditions to the license. The Department believes that the statement of Bulk Power Supply Policy effectuated as license conditions would moot all relevant issues as to Applicant's alleged anticompetitive conduct. The Department advises that an antitrust hearing would not be necessary with respect to the application if the Commission issues a license conditioned as indicated.

In its statement of Bulk Power Supply Policy, the Applicant has promised to enter into interconnection and coordination agreements, to provide transmission services, to enter into reserve coordination agreements, to provide access to the Black Fox Station units and to sell bulk power. The promises to provide access to the Black Fox units and to sell bulk power are particularly germane to GRDA's petition to intervene.

The Applicant agrees to afford an opportunity to participate in the ownership of both units to a reasonable amount provided that when 200,000 kilowatts are made available in each unit it shall be deemed reasonable. In relation to its bulk power sales agreement, the Applicant indicates that it will sell power on a full or partial requirement basis to any neighboring distribution system without restriction of use or resale except that the Applicant would not be required to make any such sale if it does not have available sufficient generation or transmission capacity to provide the requested service or if the sale would impair its ability to render adequate and reliable service to its own customers.

The telegram and letter of July 5, 1975 and the undated paper styled "Petition" are together regarded herein as GRDA's petition under Section 2.714 of the Rules of Practice. In its petition, GRDA identifies itself as a conservation and reclamation district organized as a public corporation and governmental agency for the State of Oklahoma. Its functions are to control, store and distribute the waters of the Grand River for several purposes including the generation of power. It is also authorized to develop and generate power and to buy, resell, interchange and distribute electric energy. Attached to its petition is a copy of an agreement between the Applicant and the petitioner originally dated 1957 and entitled "Markham Ferry Coordinating Agreement." The import of GRDA's petition is that, notwithstanding the Applicant's stated policy to

afford an opportunity to participate in the ownership of the Black Fox Station, GRDA is effectively precluded from such participation by the terms of the Markham Ferry Agreement which, according to GRDA, prohibits petitioner from participating in any type of thermal generation with others, including the Applicant.

GRDA admits that the Applicant has invited GRDA to participate in the Black Fox units and that the Applicant has agreed to renegotiate the Markham Ferry Agreement toward this end. However, GRDA complains that the Applicant has failed to set forth terms and conditions of the proposed renegotiated agreement and, for this reason, GRDA is not assured that a real opportunity to purchase ownership in the Black Fox units will be afforded.

In relation to the Applicant's agreement to sell excess bulk power, GRDA submits copies of correspondence from Applicant to the effect that the Applicant will not provide other than hydro firming power and pumping energy and will not assume the obligation to provide long term major generating capacity to meet GRDA's growing system requirements. GRDA regards the Markham Ferry Agreement as specifically requiring the Applicant to furnish to GRDA the capability and energy required to meet its system load requirements.

GRDA prays that the Applicant's alleged intent to exclude GRDA and its customers, notwithstanding the rights under the agreement, from participation in the Black Fox facilities be restrained and that the rights of GRDA to participate under its existing contractual agreements be reaffirmed.

The Applicant's answer filed on August 14, 1975 was directed to the petitioner's telegram and confirming letter dated August 5, 1975. GRDA's formal paper styled "Petition" had not yet been received by Applicant, and the Applicant's answer does not address itself to all of the matters raised therein. Applicant objects to the form and substance and service procedure of the petitioner's papers and prays that the petition for leave to intervene be denied and that the request for hearing be refused. GRDA's subsequent filing received August 21, 1975 fails to cure the defect in form in that the petition was not filed under oath or affirmation. Although it is not necessary because of the Order below to rule upon the Applicant's objection to this defect, the petitioner is cautioned that, in any further filings, it will be expected to comply with the Rules of Practice in form and in substance.

The NRC Staff, in its answer to the petition, addresses itself to all of the papers filed by the petitioner. The Staff asserts that GRDA's petition is deficient in that it does not describe the anticompetitive situation alleged, does not set forth a legal theory, does not describe the connection between the alleged anticompetitive situation and the operation of the nuclear facility, does not set forth desired relief nor how the petitioner's interest may be affected by the proceeding. The Staff is of the view that GRDA should be granted a 30-day extension of time to submit an amended petition.

For the purpose of evaluating GRDA's petition, the Board accepts the facts pleaded therein. The Board construes GRDA's papers most favorably to granting the petition. Even so, the most that can be said for GRDA's petition is that it suggests a form of syllogism in that allegations of anticompetitive conduct raise antitrust questions, which questions would be mooted by license conditions, but the license conditions may not be implemented, therefore, antitrust questions remain. Nowhere does GRDA expressly allege that the activities under the license would create or maintain a situation inconsistent with the antitrust laws.

10 CFR 2.714 sets forth the general requirements for petitions to intervene and specifically requires the petitioner to state "with particularity both the facts pertaining to his interests and the basis for his contentions with regard to each aspect on which he desires to intervene." The Commission, in its *Waterford* decisions,¹ sets forth additional requirements for a petition to intervene in an antitrust proceeding. The Atomic Safety and Licensing Appeal Board, in *Kanisas Gas and Electric Company, et al.*, Docket No. 50-482A, NRCI-75/6, 559 (June 30, 1975), has provided detailed guidance for potential antitrust intervenors.

GRDA's petition is defective in many respects. It has failed to submit its written petition under oath setting forth with particularity the antitrust basis for its contentions. GRDA has failed to describe a situation inconsistent with antitrust laws. In this respect, it should be noted that a mere paraphrase of the statutory language alleging a situation inconsistent with the antitrust laws would be deficient (*Waterford II, supra*). The petitioner must also state the connection between the alleged situation and the activities under the license.

The Commission also requires that the petitioner state the specific relief sought. GRDA is specific about its interest in the proceeding and about the relief it seeks. GRDA quite simply seeks to have Applicant's alleged intent to exclude it from participation in the facility restrained and to have its purchasing rights under the Markham Ferry Agreement reaffirmed. However, GRDA has not framed its request for relief in an antitrust context. While it may be inferred that this proposed relief would negate antitrust questions, inferences are not sufficient. The prospective parties and the Board must know with specificity the legal theory and factual basis supporting the relief sought.

Accordingly, GRDA's petition for leave to intervene and request for antitrust hearing is denied. However, because of the public interest implicit in the situation described by GRDA, the petition is dismissed without prejudice to the submission of an amended petition sufficient to satisfy the requirements of the Commission's Rules of Practice. The petitioner may file an amended petition within 30 days after the date of this Order. The Applicant may file its answer to

¹ Louisiana Power and Light Company, 6 AEC 48 (1973), (*Waterford I*) and 6 AEC 619 (1973), (*Waterford II*).

an amended petition within 10 days thereafter, and the Staff may file an answer within 15 days after the amended petition is filed.

**BY ORDER OF THE ATOMIC SAFETY
AND LICENSING BOARD**

designated to rule on
petition for intervention

Leonard W. Weiss, Member

John M. Frysiak, Member

Ivan W. Smith, Chairman

Dated at Bethesda, Maryland
this 16th day of September 1975.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

LBP-75-56

ATOMIC SAFETY AND LICENSING BOARD

James R. Yore, Chairman
Dr. Walter H. Jordan, Member
Dr. Richard F. Cole, Member

In the Matter of
DETROIT EDISON COMPANY
(Greenwood Energy Center,
Units 2 and 3)

Docket Nos. 50-452
50-453
September 17, 1975

Upon motion by intervenor to force applicant which had postponed commencement of construction and date of proposed operation of its project to withdraw its application, Licensing Board finds that (1) an applicant is not legally bound to proceed with the processing of its application in accordance with any set time scale, (2) the applicant has expended, and will expend, large amounts of money on the project, a large portion of which will be lost if it is forced to withdraw its application, and (3) the applicant has emphasized its firm intention to proceed with the project.

Upon motion by intervenor under 10 CFR § 2.749 to find applicant wanting of fiscal soundness and for denial of the application for that reason, Licensing Board finds that the Commission's regulations preclude its granting the relief requested.

Motion denied; applicant directed to submit a status report concerning the project on July 1, 1976.

RULES OF PRACTICE: PROCESSING OF CONSTRUCTION PERMIT APPLICATIONS

Although the Atomic Energy Act requires that a construction permit state the earliest and latest dates for the completion of construction, and that the permit will be forfeited for failure to meet the deadline unless for "good cause shown" the deadline is extended, there is no legal requirement that an applicant must proceed with the processing of its application in accordance with any set time scale. Section 185, 42 U.S.C. 2235.

RULES OF PRACTICE: PROCESSING OF CONSTRUCTION PERMIT APPLICATIONS

If an applicant elects to defer the processing of its construction permit application, it is obliged to update its Preliminary Safety Analysis Report and its Environmental Report to assure that any new significant information is included.

RULES OF PRACTICE: AMENDMENT OF CONTENTIONS

If new information is revealed in a Preliminary Safety Analysis Report or an Environmental Report which has been updated as a result of the deferred processing of an application for a construction permit, an intervenor has the right to petition to amend its contentions for good cause to reflect such new information.

RULES OF PRACTICE: MOTION FOR SUMMARY DISPOSITION

Where motion, though styled as one for summary disposition, requests denial of an entire construction permit application rather than the determination of specific subordinate issues, it must be denied because it contravenes the provision precluding use of such motions to determine the ultimate issue as to whether the permit shall be issued. See 10 CFR §2.749(d).

MEMORANDUM AND ORDER CONCERNING MOTIONS: (1) TO FORCE APPLICANT TO WITHDRAW ITS APPLICATION; AND (2) TO FIND APPLICANT WANTING OF FISCAL SOUNDNESS. (A MOTION FOR SUMMARY DISPOSITION)

The motions referred to above were filed by the Detroit Area Coalition for the Environment (DACE) concerning the application of The Detroit Edison Company (Applicant) for the Greenwood Energy Center, Units 2 and 3. These motions were primarily triggered by the request of the Applicant to cancel, pending further notice, the Prehearing Conference scheduled for December 12, 1974, and the Evidentiary Hearing scheduled for January 14, 1975. Subsequently, the Applicant advised that because of financial reasons it proposes postponing work on the project until fall of 1976 and extending the time schedule for commercial operation of Units 2 and 3 respectively to 1984 and 1986.¹ In the event the necessary approvals are received, the commencement of actual construction is planned by the Applicant for the spring of 1978.

¹ Affidavit dated May 20, 1975, of John R. Hamann, President and Chief Operating Officer of the Applicant.

Accordingly, Applicant would seek to resume the licensing process for Greenwood in 1977.

In order to obtain additional background information and give all the Parties an opportunity to comment on the Applicant's proposed schedule before ruling on the motions before it, the Board scheduled a conference of all the Parties on September 9, 1975, at Port Huron, Michigan. Representatives of the Applicant, the Nuclear Regulatory Commission Staff (Staff), and the Michigan Nature Association, one of the intervenors, attended this conference. There were no representatives from the other intervenors, namely, The Detroit Area Coalition for the Environment (DACE) or from the Crowell-Lexington Alliance to Stop Pollution (CLASP). The Board is denying the motions which were filed by DACE, and we will now consider each of them and the bases for our rulings.

First, with respect to the motion to force the Applicant to withdraw its application,² the Board requested all the Parties to submit briefs concerning the authority (or lack of it) of an Atomic Safety and Licensing Board to take such an action and excellent briefs were furnished. However, the Board has determined that it is not necessary to reach a decision on the question of its authority in this area because it does not intend to exercise it and is denying the motion.

We perceive no legal requirement for an Applicant to proceed with the processing of its application in accordance with any set time scale. It is clear that the Atomic Energy Act does provide that in a case where a construction permit has been issued "[t]he construction permit shall state the earliest and latest dates for the completion of the construction...". Section 185, 42 U.S.C. 2235. And the failure to complete the facility by the prescribed deadline will result in a forfeiture of the permit and all rights thereunder unless for "good cause shown" the deadline is extended by the Commission. *Ibid*; see also *Indiana and Michigan Electric Co.* (Donald C. Cook Nuclear Plant, Units 1 and 2), ALAB-129, RAI-73-6 414 (June 18, 1973). But here we are concerned not with an actual construction permit but with the processing of an application for a construction permit.

It is also clear that if an Applicant elects to defer the processing of its application, it is obliged to update its Preliminary Safety Analysis Report and its Environmental Report to assure that any new significant information has been included. It follows that if such new information should be revealed, an Intervenor has the right to petition to amend its contentions for good cause shown.

This ruling is buttressed by a recent memorandum and order of an Atomic Safety and Licensing Appeal Board³ which stated:

² DACE motion dated December 30, 1974.

³ *Georgia Power Company*, (Alvin W. Vogtle Nuclear Plant, Units 1 and 2), ALAB-276, NRCI-75/6 533, June 11, 1975.

In the context of this case, had the applicant's election to defer embarking upon significant construction been made prior to the issuance of the Licensing Board's initial decision, and had that Board been led to understand that it might be at least a year before the applicant determined whether it would abandon the project altogether, it is unlikely that the construction permits would have been then authorized. Instead, the probability is that the Board would have stayed its hand until such time as the applicant reached a decision. And, even then, the Board doubtless would have wished to assure itself that, in the interim, there had evolved no changed circumstances which might have affected either (1) the applicant's entitlement to construction permits, or (2) the conditions which should be imposed upon any permit which might issue. If (as appears to us) this would have been a sound approach in such a situation, why is it not equally sound as applied to the situation at bar?

The Applicant has already spent approximately \$23 million on the project and advises that it will expend another \$11,500,000 when the major equipment manufacturers are paid for work already performed. The Applicant states that if it is forced to withdraw its application, a large but undetermined portion of the investment will be lost and such a loss must result in higher electric rates for its customers. The Applicant has emphasized its firm intention of proceeding with the Greenwood project.⁴ In light of all of the above, the Board does not approve the DACE motion to force the Applicant to withdraw its application.

With respect to the motion to find Applicant wanting of fiscal soundness (a motion for summary disposition),⁵ the basis for this motion is that the Applicant is financially unqualified to be permitted to construct the Greenwood project. The relief sought by the motion is that the application for the construction permit be denied with prejudice "since Applicant does not meet one of the legal requirements to have its application accepted, nor for that matter, one of the requirements to be granted a construction permit."

The Board denies this motion because it does not meet the requirements of the Commission's Regulations. The motion is filed under the authority of 10 CFR §2.749, which permits a Board to grant a motion for summary disposition "if the filings in the proceeding, depositions, answers to the interrogatories, and admissions on file, together with the statements of the parties and the affidavits, if any, show that there is no genuine issue as to any material fact and the moving party is entitled to a decision as a matter of law".

However, the relief sought by the DACE motion, although styled as one for summary disposition, is denial of the entire application. Since the application

⁴ Affidavit dated May 20, 1975, of John R. Hamann, President and Chief Operating Officer of the Applicant.

⁵ DACE motion dated July 30, 1975.

here is for a construction permit, the relief sought by DACE is in conflict with express provisions of §2.749(d) which states, in pertinent part:

However, in any proceeding involving a construction permit for a production or utilization facility, the procedure described in this section may be used only for the determination of specific subordinate issues and *may not be used to determine the ultimate issue as to whether the permit shall be used.* [Emphasis added]

DACE has expressly moved not for a disposition of any subordinate issue but for the denial of the application. Therefore, the very relief prohibited by the regulation upon which DACE relies is the relief they now seek.

At the conference of the Parties held on September 9, 1975, in Port Huron, Michigan, the Applicant advised that if the Board approved the continuation of this proceeding, a status report would be submitted prior to remanning the project. In view of the rulings herein, the Applicant will furnish the Board and all the Parties on July 1, 1976, a status report concerning the project.

It is so ORDERED.

**FOR THE ATOMIC SAFETY AND
LICENSING BOARD**

James R. Yore, Chairman

**Dated at Bethesda, Maryland
this 17th day of September 1975.**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

LBP-75-57

ATOMIC SAFETY AND LICENSING BOARD

John F. Wolf, Chairman
Dr. J. Venn Leeds, Jr., Member
Dr. Forrest J. Remick, Member

In the Matter of
TENNESSEE VALLEY AUTHORITY
(Hartsville Nuclear Plants,
Units 1A, 2A, 1B and 2B)

Docket Nos. STN-50-518
STN-50-519
STN-50-520
STN-50-521

September 22, 1975

Upon untimely petition for leave to intervene in construction permit proceeding by city-county government with regard to proposed project's socioeconomic impact on services which such government provides, Licensing Board finds that petitioner has made a satisfactory showing of interest, and that, upon consideration of the four factors under 10 CFR §2.714(a), intervention is warranted.

Petition granted, limited to the two contentions asserted and subject to certain conditions.

**MEMORANDUM AND ORDER RE:
THE METROPOLITAN GOVERNMENT OF
NASHVILLE AND DAVIDSON COUNTY'S
PETITION FOR LEAVE TO INTERVENE**

The petitioner (Metropolitan Government) is a consolidated city-county government for Nashville and Davidson County, Tennessee. Nashville is the cultural and economic center of the middle Tennessee area which includes the proposed site of Applicant's plant.

The site on Old Hickory Lake of the Cumberland River is approximately 28 miles upstream from Nashville. The Metropolitan Government obtains its water supply from the Cumberland River, and Old Hickory Lake is a recreational facility for the residents of Nashville-Davidson.

It is petitioner's contention that if the plants are built, the influx of population will have significant socioeconomic impact on the public services which the Metropolitan Government provides.

Although notice of hearing, in this matter, was published in the *Federal Register* (39 FR 38013) on October 25, 1974, the Metropolitan Government's petition was not filed until August 21, 1975.

The stated excuse for the nine month's delay is that the Metropolitan Government believed its interest would be protected by the Mid-Cumberland Council which met on December 18, 1974, and decided to meet with TVA about the socioeconomic impact of the proposed Hartsville project on the seven-county area represented by the Council, including Davidson County. Subsequently, a meeting was held with TVA representatives present, and it was concluded that an *ad hoc* committee should be formed to counsel with TVA as to socioeconomic impact on the public services provided by Davidson County.

The representatives of the Metropolitan Government believed it would be protected by the *ad hoc* committee and that its interests would be protected in the final TVA Environmental Impact Statement.

It was not until May 23, 1975, that the Metropolitan Government learned, when it received a copy of TVA's Environmental Statement, that it had been virtually excluded from the impact area.

The Metropolitan Government appeared at the Board's hearing on August 5, 1975, and its counsel was advised to file a petition to intervene and that the petition would be taken under advisement. The petition for leave to intervene was filed August 21, 1975.

The Board finds that the petitioner has made a satisfactory showing of the required interest under the intervention rule (10 CFR §2.714(a)) in its petition.

In the Matter of Nuclear Fuel Services Inc. (*West Valley Reprocessing Plant*, CLI-75-4, NRCI-75/4R-273, April 17, 1975) the Commission has interpreted §2.714(a) as follows:

Focusing on the policies underlying the rule, however, and semantics aside, we do not construe Section 2.714(a) as automatically barring inquiry into the purpose which may be served, or hindered, by accepting an untimely petition where, as here, the petitioner has not shown good cause for his tardiness. Rather, the purpose of Section 2.714(a) is to establish appropriate tests for disposition of untimely petitions in which the reasons for the tardiness as well as the four listed factors should be considered, thus giving the Licensing Boards broad discretion in the circumstances of individual cases.

Considering the four factors we find:

1. That there are no other satisfactory means available whereby the petitioner's interest would be protected. A limited appearance would not be effective here (*West Valley*, p. 276).

2. Petitioner's participation would assist in developing a sound record in relation to socioeconomic impacts.

3. It does not appear that petitioner's interest will be represented by existing parties. The State of Tennessee has alleged in its Response to the Petition that it "is not in a position to represent and advocate petitioner's interest in these proceedings."

4. The petitioner's participation will not broaden the issues or delay the proceedings. The Staff has been authorized by the petitioner's attorney to advise this Board that "if Petition is admitted to this proceeding, it will waive any right it may have to discovery."

The petitioner, the Metropolitan Government of Nashville—Davidson, is granted the right to pursue the contention set forth in its petition. This contention is numbered 10 in the Board's Special Prehearing Conference Order #2, dated August 8, 1975.

In its participation in these proceedings, the petitioner will be required to take them as it finds them. No discovery will be permitted.

In view of results of the Board's consideration of the four controlling factors contained in the intervention rule, the Metropolitan Government of Nashville—Davidson County, Tennessee's petition to intervene in these proceedings is granted, subject, however, to the following conditions:

- (1) that Intervenor will take these proceedings as it finds them;
- (2) that Intervenor will not be permitted to make discovery; and
- (3) that Intervenor will pursue only Contentions 10(a) and 10(b).

It is so ORDERED.

FOR THE ATOMIC SAFETY AND
LICENSING BOARD

John F. Wolf, Chairman

Issued this 22nd day
of September 1975 at
Bethesda, Maryland.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

LBP-75-58

ATOMIC SAFETY AND LICENSING BOARD

Daniel M. Head, Chairman
Donald P. de Sylva, Member
Marvin M. Mann, Member

In the Matter of
WASHINGTON PUBLIC POWER
SUPPLY SYSTEM

Docket Nos. 50-460
50-513
September 30, 1975

(Nuclear Projects No. 1 and
No. 4)

Upon petition by applicant in uncontested proceeding for a supplement to its limited work authorization (LWA), Licensing Board, using expedited decisional procedure of 10 CFR §2.761, issues memorandum and order making findings requisite thereto, including findings that (1) there has been no change in circumstances which would affect the findings of the Board's previous Partial Initial Decision; (2) there are no unresolved safety issues relating to the additional LWA activities which would constitute good cause for withholding authorization; and (3) applicant's quality assurance program is acceptable for the conduct of the additional LWA work.

MEMORANDUM AND ORDER
MAKING FINDINGS PURSUANT TO
10 CFR §50.10(e)(3) UNDER EXPEDITED
DECISIONAL PROCEDURE PROVIDED FOR IN 10 CFR §2.761

This Memorandum and Order is in place of an initial decision under the authority vested in the Atomic Safety and Licensing Board (the Board) to use an expedited decisional procedure in proper cases pursuant to 10 CFR §2.761. The Board has concluded that employment of this procedure is warranted here.

On July 30, 1975, the Board issued its "Partial Initial Decision (NEPA and Site Suitability Issues)" favorably disposing of (1) environmental issues arising under the National Environmental Policy Act of 1969 ("NEPA"), 42 U.S.C.

§4321 *et seq.*, (2) the question of the suitability of the proposed site for nuclear reactors of the general size and type proposed from the standpoint of radiological health and safety considerations, and (3) safety issues relating to the conduct of certain activities subject to Appendix B of 10 CFR Part 50. Based upon the Partial Initial Decision, on August 1, 1975, the Nuclear Regulatory Commission issued a limited work authorization ("LWA") which permits the Applicant to engage in certain limited work activities pursuant to 10 CFR § 50.10(e)(1) and (3).

By letter dated August 21, 1975, the Applicant requested that the Commission issue a supplement to the original LWA which would permit the Applicant to engage in certain additional limited work activities. The Applicant seeks such authorization in order to continue with critical path construction activities prior to a final determination on the issuance of the construction permits. Attached hereto as Exhibit A is a description of the additional limited work activities as stipulated to by the parties.

By letter to the Board dated September 16, 1975, the Applicant requested that a hearing be held to consider supplementation of the original LWA. An evidentiary hearing was held in Washington, D. C. on September 29, 1975, to receive evidence with respect to the additional limited work activities.

The parties (the Applicant and the Staff) have filed a stipulation in which they requested that the expedited decisional procedure be used and in which they waived their appellate rights. This stipulation also sets forth the common view of the parties that there are no unresolved substantial issues of fact, law, or discretion remaining with respect to the activities for which the Applicant now seeks authorization, and that the record in this case clearly warrants granting the relief requested. Lastly, the stipulation indicates that it is in the public interest to adopt an expedited decisional procedure. The stipulation is attached hereto as Exhibit B.

The Board concurs with the views of the parties that there are no unresolved substantial issues of fact, law, or discretion and that the record warrants granting the relief requested. In addition, the Board finds that dispensing with the issuance of the initial decision is in the public interest. In its Partial Initial Decision issued on July 30, 1975, the Board found that there is a need for WPPSS Nuclear Project Nos. 1 and 4, and it follows that, given the absence of counteravailing factors, the Applicant should be permitted to seek leave of the Director of Regulation to engage in additional LWA activities.

Lastly, the Board incorporates by reference its "Partial Initial Decision (NEPA and Site Suitability Issues)" dated July 30, 1975, which includes all findings required by 10 CFR §§ 51.52(b) and (c) and by 10 CFR § 50.10(e)(2). The Board has analyzed the evidence presented by the parties at the evidentiary hearing on September 29, 1975, and has determined that there has been no change in circumstances which would affect the findings, as set forth in the Partial Initial Decision, which are required by 10 CFR §§ 51.52(b) and (c) and

10 CFR §50.10(e)(2). The Partial Initial Decision covers the items in the supplemental LWA request which involve excavation for and construction of structures, systems, and components which are not subject to Appendix B of 10 CFR Part 50.

With regard to the construction and backfilling activities which are subject to Appendix B, the Applicant presented testimony describing the activities and the staff presented its analysis of the activities by way of supplemental testimony. As noted, the parties indicated in their stipulation the common position that there are no unresolved issues with respect to these activities. On the basis of the present record, which includes the evidence and testimony of the Applicant and Staff with regard to the additional LWA activities for which the Applicant seeks authorization, the Board determines, as required by 10 CFR §50.10(e)(3), that there are no unresolved safety issues relating to the additional LWA activities which would constitute good cause for withholding authorization.

After examination of those portions of the quality assurance ("QA") program which would be applicable to the additional LWA work requested by the Applicant, the Staff has concluded that the Applicant is implementing a quality assurance program which is consistent with Appendix B to 10 CFR Part 50, and with the commitments in the application. The Board finds that Applicant's QA program and the implementation of that program is acceptable for the conduct of the additional LWA work as described in Exhibit A attached hereto.

IT IS ORDERED that this Memorandum and Order shall constitute the final action of the Commission on the determination required by 10 CFR §50.10(e)(3), subject to review by the Commission on its own motion within thirty (30) days of the date hereof pursuant to 10 CFR §2.761(c). This Memorandum and Order shall be effective immediately.

BY ORDER OF THE ATOMIC SAFETY
AND LICENSING BOARD

Donald P. de Sylva, Member

Marvin M. Mann, Member

Daniel M. Head, Chairman

Dated at Bethesda, Maryland
this 30th day of September 1975.

Attachments: Exhibit A and Exhibit B

EXHIBIT A

SUPPLEMENTAL LWA ACTIVITIES REQUESTED BY APPLICANT

1. Excavation for structures which are not subject to the provisions of 10 CFR Part 50, Appendix B.

This work includes the excavation for the circulating water pipe, the circulating water pump house, the make-up water pump house, and additional excavation for the turbine generator pedestal foundation and the Turbine Generator Building column footings. This work is not expected to cause any problems of sliding or erosion. If it becomes necessary to treat the slopes to prevent sliding or erosion, appropriate control measures will be taken, which may include sprinkling and stabilizing.

2. Work on structures and components which are not subject to the provisions of 10 CFR Part 50, Appendix B.

This work includes the installation of the Turbine Generator Building column footings to elevation 447'; the turbine generator pedestal foundation mat to elevation 444'; the make-up water pump house base slab, walls and slabs to approximate elevation 375' to 385' to follow the sloping grade; the circulating water pump house base slab; walls and slabs to approximate elevation 446'. The above work includes the installation of reinforcing, the installation of embedded items, and the setting and subsequent removal of formwork and the placement of concrete.

Work also included under this item includes the installation of the circulating water pipe between the Turbine Generator Building and the circulating water pump house and the installation of the make-up and blowdown pipe from the make-up water pump house to a point approximately 175' east of the pump house centerline.

3. Backfilling not subject to the provisions of 10 CFR Part 50, Appendix B.

This work includes the placing, compacting and density testing of backfill for the circulating water pipe from the Turbine Generator Building to the circulating water pump house, and the circulating water pump house to approximate elevation 440'.

4. This work involves the installation of the mud mat, foundation mat, liner, base slab and exterior walls and waterproofing membrane for the Containment to approximate elevation 440 feet, and installation of the Containment interior walls, slabs and structural steel only to the extent necessary to

support exterior walls for backfill loads to grade level. Concrete placement will include embedments. Steel liners may be installed where used as forms in the placement of concrete and where liners remain as integral parts of the structure. Placement, compaction and density testing of Containment backfill to approximate elevation 440 feet may be effected. Reactor cavity walls and any other structure associated with the reactor pressure vessel supports will not be installed.

Work also included under this category involves installation of the mud mat, foundation mat, exterior walls and waterproofing membrane for the General Services Building (GSB) to approximate elevation 440 feet, and GSB interior walls, slabs, and structural steel framing only to the extent necessary to support exterior walls for backfill loads to grade level. Concrete placement will include embedments. Steel liners may be installed where used as forms in the placement of concrete and where liners remain as integral parts of the structure. Placement, compaction and density testing of GSB backfill to approximate elevation 440 feet may be effected.

Finally, this work involves placement, compaction and density testing of backfill for the base slab of the spray pond and spray pond pump house, and the subsequent installation of the spray pond and spray pond pump house base slabs and perimeter walls. Placement, compaction and density testing of backfill adjacent to spray pond, to approximate elevation 440 feet may be effected. Concrete embedments are included, but no work is to result in structures above grade.

EXHIBIT B

STIPULATION

It is hereby stipulated to and agreed by and between the Washington Public Power Supply System ("Applicant") and the NRC Regulatory Staff that pursuant to 10 CFR §2.761, the presiding officer may dispose of Applicant's request dated September 16, 1975, for appropriate findings pursuant to 10 CFR §50.10(e)(3) by an order after conclusion of the hearing scheduled for September 29, 1975, without issuing a partial initial decision in this regard.

Pursuant to 10 CFR §2.761, the parties hereby waive their rights to file exceptions, to request appellate oral argument and to seek judicial review. Further, the parties are of the view that there are no unresolved substantial issues of fact, law or discretion remaining with respect to the activities for which the Applicant seeks authorization (as described in Attachment A to this stipulation) [Attachment A is omitted from this publication but is available at the Commission's Public Document Room, Washington, D. C.], and that the record in this proceeding clearly warrants the granting of the relief requested.

The parties believe that it is in the public interest, in view of the need for power from the WNP-1 and WNP4 facilities as determined in the Partial Initial Decision (LBP-75-41, NRCI-75/7, at p. 142) that the Applicant be authorized to engage in the requested activities, and that it is in the public interest to dispense with an initial decision to avoid possible delay in issuance of the authorization.

Attached hereto as Attachment B [Attachment B is omitted from this publication but is available at the Commission's Public Document Room, Washington, D. C.] is a consented form of "Order Making Findings Pursuant To 10 CFR §50.10(e)(3) Under Expedited Decisional Procedure Provided For In 10 CFR §2.761" which the parties propose that the Board issue to determine this proceeding.

Counsel For Washington Public
Power Supply System

Counsel for NRC Regulatory Staff

Dated at Bethesda, Maryland
this 26th day of September, 1975

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

LBP-75-59

ATOMIC SAFETY AND LICENSING BOARD

Robert M. Lazo, Chairman
Lester Kornblith, Jr., Member
J. Venn Leeds, Jr., Member

In the Matter of
ILLINOIS POWER COMPANY
(Clinton Power Station, Units
1 and 2)

Docket No. 50-461
50-462
September 30, 1975

Construction Permit

PARTIAL INITIAL DECISION—
ENVIRONMENTAL AND SITE SUITABILITY
DETERMINATIONS

Appearances

Peter V. Fazio, Jr., Esq., Sheldon A. Zabel, Esq., and
Christopher B. Nelson, Esq., Chicago, Illinois, on behalf of
Illinois Power Company, Applicant.

Robert W. Dodd, Esq., and Robert I. Auler, Esq., Cham-
paign, Illinois, on behalf of Salt Creek Association, C. Lee
Baker, Maurice Hurley and Barbara Mettler Hammer, Joint
Intervenors.

Charles A. Barth, Esq., and Myron Karman, Esq., Washing-
ton, D. C., on behalf of the Regulatory Staff of the Nuclear
Regulatory Commission.

Upon application for construction permits for Clinton Power Station,
Units 1 and 2, Licensing Board issues a partial initial decision on environmental
and site suitability aspects of the facility, making factual determinations
requisite for the issuance of LWAs and imposing certain conditions.

RULES OF PRACTICE: ADMISSIBILITY OF EVIDENCE

The Federal Rules of Evidence, although not applicable to administrative proceedings, set forth general evidentiary principles. Admissibility of evidence in a Licensing Board proceeding is governed by the Commission's rule (10 CFR §2.743(c)) which provides that only relevant material, and reliable evidence which is not unduly repetitious will be admitted.

RULES OF PRACTICE: EXPERT WITNESSES

The ultimate test of an expert witness's qualifications is whether his knowledge of the matter in relation to which his opinion is sought is such that it probably will aid the trier of the question in making its determination. Qualification as an expert may be obtained by training and experience which is neither academic nor professional.

NEED FOR POWER: FORECASTING FUTURE DEMAND

The need for power is the key benefit that must be determined in a cost-benefit balance. See *Vermont Yankee* (ALAB-179) and *Nine Mile Point* (ALAB-264). Since such need must be judged in a particular time frame, it is necessary to determine the validity of power demand projections.

I. BACKGROUND

On October 30, 1973, pursuant to Section 103 of the Atomic Energy Act of 1954, as amended, (42 U.S.C. §2011 *et seq.*) the Atomic Energy Commission,¹ ("Commission") docketed the application of Illinois Power Company (Applicant) to construct two nuclear reactors designated as the Clinton Power Station, Units 1 and 2, (CPS) to be located in Harp Township, DeWitt County, Illinois. The proposed plant would employ two identical boiling water reactors (the facility), each with a gross electric power output of approximately 991 megawatts and a thermal power rating of 2894 megawatts thermal (MWt).

This proceeding involves the request by the Applicant for issuance of a Limited Work Authorization (LWA)² pursuant to Section 50.10(e)(1) of 10 CFR of the Commission's Rules and Regulations. This section authorizes the Director of Nuclear Reactor Regulation to issue to an applicant for a

¹ In accordance with the Energy Reorganization Act of 1974, 88 Stat. 1233, the Atomic Energy Commission has been abolished and its regulatory responsibilities have been assumed by the Nuclear Regulatory Commission as of January 19, 1975. References herein to the Commission shall be interpreted to mean Atomic Energy Commission for events dated or occurring on or before January 18, 1975, and the Nuclear Regulatory Commission for events dated or occurring on or after January 19, 1975.

² Koch testimony, exhibit 1, following Tr. 1348.

construction permit an LWA, which encompasses general site preparation activity, after an Atomic Safety and Licensing Board has held a public hearing and made findings required by the National Environmental Policy Act, and further found that there is reasonable assurance that the site for a proposed nuclear power facility is a suitable location for a nuclear power reactor of the general size and type proposed from the standpoint of radiological health and safety considerations.

The hearing on other aspects of the application for construction permits will be convened when the Safety Evaluation Report has been completed by the Nuclear Regulatory Commission Staff (Staff).

On December 7, 1973, the Commission published a Notice of Hearing on Application for Construction Permits (38 *Fed. Reg.* 33789) with respect to the application filed by the Applicant on October 30, 1973.

The Notice set forth the requirements pursuant to the Atomic Energy Act and the National Environmental Policy Act of 1969 as amended (42 U.S.C. §4321 *et seq.*) (NEPA), to be met prior to the issuance of construction permits. The Notice also provided that any person whose interest might be affected by the proceeding could file a petition for leave to intervene in accordance with the requirements of 10 CFR §2.714, and also further notified interested persons that they may file requests for limited appearances pursuant to the provisions of 10 CFR §2.715.

By a petition dated January 7, 1974, the Salt Creek Association (SCA), sixty-one named members, and three individuals acting on their own behalf, filed a petition to intervene, setting forth some 46 contentions.

Pursuant to notice dated March 1, 1974 (39 *Fed. Reg.* 8651) the Atomic Safety and Licensing Board (Board) scheduled a prehearing conference to consider the petition to intervene and to permit identification of key issues. The prehearing conference was held in Clinton, Illinois, on April 4, 1974, with parties and petitioners present and represented by counsel.

The members of SCA and the three individual petitioners all live, or work, or own or rent land in DeWitt County, Illinois, in the vicinity of the proposed CPS. Affidavits were filed by forty-four members of SCA authorizing SCA to represent their interests. The Board, with concurrence of counsel for the parties, found that SCA had shown the requisite interest and had asserted a contention meeting the requirements of 10 CFR §2.714.

During the course of that prehearing conference the parties and Board also agreed to consolidate the allegations of SCA and to admit four additional contentions. The Board confirmed this action in its Order dated May 22, 1974, which granted the Petition to Intervene of the Salt Creek Association on behalf of forty-four named members. Mr. C. Lee Baker, Mr. Maurice Hurléy and Ms. Barbara Mettler Hammer, individual petitioners, were also admitted as parties to the proceeding. All (Joint Intervenors) were represented by the same counsel.

At the prehearing conference on April 4, 1974, the Applicant, as it had earlier, moved for a separate hearing on environmental matters. The Staff

opposed that motion as premature pending resolution by the Commission of the changes in the regulations proposed on February 5, 1974, in 39 *Fed. Reg.* 4582 relating to limited work authorization and separate hearings on environmental matters. In its Order of May 22, 1974, the Board deferred ruling upon the motion for a separate environmental hearing.

Extensive discovery commenced immediately after the Intervenorers were admitted and numerous documents were exchanged among the parties and depositions were taken.

On June 24, 1974, the Notice of Availability of the Draft Environmental Statement was published in the *Federal Register* (39 *Fed. Reg.* 22447). The comment period expired on August 12, 1974, and a Notice of Availability of the Final Environmental Statement was published on October 9, 1974 (39 *Fed. Reg.* 36360).

On July 16, 1974, the parties entered into a stipulation which set forth the remaining nine contentions. On July 23, 1974, the Intervenorers dropped one of these contentions. This Board entered an order on September 5, 1974, approving the remaining eight contentions. On October 29, 1974, the Intervenorers further reduced the number of contentions to six, having eliminated the only two contentions relating to safety matters.

After the close of discovery, on February 26, 1975, Applicant moved for a hearing. On April 7, 1975, a Notice and Order setting a Second Prehearing Conference was published in the *Federal Register* (40 *Fed. Reg.* 15459) for the purpose of establishing a hearing schedule and list of witnesses and exhibits to be introduced by the parties.

At the Second Prehearing Conference on April 29, 1975, the Intervenorers reduced the number of contentions from six to three and a tentative hearing schedule was established. The Joint Intervenorers dropped a contention which stated that the damming of the Salt Creek for the proposed cooling reservoir would have an adverse effect on the surrounding drainage tile emptying into the Salt Creek. This contention was dropped with the understanding that the Intervenorers and Applicant would enter into an acceptable settlement of the drainage issue. While the Applicant has given assurances that it would rectify any adverse drainage conditions caused by the impoundment of the lake, we will give independent and detailed consideration to the drainage issue in this decision. The parties subsequently entered into a second stipulation filed on May 8, 1975, which set forth the three remaining contentions, the witnesses and exhibits of all parties, and a tentative schedule for the presentation of evidence at the hearing.

On May 28, 1975, a Notice of Hearing was published in the *Federal Register* (40 *Fed. Reg.* 23123) which set a hearing date of June 17, 1975. Hearings were held in Clinton, Illinois, on June 17 and June 18, 1975, and were subsequently transferred to Champaign, Illinois, for the remainder of that week and the following two weeks. An evening session was held on June 17th for the

convenience of interested members of the public who wished to make limited appearances.

At the outset of the hearing at each of the locations, the Board heard limited appearances from an aggregate of 33 interested members of the public. Their comments were incorporated into the record and have been considered by this Board in arriving at its decision herein.

The record in this case consists of all of the material pleadings filed herein, the transcripts of the prehearing conferences of April 4, 1974, and April 29, 1975, the transcripts of the three-week evidentiary hearing held between June 17, 1975, and July 3, 1975, and all evidence and exhibits received during the course of the hearings and five supplementary exhibits submitted by the parties after the close of the evidentiary hearing on this phase of the proceeding.

In addition to the issues raised by the Intervenors in this proceeding, the Board has an independent responsibility under the National Environmental Policy Act of 1969 ("NEPA") to consider environmental matters. In accordance with Section A.11 of Appendix D to 10 CFR Part 50,³ and in accordance with the notice of hearing published on December 7, 1973, in the *Federal Register* (38 *Fed. Reg.* 33789), this Board must (1) determine whether the requirements of Section 102(2)(C) and (D) of NEPA and Appendix D to 10 CFR Part 50 have been complied with in this proceeding; (2) independently consider the final balance among conflicting factors contained in the record of the proceeding with a view to determining the appropriate action to be taken; and (3) determine whether the construction permits should be issued, denied, or appropriately conditioned to protect environmental values.

Throughout this decision, we will have reference to exhibits of the Staff and Applicant received into evidence at the hearing. A list of all exhibits, except those attached to the prepared testimony of individual witnesses, appears in the Appendix attached hereto [the Appendix is omitted from this publication but is available at the Commission's Public Document Room, Washington, D. C.]. For ease of reference, we will hereafter refer to the Staff's Environmental Statement as the "FES", the Applicant's Environmental Report including its five supplements as the "ER", and the Applicant's Preliminary Safety Analysis Report with its thirty amendments as the "PSAR".

Although the notice of hearing set forth all the issues which must be considered and decided by this Board to determine whether construction permits should be issued to the Applicant, this Partial Initial Decision addresses only the environmental issues specified by the Notice of Hearing and Appendix D to 10 CFR Part 50; the contentions of the Intervenors; the site suitability issues

³ Facility licensing proceedings for which a notice of hearing was published prior to August 19, 1974, remains subject to Appendix D of 10 CFR Part 50 rather than Part 51 (10 CFR §51.56).

specified by 10 CFR §50.10(e)(2) and certain other particular matters set forth at length hereinafter. An initial decision on the remaining radiological health and safety issues, and this Board's ultimate decision on issuance of the construction permits, will be issued after concluding public hearings on the remaining radiological health and safety aspects of the application have been held.

Evidentiary Rulings

(a) During the hearing, two evidentiary rulings were made which deserve some discussion in this decision. We will treat them in the order in which they arose.

On Thursday, June 26, 1975, during the cross-examination of Applicant's witness, Jaye, the Intervenor requested the Board to direct the witness to bring to the hearing for use by counsel for Intervenor during cross-examination certain detailed backup information. As first identified, the request was for the source deck, the data deck and the written documents available relating to a computer program which produced a computer printout of some 20 or so calculations, a portion of which Mr. Jaye had with him at the hearing. Exactly what calculations were contained on the computer printout was never clearly brought out at the hearing. It is, however, clear from the context that the Intervenor was asking for the computer programs and basic data input relating to the various models of industries utilized by Mr. Jaye in arriving at his nuclear fuel cycle cost projections. Both the Applicant and the Staff objected to the request. Counsel for Applicant argued that the request came too late and that granting it would impose an unfair delay upon the proceedings. He pointed out that during the discovery process at a meeting held in Decatur, Illinois, on January 17, 1975, in which Dr. Rieber, Intervenor's expert in this area participated, among other documents copied and taken away was a letter dated October 14, 1974, from Mr. Jaye to W. C. Gerstner, a vice president of Applicant. The letter made explicit reference to the existence of a return on investment model which was used as a basis for cost estimates of exactly the same type as were being presented by Mr. Jaye at the hearing. Intervenor was given at least a week's time following receipt of that letter to request additional information as part of the discovery process and thereafter they agreed that the discovery process should be closed. Counsel for Applicant also pointed out that the Intervenor had been furnished with Mr. Jaye's testimony on June 9 and had not during the intervening 17-day period requested any backup information or working papers to aid them in their cross-examination. It also became apparent in response to questions from the Board that if the requested material were made available, the Intervenor would have required a delay in the hearing of a week or two to analyze it.

It appears that counsel for the Intervenor was not present in Decatur at the January meeting, although he was represented by an associate, and, accordingly,

he may not have been completely familiar with the contents of the letter. However, Intervenor was represented by counsel at that meeting, and their expert who was advising them on matters of this type was at the meeting and did see and copy the letter. Accordingly, we concluded that information revealing the existence and significance of the models was available to the Intervenor during the discovery process and their failure to follow up and request the detailed backup data at that time required us, in fairness to the other parties and to the public's right to a prompt disposition of this proceeding, to deny their request.

(b) The other significant evidentiary matter related to separate objections made to the introduction of Dr. Rieber's non-proprietary testimony. After extensive *voir dire* examination, counsel for Applicant objected to the introduction into the record of substantial portions of Dr. Rieber's prepared non-proprietary testimony, on the grounds that they were immaterial and incompetent because they purported to be experts' opinions in areas in which Dr. Rieber had shown no basis for rendering such an expert opinion. More particularly, Applicant objected to the introduction of Section II relating to demand for power on the basis that Dr. Rieber's qualifications as set forth during the *voir dire* examination did not qualify him by virtue of his experience or training to render expert opinions in the area of electric utility load forecasts; with respect to Section III relating to site selection on the ground that Dr. Rieber's training and experience did not give him any ground upon which to express an expert opinion in the area of site selection or utility system planning; with respect to Section IVA relating to fuel cycle costs on the grounds that Dr. Rieber had specifically testified that he had no training in physics and that his only other experience cited, namely a study prepared for the Missouri Public Service Commission, was not used for reasons which were discussed at some length during the hearing; with respect to Section V relating to capital costs on the grounds that Dr. Rieber testified he had no engineering training and there appeared to be no other basis in his experience or training upon which to base an expert opinion relating to capital costs of electric generating stations; with respect to Section VII relating to cooling systems on the same grounds as were cited for Section V. In addition, objection was made to six statements in Sections II, IV, V and VI on the basis that in those statements Dr. Rieber purported to state legal conclusions; and, with respect to paragraph one in Section II, page 28, on the basis that Dr. Rieber had not indicated any expertise in accounting; and, with respect to part VI, pages 2 to 3, on the basis that Dr. Rieber had not indicated any experience or training as a biologist or hydrologist. No objection was made to Section VI because it related to cost-benefit analysis and Applicant admitted that Dr. Rieber had expertise in the area of economics. Applicant's counsel reserved the right to make specific evidentiary objections with respect to hearsay and other matters if the testimony were admitted.

Staff counsel, after making it clear that the Staff did not join in, and did not support Applicant's motion and that the Staff was not concerned with Dr. Rieber's expertise, moved to strike (1) all hearsay in Dr. Rieber's testimony; (2) all of Section VI relating to cost-benefit analysis on the grounds that it was not relevant to Contentions 4 and 5 which, pursuant to stipulation of counsel, were the only contentions that Dr. Rieber was expected to address; (3) all references and related testimony to the Draft Environmental Statement on the grounds that all comments on the Draft Environmental Statement could be found at the back of the Final Environmental Statement which had been admitted as Staff Exhibit 1 and to allow them again in evidence would be repetitious, redundant and surplusage; (4) all of Section III entitled "Site Selection" on the grounds that it was irrelevant to Contentions 4 or 5 or any other contention and on the further ground that it was surplusage and incompetent and in contravention of the stipulation of counsel; (5) all of Section VII on cooling systems on the grounds that it expressed a legal conclusion regarding EPA water law and was beyond the scope of the contentions; (6) the bottom of page II-21 and the top of page II-22 referring to testimony of Dr. Connor on the grounds that it was rebuttal and not direct testimony. Staff counsel then proceeded with a line-by-line delineation of the portions of Dr. Rieber's testimony which he considered objectionable.

Counsel for the Intervenors responded that Dr. Rieber was being presented solely as an expert in economics and that the various newspapers, magazines and other articles to which objections were made merely formed a part of the material upon which he based his expert opinion as an economist.

The Board advised the parties that it would grant the motions of Applicant and Staff as they related to hearsay and legal conclusions, but that it had some difficulty in ruling on the remainder of the motions relating to Dr. Rieber's qualifications to testify as an expert. In order to aid the Board in reaching a conclusion, counsel for Intervenors was given an opportunity to conduct further examination of Dr. Rieber concerning his qualifications to give the testimony which the Board had reviewed. Members of the Board then put additional questions to Dr. Rieber concerning his qualifications and his method of analyzing the various information which he had referenced in his testimony. After further considering the matter, the Board denied the motions of both parties to strike any further testimony. Also, the Board denied a subsequent request by counsel for Intervenors to present at a later date supplemental written testimony in place of those portions of the testimony stricken as hearsay and legal conclusions, pointing out that counsel would have an opportunity to present redirect testimony. The final ruling of the Board striking specific portions of Dr. Rieber's proffered testimony was entered on Tuesday, July 1, 1975.⁴

⁴Tr. 1664-1667-A.

General evidentiary principles and the rules now governing practice in the Federal courts are set forth in the recently enacted Federal Rules of Evidence. Rule 702 entitled "Testimony by Experts" provides that if scientific, technical or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise. Rule 703 relating to the bases of opinion testimony by experts provides that the facts or data in the particular case upon which an expert bases an opinion or inference may be those perceived by or made known to him at or before the hearing. If of a type reasonably relied upon by experts in the particular field in forming opinions or inferences upon the subject, the facts or data need not be admissible in evidence.

We should note at this point that these rules of evidence are not applicable to administrative proceedings where, traditionally, there has been no strict application of evidentiary rules. We are, however, bound by Section 2.743 of the Commission's rules (10 CFR §2.743) and in particular paragraph (c) thereof pertaining to admissibility of evidence which provides that only relevant material and reliable evidence which is not unduly repetitious will be admitted. Immaterial or irrelevant parts of an admissible document will be segregated and excluded so far as is practicable.

It is well established that a newspaper article is hearsay and cannot be admitted to prove the truth of the assertions stated herein. *Poretto v. United States*, 196 F. 2d 392 (5th Cir. 1952); *United States v. Jaffe*, 98 F. Supp. 191 (D.C. D.C. 1951); see annotation: Admissibility of Newspaper Article as Evidence of the Truth of the Facts Stated Therein, 55 ALR 3d 663 (1974). The question remains as to whether newspapers are facts or data of a type reasonably relied upon by experts in a particular field in forming opinions or inferences. It is quite clear that they are not standard or recognized texts within the meaning of that exception to the hearsay rule. And even if newspaper articles constitute this type of data and may be in some fashion relied upon by an expert in expressing an expert opinion, they still would not be entitled to be admitted as evidence to prove the facts asserted within them. See e.g., *United States v. Sowards*, 339 F. 2d 401 at 402 (10th Cir. 1964) and *Hickok v. G. D. Searle & Co.*, 496 F.2d 444, 445-6(10th Cir. 1974).

The same is true for academic journals and scientific articles containing the written works of other experts. Clearly such written works are commonly relied upon by experts in forming opinions. But when that is the case, the hearsay objection may be largely obviated by requiring the introduction of the articles through experts in the field who will, themselves, be subject to cross-examination.

In their proposed findings of fact, Intervenors have asserted that Dr. Rieber was attempting to show some of the bases for his opinions and was not

attempting to introduce his sources as evidence themselves.⁵ Thus, the effect of our ruling on the hearsay objection during the course of the evidentiary hearing was to segregate and exclude irrelevant or immaterial parts of an admissible document. Further, if the delineated portions of the testimony referring to source materials are not stricken as hearsay, they must be rejected for the reason that there is lacking sufficient assurance of the truthfulness of the facts expressed in the excluded source material.

The ultimate test of a witness's qualification is whether his knowledge of the matter in relation to which his opinion is sought is such that it probably will aid the trier of the question to determine the truth. Where such knowledge is based upon newspaper and magazine articles, there is little if any assurance that the source upon which opinion is based is reliable. As to other excluded source materials on which Dr. Rieber has based his opinions, the Board has serious reservations concerning whether this witness has sufficient technical qualifications to permit him to fully evaluate the reports he has read referring to the specific matters at issue in this proceeding such as electric utility load forecasts, utility system planning, fuel cycle costs and capital costs of electric generating stations, and thereby determine for himself whether such source materials are reliable.

Dr. Rieber's credentials as an economist are excellent and his testimony has been received by this Board and evaluated in light of his skills, experience and work as an economist in areas closely related to some of the matters he has testified to.

We have reviewed Dr. Rieber's testimony in its entirety. We have formed a conclusion as to the sources he used in reaching his opinions and, as we have indicated elsewhere, we have accorded his testimony such weight as we have deemed appropriate in applying that judgment. We have concluded that the portions of the testimony delineated in our order at the hearing should not be admitted, on the grounds that such testimony is irrelevant, immaterial, and unreliable within the meaning of the Commission's rules and would serve no useful purpose in the record. Accordingly, that testimony is herewith stricken for the reasons set forth herein.

II. FINDINGS OF FACT—MATTERS IN CONTROVERSY

Before discussing the Board's decision on the specific contentions and its reasoning, the Board feels it is necessary to discuss some of the background involved with the contentions and to discuss the Board's reasoning for choosing a particular order in which to address the contentions.

The Board will address the contentions in the following order:

⁵ Intervenors' proposed finding of fact No. 516.

- A. Need for Power
- B. Coal as an Alternative
- C. Taking of Land

In order to resolve the "Need for Power" contention, it is necessary to consider decisions of the Atomic Safety and Licensing Appeal Board in *Vermont Yankee*⁶ and *Nine Mile Point*,⁷ which imply that the need for power is the key benefit that must be determined in a cost-benefit balance. In addition, it is logically necessary to determine first whether or not a need for power exists because if no need for power exists then no need for any plant exists, coal or otherwise, and no taking of land would be necessary. Thus, the Board would not need to reach the "Coal as an Alternative" nor the "Taking of Land" contentions.

The "Need for Power" contention does not just relate to a need for power, but a need for power within a time frame. Thus, the "Need for Power" contention is really a problem in determining the validity of power demand projections.

Two basic methods of projection are:

(1) A historical growth projection based on power demand over a period of years, including corrections for anticipated and known effects such as air conditioning saturation and temperature variations from season to season, and year to year.

(2) An econometric model of a country or a region which utilizes as input variables data such as population, industrial output, growth of the economy, etc. In order to use the model, historical data is used to determine the parameters of the model.

This historical growth model as used in this proceeding is not a pure historical growth model, but is also a quasi-econometric model because corrections have been made to the historical data. In the same sense, the econometric model is also a historical model because historical data are used to determine the parameters of the model. However, for purposes of this decision, we need only discuss a historical growth model because the testimony on predictions in this particular proceeding included historical models only. The Intervenors did not present a model nor any projections, but instead presented a "critique" of the projections of others.

Because of the Appeal Board rulings in *Nine Mile Point* and *Vermont Yankee, supra*, the only benefit that has to be considered is the need for power. Thus, once the need for power has been established, the problem resolves itself

⁶*Vermont Yankee Nuclear Power Corporation* (Vermont Yankee Nuclear Power Station), ALAB-179, 7 AEC 159 (Feb. 28, 1974).

⁷*Niagara Mohawk Power Corporation* (Nine Mile Point Nuclear Station, Unit 2), ALAB-264, NRCI-75/4R, 347 (Apr. 1, 1975).

into determining the least cost alternative in terms of environmental costs and economic costs. The contention as stated by the Intervenor and accepted by the Board relates to the economic cost. The environmental costs will be considered in addressing the "Taking of Land" contention and in the Board's cost-benefit balancing.

Assuming arguendo, that a need for power has been established and a nuclear plant is the least cost alternative, then the "Taking of Land" contention must be addressed. The contention is concerned with the economic and agricultural costs with respect to resident members of the Salt Creek Association. These resident members of the Salt Creek Association stand in two different relationships with respect to this contention: (1) as individuals who are directly affected, and (2) as members of society who are indirectly affected.

The Board will examine the resident members as members of society first. If society cannot bear the "Taking of Land," then the Board does not need to address the economic agricultural impact with respect to the resident members.

Assuming arguendo, that the society can bear the costs of "Taking of Land", then the Board must examine the direct effect on the resident members of the Salt Creek Association. The only two direct effects identified are:

1. Whether or not the price paid for the land represents the value of the land; and
2. Whether or not the impact on the agricultural production of the members' remaining parts of land has been adequately considered in resolving the drain-tile issue. (The drain-tile issue is an issue involving whether or not the commitment of the Applicant to mitigate the effect of the reservoir on the present drain-tile system is adequate.)

The Board will now discuss each contention in detail:

Contention A—"Need for Power"

The "Need for Power" contention (No. 4 in the record) will be considered first as discussed above:

The demand predictions of the Applicant and the Staff are unsound, do not take energy conservation methods into account, and the power to be produced by this plant will not be needed as presently scheduled.

We observe first that this contention does not challenge the need for the plant. No party, including the Intervenor, challenges the actual need for some power. In fact, the Intervenor has proposed the following finding:

223 . . . and there is little question that the Applicant's future growth will be substantial

In *Nine Mile Point, supra*, the Appeal Board recently discussed the criterion that must be used by licensing boards in considering need for power. The Appeal Board stated:

... given the uncertainties inherent in the predictions of future demands, can it be fairly concluded on the evidence presented that a particular projection of a future need for power is a reasonable one. (at p. 367).

In the present proceeding, we are not faced with alternative predictions of the future power demand by the Intervenors, as the Licensing Board was in the *Nine Mile Point* proceeding, but with comments on the projections of the Staff and the Applicant by the Intervenors' witness. That witness in fact entitled the section of his prepared testimony applicable to the need for power issue; "A Critique of the Illinois Power Environmental Report and Nuclear Regulatory Commission Final Draft (sic) Environmental Statement". Even a casual examination of his testimony will reveal that the subtitle is accurate. The testimony contains no demand study or projections of power needs.

The testimony of the Intervenors' witness is actually a discussion of the problem of predicting the future. His experience is the general field of economics and statistics. His views were considered by the Board in evaluating both the Staff's and the Applicant's predictions.

The Applicant presented testimony of Mr. Robert Sarikas, who sponsored a revised load forecast prepared by the Applicant and also prepared an independent forecast.⁸ The Applicant's revised load forecast, which was submitted as updating the information previously contained in the Environmental Report, predicted a peak summer demand in 1981, the year of commercial operation of the first unit, of 3,715 megawatts, and in 1984, the year of commercial operation of the second unit, of 4,425 megawatts. The Applicant's load forecast as contained in Sarikas' Exh. 1 contained not only these predictions, but also the details and the assumptions underlying these predictions and narrative description of the methodology used to reach the predictions.

Mr. Sarikas, who is now an independent consultant, has been employed by the Applicant for 31 years in various assignments. He testified regarding his independent review of the Applicant's revised load forecast, including the methodology used and the data summaries contained in the forecast and that he had in addition used the results of his own independent analysis to test the reasonableness of the Applicant's results and had compared those results with the results of forecasts of neighboring utilities. The Applicant's new load forecast indicates a long-term annual growth in peak demand of 6.5%. The forecast of the Applicant consists of projections of two load components: a base load and a weather-sensitive load.

The base load component was determined by computing the average of all weekday peak loads in the months of April and October that fall within a system-weighted temperature range of 48 and 64 degrees. System temperature is weighted by geographical load distribution and in terms of the previous day's

⁸ Sarikas, following Tr. 1444.

temperature. Historical base load values are set forth in Sarikas' Exhibit 1. The forecasted growth rate for the base load is 6.5%.

The weather-sensitive load component was determined by first adjusting the total peak load to the amount to be expected at a constant system-weighted temperature and then deducting the base load component. The average system-weighted temperature during peak base load is 84°. Additional adjustments are made in projected weather-sensitive loads to consider increased residential air conditioning saturation. The projected growth rate for potential weather-sensitive load adopted by the Applicant was 4.5% and after correction for saturation, the projected actual growth rate was 6%. The historical rate was 6.8%.

The revised forecast of 6.5% is a result of considering data from 1948 to 1963, which was not considered previously, and the data for the last two years, which was not available when the original forecast was made.

Mr. Sarikas also testified that he had made an independent projection of the Applicant's load growth and concluded that growth would be 6.98%, that the Applicant's load forecast is consistent with industry-wide forecast and that in his judgment it adequately reflected energy conservation potential.

The Staff's witness, Dr. Donald Connor, a Senior Physicist at the Argonne National Laboratory, addressed this contention. His testimony is intended to supplement and amplify the position of the Staff, which is set forth in Section 8 of the FES. Dr. Connor testified that his studies attempted to recognize and interpret the consequences of several significant events which occurred prior to as well as subsequent to the preparation of the FES. Such events included the oil embargo, the subsequent increase in world petroleum prices, public and government recognition of an "energy crisis", the advocacy of energy conservation, and the effect of unprecedented inflation which culminated in an economic recession.

Dr. Connor approached the need for generating capacity by a study of sales of electrical energy rather than peak loads. He felt such an approach was justified because the high capital cost of a nuclear-fueled generating plant would require, as a matter of economic necessity, the use of that plant in the generation of base load power, as opposed to peak load power. Dr. Connor presented electrical output statistics which would show that the national load growth halted in late 1973. He testified that the Applicant's experience in 1974 was similar to the national average and in total kilowatt hours sales increased by $\frac{1}{10}$ th of 1% over 1973. He testified that applying long-term statistical analysis to the historical data did not result in a need for any marked change in expectation of future growth because of falloff in energy sales in 1974. At the same time, he recognized that such a long-term analysis was inherently insensitive to the effects of recent short-term changes.

Dr. Connor's testimony also discussed the Project Independence Study of future U.S. energy needs and resources prepared by the Federal Energy Administration and published after the Final Environmental Statement was

issued. Based on a study of standard metropolitan statistical areas, Dr. Connor concluded that it was reasonable to apply the national forecast to the Applicant's service area.

Recognizing, however, that the reason for dramatic drop in energy sales might have resulted from a basic change of public attitude, Dr. Connor also analyzed the Applicant's monthly kilowatt hours sales during the period January 1969 through April 1975. He concluded that a large part of the monthly variation in energy uses was controlled by temperature. He fitted the monthly kilowatt-hour sales for a period preceding the oil embargo, which spanned one business cycle to a linear growth model which incorporated adjustment for temperature and other seasonal variations. He testified that the degree to which the actual kilowatt-hour sales differed from those forecast by his model served as a measure of changing economic conditions and of possible changes in public attitude. Because he expected kilowatt-hour consumption to be influenced by economic conditions, he considered five economic indicators which he fitted to a separate growth model so that deviations of kilowatt-hour sales could be compared with corresponding deviations of economic indicators from other models. The final comparisons were plotted in his Figures 5 and 6, which indicate the percent deviations of all the predictions for each load sector and for the five indicators.⁹

Dr. Connor interpreted the results shown in Figures 5 and 6 to mean that the decrease of a few percent in residential kilowatt hours of usage for the 13-month period ending November 30, 1974, was attributed to a genuine conservation effect, noting, however, that the largest deviation occurred in the summer months and corresponded to less than a change of 2° in the setting of air-conditioning thermostats. He expected that any reduction due to changed attitudes toward non-air conditioning use would not exceed 1 to 2%. He concluded that the greatest total reduction in the annual base for future growth in residential sales would be no more than 5% which corresponded roughly to using the 1974 annual kilowatt sales as a base for future growth rate.

He reached the same conclusion with respect to commercial sales. With respect to industrial sales, he concluded the correlation between kilowatt-hours sales and industrial index shown in Figure 6 was so strong that all of the decline from normal growth during the last year should be described to economic conditions as opposed to conservation efforts. Since industrial load is more than one-half the Applicant's total kilowatt-hour sales and the fastest growing component, the Applicant's annual industrial kilowatt-hour growth has been substantially higher than the national rate. Dr. Connor found no reason to expect the difference would not persist. Accordingly, he expects the Applicant's industrial growth rate to continue to exceed the national growth rate as projected by Project Independence. Dr. Connor concluded future long-term

⁹ Connor, pp. 18 and 19, following Tr. 926.

growth of the use of electricity in the Applicant's service area would be no different than in the past.

In order to compare the projected annual kilowatt hours with the Applicant's need for the base load capability which the Clinton units would provide, Dr. Connor compared Applicant's average load and base load capacity in recent years with his projection of those quantities to 1985.¹⁰ That table showed the ratio of these values to be 15% higher in 1981 and 13% higher in 1984 than in 1974, an increase which Dr. Connor felt would be reasonable.

Finally, Dr. Connor evaluated the effects of substantial uncertainties inherent in long-term economic projections by analyzing the comparative costs associated with completion of a proposed plant, either before or after the date when it was actually needed. He testified that the risk of serious power shortage has been enhanced because a number of utilities may complete new generating plants later than needed, resulting from such utilities delaying or reducing their plans for new generating units, and the net extra cost of completing the plant early is small. He concluded on a balance that it would be better for a plant to be early rather than too late and that the Applicant's present construction schedule is reasonable. Dr. Connor predicted a growth rate of 7.5%.

Thus, the Board is faced with growth projections of 6.5 to 7.5% by two different witnesses, and a critique of the method used by the Staff and the Applicant. After carefully weighing the testimony of Intervenor's witness with respect to the problem of predicting the future, and examining in detail the methods as discussed above used by the Applicant and Staff to arrive at their predictions, this Board finds that, given the uncertainties inherent in such projections, the projections of the demands for power by the Applicant and the Staff though differing are sound and reasonable and do consider energy conservation insofar as possible by incorporating recent data, and that the Clinton units will be needed as presently scheduled.

Contention B—"Coal as an Alternative"

As stated, *supra*, the "Coal as an Alternative" contention (5 in the record) will be discussed next. This contention relates to the need for a nuclear plant:

The Applicant and the Staff have not given adequate consideration to coal as an economically viable alternative.

Although this contention as stated relates to the past, the Board notes that the record not only contains the past as represented by the Applicant's Environmental Report and the Staff's Environmental Statement, but additional evidence presented at the hearing. The Applicant presented four witnesses: True, on the cost of the Clinton units; Weir, on the cost of coal; Jaye, on nuclear fuel costs; and Sarikas, on cost comparisons. The Staff also presented a witness, Connor. All these witnesses were cross-examined by the Intervenor's counsel.

¹⁰ Connor, Table 4, p. 25, following Tr. 926.

Our task is not to decide if the past consideration of the alternatives was adequate, but whether the past as brought up-to-date is adequate. Hence, we will assume arguendo that the contention when accepted by the Board was true.

The Board also notes that the contention does not state that coal had to be the lowest cost alternative fuel to produce the power, but all parties have interpreted the contention to mean that coal would be the lowest cost alternative to produce power. Furthermore, the Board notes that the contention applies only to economic considerations. As discussed above, the Board having found a "Need for Power", the problem shifts to examining both environmental and economic costs of producing that power.

The Applicant's witness, Mr. Sarikas, testified that the 1981 present worth of the future revenue requirements of the Clinton nuclear plant was \$2,343,404,000, and that the least costly alternative coal plant was \$3,923,065,000.¹¹ The Staff's witness, Dr. Connor, testified¹² that the generating costs of the alternative plants were:

Capacity factor	Cost nuclear (mills per kilowatt hr)	Cost coal (mills per kilowatt hr)
0.6	19.7	22.7
0.7	17.5	21.2
0.8	15.9	20.1

The Intervenors have asserted that the costs of coal and of its transportation have been overestimated. Using the Applicant's data, the cost of the coal plant exceeds the cost of the nuclear plant by some 1.6 billion dollars. To achieve equality of the nuclear and coal plants, the cost of coal would have to be in error by 1.6 billion dollars, which is approximately 59% of the cost of coal over the life of the plant. The Staff's witness, Dr. Connor, estimated the nuclear fuel costs to be 4.4 mills per kilowatt-hour, and the coal fuel cost to be 13.4 mills per kilowatt-hour. Assuming that the 3 mill/kilowatt-hour or greater difference in total generating costs between the nuclear and coal plants (see table above) was due entirely to fuel, the estimated coal costs would have to be in error by approximately 25%. The Board found no evidence in the record that the fuel costs were in error by these amounts. With respect to the transportation cost, the Applicant's witness, Weir, estimated the cost of coal to be \$20 per ton FOB at the mine and the cost of transportation to be 1.2 ¢ per ton/mile for 200 miles. Thus, transportation adds \$2.40 per ton to the cost of coal. Hence, if the plant were at the mine mouth, the reduction in the coal cost would amount to

¹¹ Sarikas exhibit 3, p. 1, following Tr. 1444.

¹² Connor, p. 29, following Tr. 926.

only approximately 11%. Using this value and either the Applicant's data or the Staff's data, the difference of the cost for the coal units and the nuclear units is reduced but not eliminated. The Board will now discuss the evidence in detail.

Mr. True, head of the estimating department at Sargent & Lundy, Applicant's architect/engineer, presented the current estimates of the cost of construction of the Clinton units.¹³ Mr. Weir, a consulting mining engineer, testified on the Applicant's behalf as to the expected cost of coal over the life of the Clinton units;¹⁴ and Mr. Jaye, a nuclear fuel cycle expert, testified as to the 30-year levelized nuclear fuel cost for the Clinton station.¹⁵

Mr. Sarikas then utilized the data of these witnesses together with CONCEPT III, a computer program developed for the Atomic Energy Commission, to compare the cost of building and operating the Clinton units and alternative units.¹⁶ Mr. Sarikas presented the results of the economic comparison of the nuclear units with alternative coal units, using both Illinois and Western coal at both the Clinton site and the Hennepin East site (the site considered as the most likely alternative). For either site, the comparison showed that future revenue requirements were less for a nuclear plant than for a coal-fired plant, and were less for a coal-fired plant using western coal than for one using Illinois coal. The Intervenor's testimony indicated that the Intervenor's witness, Dr. Reiber, advocated the use of an Illinois coal-fired plant, which was the most costly of all the alternatives.

Mr. Sarikas testified that the capital cost estimates used in his comparison were prepared by combining site cost estimates developed by Mr. True with power plant construction costs estimates prepared using the CONCEPT III computer program. Mr. Sarikas also testified as to his method of developing present worth capital cost operating expenses and fuel costs used as comparisons.

Mr. True testified that the costs of the Clinton Nuclear Power Station as estimated by the Estimating Division of Sargent & Lundy for Unit No. 1 with a commercial operation date of June 1, 1981, were \$617,329,000 and for Unit No. 2 with a commercial operating date of June 1, 1984, were \$547,545,000 so that the combined cost exclusive of the \$12,400,000 cost of land would be \$1,164,874,000. Mr. True's testimony briefly covered how such estimates are made and indicated that the estimate for the Clinton Power Station had been updated through September 13, 1974.

During cross-examination by counsel for the Intervenor, Mr. True was asked a series of questions concerning his qualifications. He testified that he had not graduated from college, was not a graduate engineer and was not a licensed professional engineer. Mr. True was presented as head of the Estimating Division

¹³ True, pp 1-6, following Tr. 1069.

¹⁴ Weir, pp 1-12, following Tr. 1211.

¹⁵ Jaye, pp 1-17, following Tr. 1255.

¹⁶ Sarikas, pp 14-20, following Tr. 1444.

to sponsor the cost estimates which had been prepared by that division under his supervision and direction during the ordinary course of the business of his employer. Accordingly, the fact that he actually supervised and directed the work on the estimates was sufficient to qualify him to testify as he did. Further, we would note that qualification as an expert may be obtained by training and experience which is neither academic nor professional. The record indicates that he has been employed in various positions by Sargent & Lundy since 1948; he has worked in their Estimating Division since 1969; and he has been assigned responsibility as head of that division since January 1974. The record further indicates that Mr. True has been involved in design work associated with a majority of Applicant's generating stations since 1949 or 1950. Accordingly, we find Mr. True qualified to testify as an expert with respect to the design and estimated costs of electric generating stations.

The remainder of Intervenors' cross-examination was oriented toward questioning the accuracy of the estimate. Mr. True testified that the latest estimate indicated increases in estimated costs of approximately 25% over a similar estimate prepared one year earlier. The record indicates that this increase can be attributed primarily to the fact that the earlier estimate was made at a time when the design of the plant was in its early stages and that it is usual for estimates to be updated on an annual basis as more details become available. A further updating which is now in the process of preparation is expected to indicate slightly higher costs. It appears that the earlier estimates also were low because of a failure to anticipate the exceptional escalation that has occurred during the last two years.

We find that the approach utilized by Mr. True in estimating the capital costs of construction of the Clinton Power Station is reasonable and provides a basis from which we can determine the expected costs of the plant. These estimates were developed in accordance with the current practices of one of the largest architect/engineer firms in the country in the ordinary course of its business and, accordingly, represent as far as can be ascertained from the record the state of the art with respect to such estimates.

The Applicant's witness, John P. Weir, a consulting mining engineer, testified on the estimated cost of coal. This testimony was uncontroverted as to the estimated cost of Illinois and low-sulfur western coal delivered to the Clinton and Hennepin East sites in 1975-1981 and 1984 dollars.

In making these estimates, Mr. Weir assumed that an average grade of washed-Illinois high-sulfur coal with a heat content of approximately 10,500 BTU per pound resulting in a requirement of about 2,800,000 tons per unit annually for a 950 megawatt unit. With respect to low sulfur coal he assumed the heat content to be 8,500 BTU per pound resulting in a requirement of 3,500,000 tons per year per unit. He also assumed the Illinois coal would be No. 6 seam, deep-mined coal, from new mines which would have to be developed in the Belleville area of Illinois. He estimated that a price of \$20 per

ton including sales tax would be required to induce an Illinois coal operator to sign a contract for coal supply at this time. With respect to low sulfur western coal, he estimated a price of \$7 per ton. Based on a historical analysis of increasing wage rates in the coal mining industry, and in the price of coal, Mr. Wier adopted an escalation rate of 6% per year in the price of coal. Mr. Weir's estimate of transportation costs were based on unit-train hauls of 1,300 miles for western coal and 200 miles for Illinois coal, and on this basis he estimated unit cost of 1.2¢ per ton-mile for the short-haul and $\frac{9}{10}$ ¢ per ton-mile on the long haul. He also applied a 6% annual escalation rate for transportation costs which he based on a study of indexes for railroads, of Class I, Association of American Railroads.

We find that the approach used by Mr. Weir to estimate the coal costs for the life of the plant is reasonable and presents a base on which we can estimate the cost of the coal for a plant of this size during the relevant period. The Applicant's witness, Mr. Seymour Jaye, testified to the 30-year levelized fuel cycle costs for the power station. Mr. Jaye is a vice president and general manager of the utility division of S. M. Stoller, a consulting organization which assists utilities in all phases of nuclear power involvement. He has been employed by Stoller since 1971, and is responsible for all studies by his organization for utility clients which are related to nuclear fuel and its competitive position fossil fuel. Mr. Jaye has been engaged in the nuclear field since 1955. Mr. Jaye analyzed and projected nuclear fuel costs of the Clinton units over 30 years of operation. To form these projections he utilized a variety of information including applicants' contractual commitments for various fuel cycle needs. Where no contracts were available the economic information that he used came directly from Stoller Corporation's long-range projection for each fuel cycle requirement. This information was supplemented by additional information from the Applicant concerning its anticipation of economic factors such as interest rates, carrying charges, discount factors, and energy requirements for the units on a year-to-year basis. Based on these studies, Mr. Jaye estimated the fuel cycle costs for Unit 1 at 5.6 mills per kilowatt-hour,¹⁷ and for Unit 2 at 6.4 mills per kilowatt-hour.

Mr. Jaye testified that in making his projection of fuel costs, he made many assumptions as to long-range economic conditions as well as presuming that Clinton units will operate as projected. He realized that a number of uncertainties existed in his results, and testified that he had tested these uncertainties under a variety of conditions.

Mr. Jaye testified that the upper range value which he defined as a possible, but not highly probable fuel cost would be 9.1 mills per kilowatt-hour for Unit 1, and 10.0 mills per kilowatt-hour for Unit 2. On cross-examination, the witness testified that the difference in actual prices and those estimated by his modeling

¹⁷Tr. 1257-1258.

techniques, resulted from using models based on return on investment, rather than models based on the market. Such investment models minimize short-term fluctuations. While any projection of the future is subject to error, we find that the modeling techniques used by Mr. Jaye and the evidence in this record do not disclose that his results were unreasonable.

Dr. Connor, the Staff's witness, presented a revised version of material that was in the FES (Table 9.4).¹⁸ Dr. Connor also used the CONCEPT III computer program to calculate construction costs. He concluded that the nuclear fuel plant is less expensive than coal to build and operate, regardless of whether the capacity factors of the plant are 60, 70, or 80%. Intervenors did not cross-examine Dr. Connor to any extent on his Table 5. Accordingly, his testimony stands uncontroverted by anything that the Intervenors have offered independently or by their cross-examination.

The evidence presented by the Intervenors consisted of testimony by Dr. Rieber including a 95-page section analyzing fuel cycle costs which was in part based on information proprietary to General Electric Company and which the parties had agreed to treat confidentially.¹⁹ The non-proprietary portions of Dr. Rieber's testimony treated this Contention in Section III on Site Selection, Section IV-A on Fuel Cycle Costs, Section V on Capital Costs and Section VII on Cooling Systems.

We begin our analysis of Dr. Rieber's testimony by again stating that we are faced with a decision as to the weight to be accorded to his testimony. Dr. Rieber's statement of qualifications indicates that he has had some extensive experience in studying coal as a fuel for electric generation. However, except in the case of his proprietary testimony where he conducted studies and undertook calculations designed to independently establish a nuclear fuel cycle cost, no other independent studies or analyses were made by Dr. Rieber in addressing this Contention. Rather than presenting an independent study of estimated future coal costs, Dr. Rieber presented nothing more than his unsupported reflections upon data developed by the Applicant and the Staff in the Environmental Report and the FES. His testimony is based completely on information supplied by the Applicant and the Staff. It is basically a critique of the Applicant's work and the Staff's work consisting almost entirely of statements of conclusions which are diametrically opposed to the conclusions that the Applicant and the Staff have drawn from the same information. There are for the most part, however, no independent studies or analyses of these data that support these different conclusions.

We turn now to a consideration of Dr. Rieber's testimony on nuclear fuel cycle costs. Since it will not be necessary for us to reveal any proprietary information in the text of this opinion, we will consider together both the non-proprietary and proprietary portions of Dr. Rieber's testimony on this

¹⁸ Connor, Table 5, p. 29, following Tr. 925.

¹⁹ Rieber, pp. IVB-1 to IVB-95, following In Camera, Tr. 11.

subject. Evidentiary rulings with respect to the motions to strike the non-proprietary testimony are described elsewhere. No motions were made to strike the proprietary section of Dr. Rieber's testimony and, accordingly, it was admitted into evidence without objection.

Dr. Rieber's testimony in this area can be generally divided into two parts. The first is a critique of the methods employed by Mr. Jaye in presenting his nuclear fuel cycle cost evidence and the second is an independent presentation by Dr. Rieber of nuclear fuel cycle costs which he had calculated utilizing the raw data he had obtained from the Applicant during the discovery process. We can give credence to neither section of Dr. Rieber's testimony because the record clearly indicates that he has grave misconceptions concerning the operation of the nuclear fuel cycle. These misconceptions are so fundamental that they fatally flaw the attempt on his part to analyze the presentation made by Mr. Jaye, and also fatally flaw his independent presentation of nuclear fuel cycle costs.

The most obvious and fundamental of Dr. Rieber's misconceptions of the nuclear fuel cycle relate to the residence time in the reactor of the nuclear fuel. Although he obtained from the Applicant during the discovery process all of the assumptions needed to calculate the residence time, he did not use a critical assumption, namely, the burn-up rate for the initial core and each reload batch. Instead, he made his own faulty calculation of the energy to be generated by the initial core and each reload batch.

The fact that he ignored the burn-up rate assumption given to him by the Applicant during the discovery process in itself indicates a lack of understanding of the nuclear fuel cycle as to render his testimony in this area unreliable.

Further, there are arithmetic and logical errors which appear from the face of the tables contained in his testimony. For example, it is obvious from his tables that starting with the first reload batch and continuing thereafter, he had provided for only one-third the amount of fuel as was contained in the initial core loading.²⁰ The record indicates that his calculations with respect to the nuclear fuel cycle costs related to the initial core were overstated by more than a factor of 2 and for reload batches by factors somewhat less than that.²¹ They are calculated in a way which has no basis in reality and, accordingly, can provide no basis from which we can draw any conclusions.

Finally, although he was familiar with the existence of at least one computer code which could be used to calculate nuclear fuel cycle costs,²² Dr. Rieber testified he had never studied or even seen any other nuclear fuel cycle study.²³

Because of these basic misconceptions about the nuclear fuel cycle and Dr. Rieber's lack of training or experience related to the industries which make

²⁰ In Camera, Tr. 20.

²¹ In Camera, Tr. 28-30, 33.

²² In Camera, Tr. 35-37.

²³ In Camera, Tr. 54.

up the nuclear fuel cycle input, we find that we can attribute no weight to the second portion of his proprietary testimony where he purports to substitute his estimate of the nuclear fuel cycle cost increments for those developed by Applicant and, in particular, Mr. Jaye.

With respect to this contention also, we conclude that the Intervenors have not sustained their burden of going forward either by virtue of their cross-examination of the various witnesses, or by the introduction of any material and reliable direct evidence in support of this contention.

The environmental costs, though different for a nuclear plant than for a coal plant, are not sufficient to negate the economic cost differential between the two alternatives.

The Board, after examining all the evidence in the record, concludes that if the Applicant and the Staff had not adequately considered coal as an alternative prior to the hearing, the alternative has now been adequately considered with respect to economic costs.

Contention C: "Taking of Land"

The "Taking of Land" contention (originally No. 1) is:

A. Taking of 15,000 acres by the Applicant for a nuclear power plant site, will have had adverse agricultural and/or economic impacts on the members of the Salt Creek Association residing in DeWitt County.

B. These impacts have not been adequately considered in the Applicant's cost-benefit analysis.

First we must analyze the effects on society. The Intervenors apparently feel that the issue is cost of land, whereas the principal issue is really removal of land from agricultural production. If the plant was not built, the land could be used for agricultural production. The issue here is not as the parties have argued, the economic one revolving around differences of production yields or around the differences in the value of land resulting from different agricultural management programs. The issue is whether or not the removal of land from agricultural production is a cost society cannot bear.²⁴ If society cannot bear the loss of agricultural production, regardless of the dollar cost, then the plant should not be built or alternative cooling methods which will require substantially less land will be necessary.

The contention states that 15,000 acres is to be removed, but the testimony now indicates that some of the acquired land will remain in production and that only approximately 7,000 acres of crop land will be removed as the plant is now designed.²⁵

²⁴Texas Utilities Generating Company, et al., Comanche Peak Steam Electric Station, Units 1 & 2, ALAB-260, NRCI-75-2 51, 54-55 (February 1975).

²⁵Nash, following Tr. 444 and Berbaum, following Tr. 1095.

The Staff presented the FES and one witness. That witness, based on the examination of data of others, and after making an independent assessment of those data, concluded the preemption of the land for the station will have no appreciable effect on the food production on the national level in the foreseeable future.²⁶

The Intervenor's witness testified that he expected an increase in demand for food and that the United States was running short of food. However, on examination,²⁷ he agreed with data from the U. S. Department of Agriculture which showed that the growth of food production is in excess of population growth.

Based on the testimony of the witnesses, the FES and the entire record, this Board finds that the preemption of land for the station will have no appreciable effect on food production at the national level now or in the foreseeable future and the land will not be needed for food production in the future. Furthermore, we note that if the land should be needed in the distant future, the possibility exists that the land could be reclaimed and put back into production. (The record contains some evidence that much of the present agricultural land is actually drained marsh. The drain tiles discussed below were installed because of deficiencies in natural drainage).

Having determined that society can bear the loss of the agricultural production from the land needed for the plant site, we now turn to direct impacts of the taking of the land on the resident members of the Salt Creek Association. We first consider the agricultural impact caused by effects on the drain tile system. The Applicant has established the nature of these effects and the measures necessary to rectify any adverse effects. The Applicant retained the independent engineering firm of M&E/Alstot, March and Guillou, Inc., to study the drainage problem and a member of that firm, Mr. Guillou, testified. The principal studies made to date have involved drainage conditions in the Trenkle Slough, a tributary of Salt Creek.

Extended duration flooding caused by the reservoir would, if not corrected, have an impact during the 25-year frequency flood on drain tile serving approximately 44 acres belonging to three landowners. The engineering firm has designed a collecting sewer system which would intercept the tile drain flow from the affected area to minimize, if not eliminate the effect of the reservoir upon the drain tiles served by the system. The system includes the construction of intercepting sewers on both sides of the drainage ditch, a pump station, and an automatic gate. As an alternative, the firm has proposed, and the Trenkle Slough Commissioners and the affected landowners are considering, having Illinois Power acquire flowage easements over these lands.

²⁶ Kline, following Tr. 577, p. 16.

²⁷ Tr. 693.

Other drainage problems, not as serious as those in the Trenkle Slough, may exist along the reservoir to be formed. Applicant commissioned a study to be made of drainage tiles at these locations by Charles Danner and Associates of Urbana, Illinois. That firm made physical surveys, walked both sides of the stream bed to locate tile outlets, talked with owners of adjacent lands, probed for location of underground tile and made aerial photographs of the area. Several isolated tiles in the Danner survey will require new outlet structures where lower sections of the tile will be abandoned due to the reservoir. Although no specific solutions have been proposed as they relate to any particular tile south of the Trenkle Slough Drainage District, studies are continuing and will continue during and after filling of the reservoir.

Mr. W. C. Gerstner, a vice president of Applicant, has committed the Applicant to take whatever action is necessary to correct any drainage problems which are caused by the construction or operation of the reservoir.²⁸

Mr. David Schreiber, a hydrologist for the Staff, testified that the drainage problems in the area outside of the Trenkle Slough District are common and have easy engineering solutions. Mr. Schreiber also indicated that he had analyzed and studied the engineering firm's proposed solutions and found them to be adequate to solve any potential drainage problems caused by the creation of the cooling lake.

The Board concludes that the agricultural impacts caused by effects on drain tile will not be significant impacts provided the Applicant satisfies its commitment, and concludes that impacts have been adequately considered.

Next we turn to the direct economic impact on the members. First, some of the land has been acquired by purchase and some remains to be acquired by the Applicant under eminent domain proceedings. From the record the Board concludes that the land was sold with at least the expectation that if the Applicant's offer was not accepted, the land would be acquired by court proceedings. The Intervenors apparently feel that the direct economic impact to the owners is that the price paid is too low. No doubt the price paid for land does not include in a quantifiable way the love of the land and the memories. Still, when a sale is not actually forced, the price received can be assumed to include compensation for the "love of the land and memories." This Board would turn the economic world "topsy-turvy" if we declared that the price received in a bargaining situation was not the value of the land. The record contains testimony to that effect. Further, we would turn the legal system "topsy-turvy" if we held that the fair and reasonable price determined by a Court in condemnation proceedings for the land was not the value of the land.

Thus, only the fairness of the price arrived at under the threat of condemnation procedures needs to be discussed. Even here, bargaining power exists on both sides. The Applicant by holding out the possibility of court

²⁸ Gerstner, pp. 6-7, following Tr. 272.

proceedings can induce a lower price. The owner, by holding out the possibility of court proceedings, and the consequent larger legal costs to the Applicant, can extract a higher price.

Furthermore, the Record contains no evidence that any owner received or will receive anything less than they would have received if the land had been sold to another individual for agricultural uses. The Board finds that an adverse economic impact does not exist and the price received is the value of the land.

Last, assuming arguendo that the Staff and the Applicant had not adequately considered the impacts in the cost-benefit balance, we conclude that the Final Environmental Statement and the Environmental Report as supplemented by this Record, do adequately consider the agricultural and economic impacts in the cost-benefit analysis insofar as these impacts affect the resident members of Salt Creek Association as individuals and as members of society.

III. FINDINGS OF FACT—COMPLIANCE WITH NEPA, SECTIONS 102(2) (C) AND (D), AND APPENDIX D TO 10 CFR PART 50

A. NOTICE OF HEARING

Pursuant to the Notice of Hearing (38 *Fed. Reg.* 33789) and Appendix D to 10 CFR Part 50, this Board must (1) determine whether the requirements of section 102(2) (C) and (D) of NEPA and Appendix D to 10 CFR Part 50, have been complied with in the proceeding; (2) independently consider the final balance among conflicting factors contained in the record of the proceeding with a view to determining the appropriate action to be taken; and (3) after weighing the environmental, economic, technical, and other benefits against environmental costs, and considering available alternatives, determine whether the construction permits or limited work authorization should be issued, denied, or appropriately conditioned to protect environmental values.

B. ENVIRONMENTAL REPORT AND FINAL ENVIRONMENTAL STATEMENT

The Applicant submitted a four-volume Environmental Report (ER) to the Commission which has been supplemented five times. Based upon the Staff's review of the environmental information submitted by the Applicant, and its independent study and analysis of the Applicant's proposal, the Staff issued a Draft Environmental Statement (DES) in June 1974. The DES was made available to other Federal agencies, agencies of the State of Illinois, and the public. Comments concerning the DES were considered in the preparation of the Final Environmental Statement (FES) which was issued in October 1974. Those

comments are included as Appendix "A" to the FES and the Staff's responses are set forth in Chapter 11 of the FES. The FES contains a detailed evaluation of the baseline environmental background of the proposed CPS.

The Final Environmental Statement was prepared in accordance with the Commission's regulations and guidelines and contains all the required factors.

The FES contains the following summary of environmental impacts and adverse effects:

(a) Construction-related activities will occupy or utilize various portions of about 6135 acres of the proposed 13,800-acre site. About 5225 acres will remain as developed areas for at least the plant service lifetime; approximately 4900 acres will be inundated for the cooling lake, 45 acres will be used for the station structures, 150 acres for the dam and spillways, and 130 acres for a discharge flume. Some of the remaining 910 acres can be returned to its previous condition or can be modified to other uses after plant completion. Terrestrial biota will be either eliminated or displaced by the inundation of land. Other land disturbances will eliminate or displace other terrestrial biota. Current use of the intended site acreage is principally devoted to agriculture (corn, soybeans, pastureland, and timber) and recreation (fishing and hunting).

(b) Due to the creation of Clinton Lake, the existing aquatic regime and associated biotic structure will be markedly changed with concurrent elimination of some existing aquatic forms and replacement by other forms able to adapt to or normally found in the new aquatic habitat.

(c) Approximately 40 miles of new transmission line corridors will require about 708 acres of non-site land for the right-of-way. Most of this acreage is on agricultural land which can remain in production after the construction in the corridors is completed.

(d) Station construction will involve some community impacts. As many as 89 families will be displaced from the land constituting the Clinton Power Station site. Farming, grazing, hunting and public water use on the site will be suspended. Traffic on local roads will increase slightly due to construction and commuting activities but no adverse impact is expected. Influx of construction workers' families (1200 peak work force) is expected to be minimal and to cause no major housing or school problems.

(e) A total flow of 500 gpm of groundwater will be used to supply station needs and is expected to be within the capacity of the supplying aquifer. During lake filling, all but 40 cfs of the flow of Salt Creek and its North Fork (201 cfs, average flow) will be impounded; this will cause an obvious but small and reversible impact upon Salt Creek below the dam. During station operation under average-flow conditions, approximately 25% of inflowing waters will be consumptively used and lost and 75% will be

discharged into Salt Creek below the station. During drought conditions, the design minimum blowdown to Salt Creek will be 5 cfs, which is about seven times as much as the minimum flow of record.

Consumptive use of water by natural and forced evaporation and seepage will amount to about 37,200 acre-feet per year. Total dissolved solids concentration in Clinton Lake water and the water of Salt Creek will be increased by a factor of about 1.25. This will be well within the concentration permitted by the water quality standards of the State of Illinois and is not expected to affect the biota of Salt Creek. Thermal alterations will not significantly affect the aquatic productivity of Salt Creek.

(f) A large percentage of aquatic organisms entrained in the plant's makeup water system will be killed due to thermal, chemical and mechanical impact, but such loss is not expected to affect the recreational activities or the aquatic biota of the lake.

(g) The risk associated with accidental radiation exposure is very low.

(h) No significant environmental impacts are anticipated from normal operational releases of radioactive materials. The estimated dose to the offsite population within 50 miles from operation of the station is 15 man-rem/year, less than the normal fluctuations in the 93,000 man-rem/year natural background dose this population now receives.

C. WATER QUALITY AND EFFLUENT LIMITATIONS

The proposed CPS will utilize a 4900-acre cooling lake containing approximately 74,000 acre feet of water with a once-through condenser cooling system. The Staff calculates the normal station operation will result in a consumptive use of about 34,000 acre-feet of water per year. The Applicant originally proposed to discharge water into the lake at temperatures which could exceed 103°F. Staff analysis concluded that this was environmentally unsound. The Staff concluded that a maximum temperature of the water at the point of discharge into the lake should not exceed 96°F. The Staff concluded that this was physically achievable and would result in Lake Clinton being an environmentally viable habitat for aquatic biota and also for recreational purposes. Although the Staff analyzed the quality of the lake with a maximum 96°F point discharge, it recognized that section 203 of the Rules and Regulations of the Illinois Pollution Control Board required a lower discharge temperature into the lake.²⁹

On October 8, 1974, several days after the FES was issued, the Environmental Protection Agency (EPA) promulgated 40 CFR Part 423 (39 *Fed. Reg.*

²⁹Tr. 86-89, 91-92, 116, 117.

36176) which established limitations upon thermal discharges from steam electric power generating plants pursuant to authority contained in the Federal Water Pollution Control Act Amendments of 1972 (33 USC § 1151) (FWPCA). The Staff and the Applicant both recognized that the new EPA regulations raised a substantial legal question as to whether condenser cooling water could be discharged into Lake Clinton except as cold side blowdown from closed-cycle mechanical draft cooling towers, or the equivalent thereof.

On October 10, 1974, the Applicant filed a 316(a) demonstration with EPA and amendments thereto on February 24, 1975, and April 14, 1975, requesting EPA approval to discharge condenser cooling water into Lake Clinton in the manner set forth in the FES.³⁰ On May 9, 1975, the EPA approved alternative thermal limitations which would permit use of the Applicant's proposed condenser cooling water system, subject to certain conditions.³¹

The EPA approval of May 9, 1975, did not resolve Applicant's compliance with Illinois state law. The Applicant also filed for a variance from state thermal limitations with the State Pollution Control Board, which granted the variance on July 31, 1975.³²

On August 25, 1975, the Illinois Environmental Protection Agency issued to the Applicant a certification pursuant to section 401 of the FWPCA certifying that the Applicant's proposed condenser water discharge system complied with sections 301, 302, 306 and 307 of the FWPCA and also complied with applicable Illinois state limitations and requirements. That 401 certification incorporated by reference the variance approved by the Illinois Pollution Control Board which included the principal conditions imposed by EPA upon the Applicant in its approval of May 9, 1975, and required NRC to include them as conditions of any license or permit it may issue to the Applicant.³³

Section 401(d) of the FWPCA requires that state imposed conditions in the 401 certification which are necessary to assure compliance with sections 301, 302, 306 and 307 of the FWPCA shall become conditions of the federal license or permit. The state of Illinois imposed such conditions and the Board directs that the Limited Work Authorization and construction permit, if issued, contain the following conditions:

(i) The Applicant shall operate, as a minimum, a supplemental cooling system in the following manner:

(a) in the late spring when the condenser discharge temperature reaches 92°F or on June 1, whichever comes first, the supplemental cooling system will begin operation with approximately one-fifteenth ($\frac{1}{15}$) of the capacity being switched on;

³⁰ Applicant's Exhibits 4 and 5, Tr. 934.

³¹ Tr. 1168, Applicant's Exhibit 7.

³² Applicant's Exhibit 8.

³³ Applicant's Exhibit 9.

(b) each day thereafter another one-fifteenth ($\frac{1}{15}$) of the system will begin operation, until by June 15, at the latest, all modules will be operating;

(c) in the late summer, when the condenser discharge temperature reaches 92°F on the declining side of the time/temperature curve, or on September 19, whichever occurs last, the supplemental cooling system will begin to be sequenced off with approximately one-fifteenth ($\frac{1}{15}$) of the modules being shut down for the first six (6) days;

(d) each day thereafter another two-fifteenths ($\frac{2}{15}$) or less of the modules will be shut off until by September 30, at the earliest, the complete system will be off.

(ii) The effluent temperature to the lake will not exceed 96°F at any time.

(iii) The Applicant shall prior to the filling of the impoundment, submit an acceptable lake management plan for approval by the Illinois Environmental Protection Agency and the Illinois Department of Conservation, which plan will preserve the lake's recreational and fisheries value.

(iv) The Applicant shall keep the lake open to readily available public access throughout the life of the lake.

(v) The Applicant shall develop and submit an acceptable program prior to operation showing startup and shutdown procedures which will minimize the adverse effect of such activities on aquatic life.

(vi) If it is determined after operation of the first unit or by ongoing research, that conditions in Lake Clinton will be significantly different than has been described in the 316(a) demonstration, or if it is determined that the cooling water use, recreational aspects of the lake, or that protection and propagation of indigenous aquatic life cannot be assured, the Applicant shall take whatever measures are needed to correct the problem, including backfitting of the proposed or existing plant with additional cooling facilities.

(vii) The Applicant shall submit quarterly progress reports to:

Illinois Environmental Protection Agency,
Manager, Variance Section
Division of Water Pollution Control
2200 Churchill Road
Springfield, Illinois 62706

D. IMPACTS OF CONSTRUCTION

The site will comprise approximately 13,800 acres of which 6,000 acres are now in row crops, 3,500 acres in pasture and 4,000 acres in timber, timber-pasture, roads, streambeds and farmsteads.³⁴ The Staff assessment which is conservative was based upon 7,000 acres of row-crop land.³⁵

Approximately 40 miles of new transmission lines will be required and will be constructed in conformity to requirements of the Departments of Interior and Agriculture and the Federal Power Commission. Little disturbance of the land use will be caused by the transmission lines. Agricultural use beneath the lines can continue. In other areas some short-term clearing of vegetation will occur. The Board concludes that the adverse impacts of the transmission lines will be minimal and are not significant.

Construction of the dam, the submerged ultimate heat sink, the station, and the discharge canal will result in localized increase in noise, dust and road use which will not be significant impacts.

Traffic on Illinois Highways 48 and 54 and County Road 14 will have to be interrupted and rerouted while portions of these roadbeds are elevated above or bridges are constructed to carry the roads over the reservoir. Local roads on the Applicant's property will be closed, improved, or relocated, depending on their projected use in the construction and operation of the station or service to the proposed recreational area.

The Applicant is negotiating (or has negotiated) with the local township road commissioners to construct a bridge over the reservoir for a township road which passes about 1½ miles east of Highway 48. This bridge would facilitate the transportation of farm equipment across the reservoir rather than on Highway 48, which would pose a hazard for slow-moving farm machinery. Another township road, which bridges Salt Creek a mile west of Farmer City, will remain in operation without a need for the elevation of its roadbed or bridge. Stretches of other township roads which skirt the proposed impoundment will be elevated above the level of the impoundment where necessary.

The Applicant will build the bridges and raise the roadbeds before the reservoir is filled, minimizing construction problems and environmental impact. Nevertheless, some erosion problems and temporary siltation of Salt Creek will occur. When the soil becomes stabilized, most erosion will cease and impacts due to siltation will be reversed. The Board concludes that the Staff's requirements and the Applicant's procedures will minimize the possible adverse effects. The remoteness of the site itself will minimize dust, noise and esthetic adverse effects.

³⁴Tr. 1093 and FES Table 5.2.

³⁵Nash and Kline, following Tr. 440 and 577.

The principal impacts expected from lake-filling include: reduction of downstream flow; reduction of aquatic stream communities; reduction in the limited recreational use of the streams at the station and on Salt Creek downstream of the dam; siltation and related aquatic biological effects; and the possible elevation of the groundwater level in the vicinity of the lake. Since little use is made of Salt Creek water for farming (only the watering of a few head of cattle), the reduction of downstream flow will produce little agricultural impact.

After the reservoir is filled to the 690-foot level and the downstream flow more closely approximates prereservoir flows, portions of the exposed streambed will be inundated and aquatic communities are expected to become reestablished. The Board concludes that the initial impact, although relatively large locally, is largely reversible.

The Staff had expressed concern about the height of the dam and the Applicant is committed³⁶ to raise the height of the dam to the Staff's proposed 711.8 ft. msl, thus increasing the safety factor downstream.

Although the Clinton Dam is not designed for flood control purposes, the Staff expects a significant lessening in downstream flooding due to the flow-regulation action of Clinton Lake's capacity and spillway. This flow-regulating action could reduce peak discharge by as much as one-half and benefit the agricultural lands below the dam. An additional benefit of the proposed design will be the continuous downstream discharge of 5 cfs. Under severe drought conditions, this flow would provide a reasonable volume of water in the downstream channel to sustain aquatic habitat. The Board finds that this flow is a positive environmental benefit.

In summary, the major impacts of station and dam construction will be: (a) elimination of terrestrial vegetation communities and concurrent elimination or marked reduction in wildlife populations; and (b) erosion and siltation. With a habitat restoration program, wildlife will repopulate the area. Soil erosion and siltation of the creeks during construction will be a temporary condition, but erosion control measures will be required. Several miles of stream biota will be replaced with a viable lake biota. The Board finds these impacts to be temporary and minor, except for conversion of stream to lake and that these impacts are not significant adverse environmental impacts.

Aquatic plants or macrophytes will also be a part of the ecosystem of the new Clinton Lake. The ratio of importance between phytoplankton and macrophyton within a new reservoir usually depends on the morphology of the lake, the nature of the bottom sediments, and light conditions. If excessive growths of macrophyton, periphyton, or algae occur within Clinton Lake or on adjacent shorelands, specific control measures can be taken to reduce these nuisance developments. The requirements of EPA in its letter of May 9, 1975, to

³⁶Tr. 273.

the Applicant³⁷ should be adequate to control any excessive macrophyte problem. The Staff is committed to a review of the viability of the lake and drainage from surrounding lands again at the operating license stage.

Construction work will cause some increase in local population requiring an increase in community services. The Staff does not expect this to be significant or of long duration. The principal local impact may be the temporary closing of Illinois Highways 48 and 54 and County Road 14 while portions of these roadbeds or bridges are elevated. The Board finds these effects to be of only short duration and not significant impacts.

A detailed list of the Applicant's commitments to reduce or limit adverse effects during construction appears on pages 4-11, 4-12 and 4-13 of the FES. The Board finds these measures adequate and appropriate to minimize adverse environmental impacts during construction.

E. IMPACTS OF OPERATION

Sections 5 and 7 of the FES describe the probable and possible impacts of plant operation, and section 6 discusses monitoring programs designed to provide a continuous flow of base-line data and to detect any substantial change in the environment caused by plant operation.

The primary impact will be the change of 7,000 acres now used as crop land to a power station. This impact was considered *supra* under Contention C. During normal operating conditions with average monthly evaporation rates and including seepage from the lake bottom, the Staff estimates that the plant will consumptively use about 37,200 acre-feet of water per year, about 25% of Salt Creek's average flow at the dam.

The Staff has analyzed expected lake temperatures during plant operation for average to extreme conditions and the effects of such temperatures upon the expected aquatic community. The Staff concludes that, as designed with a maximum 96°F discharge into the lake, a viable aquatic biota will exist. The Applicant's amended 316(a) demonstration³⁸ and supplement thereto of April 14, 1975,³⁹ as well as the EPA approval of May 9, 1975 of the 316(a) demonstration,⁴⁰ confirm the Staff's conclusion.

F. RADIOLOGICAL CONSIDERATIONS

Radiological effects may be divided into those associated with normal operations and those resulting from postulated accidents.

³⁷ Applicant's Exhibit 7.

³⁸ Applicant's Exhibit 4.

³⁹ Applicant's Exhibit 5.

⁴⁰ Applicant's Exhibit 7.

On December 3, 1970, the Commission published new regulations, 10 CFR §§50.34a and 50.36a, confirming the design and operating requirements for nuclear power reactors to keep levels of radioactivity in effluents "as low as practicable." These amendments provided qualitative guidance, but not numerical criteria for determining when design objectives and operations met the specified requirements. On June 9, 1971, the Commission published in the *Federal Register* (36 *Fed. Reg.* 11113) proposed amendments to 10 CFR Part 50 which would supplement Sections 50.34a and 50.36a with a new Appendix I. The proposed Appendix I provided numerical guides for design objectives and technical specification requirements for limiting conditions for operation for light-water-cooled nuclear power reactors. After a lengthy Appendix I rule-making proceeding initiated in 1971, the Commission on May 5, 1975, adopted a new Appendix I to Part 50 (40 *FR* 19439)⁴¹ subject to codification to be effective on June 4, 1975.

Appendix I provides numerical guides for design objectives and limiting conditions for operation for light-water-cooled nuclear power reactors to keep radioactivity in effluents as low as practicable. All Commission licensees are required by 10 CFR Part 20 to make every reasonable effort to maintain radiation exposures and releases of radioactive materials in effluents to unrestricted areas as far below Part 20 limits as practicable. The definition of "as low as practicable" in both 10 CFR §§20.3(c) and 50.34(a) includes consideration of the economics of improvements in relation to the public health and safety.

Appendix I as adopted by the Commission provides in Section II in addition to design objectives for annual doses for any individual in an unrestricted area from both liquid and gaseous effluents, including radioactive iodine and radioactive material in particulate form—a further requirement that the Applicant include in the radwaste system all items of reasonably demonstrated technology that, when added to the system sequentially and in order of diminishing cost-benefit ratio, effect reductions in dose to the population reasonably expected to be within 50 miles of the reactor. As an interim measure and until establishment and adoption of better values (or other appropriate criteria), the values \$1000 per total body man-rem and \$1000 per man-thyroid-rem (or such lesser values as may be demonstrated to be suitable in a particular case) are to be used in this cost-benefit analysis.

The numerical guides of Appendix I are a quantitative expression of the requirement that radioactive material in effluents released to unrestricted areas from light-water-cooled nuclear power reactors be kept "as low as practicable."

⁴¹(In the matter of Rulemaking Hearing, *Numerical Guides for Design Objectives and Limiting Conditions for Operation to Meet the Criterion "As Low As Practicable" for Radioactive Material in Light-Water Cooled Nuclear Power Reactor Effluents*, Docket No. RM-50-2, CLI-75-5, NRCI-75/4R 277 (April 30, 1975).

The proposed Appendix I was silent on the method for implementation of the numerical guides. The Commission has stated that it believes that Appendix I should guide the Commission Staff and other interested persons in the use of appropriate calculational procedures for applying the numerical guides for design objectives.⁴² Consequently, Appendix I states that compliance with the guides on design objectives shall be demonstrated by calculational procedures based on models and data that will not substantially underestimate the actual exposure of an individual through appropriate pathways, all uncertainties being considered together.

Because of the uncertainty in the application of the numerical guides contained in Appendix I, the Board requested additional detailed testimony from the Staff for the purpose of updating and defining the acceptable numerical values and the models to be used for projecting releases and calculated doses to the environment and to the public. In response to the Board's concern, the Staff presented a panel of witnesses to testify on Appendix I requirements and answer the Board's inquiries.

Mr. Echols testified that the new Appendix I will require reassessment of the proposed radwaste system and may entail modification of that system in order to meet the established guides. The Staff is presently in the process of reassessing assumptions and evaluating models for projected releases and calculated doses to reflect the Commission's direction that assumptions and models reflect best available evidence and result in models which do not substantially underestimate actual exposure, all uncertainties being considered together.⁴³ Appropriate models are also under development for use in determining man-rem estimates for sequential cost-benefit assessment of a range of potential radwaste augments. These model developments will not be completed for some time and therefore cannot be specifically applied at this time to the radwaste systems proposed for the Clinton facility to determine compliance with Appendix I guides.⁴⁴ The Staff, however, has made interim calculations in an attempt to estimate how the use of newer data and broader considerations of population doses called for in Appendix I would affect the dose estimates previously set forth in the FES. While these calculations contained in the testimony of Messrs. Cardile and Congel have not been developed for the purpose of demonstrating compliance with Appendix I requirements, they do result in dose estimates which are unlikely to be exceeded in the Staff's detailed assessment of assumptions and models which is yet to be completed.⁴⁵

The Staff presented a model using conservative assumptions in order to make an upper bound estimation of population dose as an interim assessment of the

⁴²RM-50-2, NRCI-75/4R 277 at 286.

⁴³Echols, p. 2 following Tr. 1972.

⁴⁴*Ibid.*

⁴⁵*Id.* at 3.

potential radiological impact from the normal operation of CPS.⁴⁶ The Staff's final model and assumptions are expected to be within the parameters described in the testimony of Congel, Appendix A. The Staff estimated releases using current operating data applicable to the proposed radwaste treatment and effluent control systems for CPS.⁴⁷ The Staff's final analysis will provide some greater degree of refinement in the estimation of releases from the CPS, but the Staff does not anticipate that the final values calculated will differ significantly from those appearing on page 8 of Mr. Cardile's testimony.

Dr. Congel constructed a table of curies per year of radiation released from the CPS⁴⁸ based upon the analysis presented by Mr. Cardile.

The Staff then computed an annual population dose to the U. S. population, multiplied it by the Commission's interim value of \$1000 per man-rem and came to the conclusion that an extremely conservative upper bound cost would be less than \$400,000 per year.⁴⁹ The Board recognizes the conservatism built into the Staff assessment and concludes that the Staff's final dose calculations and the value the Commission has assigned are most likely to be less than these presented in Staff testimony. The Board also concludes that the cost-benefit analysis is not significantly altered by the upper bounds case presentation by the Staff and that it is likely that the Staff's final calculations will have an even smaller effect upon the cost-benefit balance.⁵⁰

To put the matter in another perspective, natural background radiation, using the assumptions in the Staff model, would result in an annual U. S. population dose of approximately 20 million man-rem while the effect of the Clinton station would only, at a maximum, be approximately 400 man-rem.

In regard to the maximum radiological exposure to an individual near the boundary of the exclusion area of CPS, the Staff stated that the doses should be no more than 10 man-rem per year to the whole body from gaseous effluents, 6 man-rem per year to the whole body from liquid effluents, and 50 man-rem per year to any organ from all sources.⁵¹

The Board concludes that the conservative assumptions used by the Staff do provide an appropriate upper limit population dose assessment, and that the value of \$400,000 per year of this upper limit dose to the total U. S. population would not significantly alter the cost-benefit balance of the proposed CPS. For

⁴⁶ Appendix A to testimony of Frank J. Congel, following Tr. 1969.

⁴⁷ P. 8 of Cardile testimony following Tr. 1970.

⁴⁸ Congel, Table 1 following Tr. 1969.

⁴⁹ Congel, page 4 following Tr. 1969.

⁵⁰ We further note that the Staff's estimate of \$400,000 per year is based on the dose to the entire U. S. population, whereas Appendix I requires that the analysis take into account the population within 50 miles of the facility. This will substantially reduce the \$400,000 figure (see Tr. 2001).

⁵¹ Echols testimony, page 4 following Tr. 1972.

the purposes of the required environmental findings, the Board concludes that the Staff's interim assessment is adequate under NEPA.

The Board notes that on September 4, 1975, the Nuclear Regulatory Commission adopted amendments to Appendix I of 10 CFR Part 50,⁵² to provide an optional method for some reactors to comply with the provisions of that regulation. Under the new option, applicants who have filed for construction permits for light-water-cooled power reactors on or after January 2, 1971, and prior to June 4, 1976, need not comply with the cost-benefit requirements of Paragraph II.D of Appendix I (requiring that a new cost-benefit analysis be made), if the radwaste system and equipment described in the PSAR and amendments thereto, satisfy the design objectives proposed by the Staff in the Appendix I rulemaking proceeding.

We note also, that after the adoption of Appendix I, the Staff and Applicant entered into an agreement confirmed by a letter from the Staff to Applicant dated July 1, 1975,⁵³ whereby Applicant committed as follows:

- (1) That the proposed design for which Applicant seeks a construction permit includes the radwaste equipment presently described in its PSAR, §11.0, and that Applicant does not intend in connection with its construction permit application to remove any presently proposed equipment or systems.
- (2) That Applicant will provide such additional equipment determined to be necessary to meet Appendix I as a result of the Commission's detailed assessment in connection with the subsequent hearing to consider the radiological safety aspects of the facility.

The Board will reexamine the application of Appendix I to CPS during the public hearings on the remaining radiological health and safety aspects of the application prior to any decision regarding the issuance of construction permits.

The probability and spectrum of accidents that could occur at the CPS, including associated fission product releases, have been analyzed concerning potential environmental effects by the Applicant and Staff. Table 7.2 in the Staff's FES shows the estimated radiological consequences of postulated accidents. Such accidents would result in an exposure, for an individual assumed to be at the site boundary, less than that resulting from exposure for one year at the level of maximum permissible concentrations permitted by 10 CFR Part 20. When considered along with the probability of occurrence of such accidents, the annual potential radiation exposure of the population from all the postulated accidents is less than exposure to natural background radiation and is well within variations in the natural background radiation. Therefore, the Board concludes that the environmental risks due to postulated radiological accidents are exceedingly small.

⁵² 40 F.R. 40816, September 4, 1975.

⁵³ Staff Exhibit 4.

G. ENVIRONMENTAL MONITORING

The Applicant has established a preoperational monitoring program, monitoring meteorology, terrestrial flora and fauna, and stream biota, which has provided the Staff with sufficient base-line data. This program, in conjunction with Staff site inspections and independent research, has permitted the Staff to assess the site and to predict the effects of the proposed station upon the area. A detailed continuous monitoring program has been established⁵⁴ which will provide adequate data to assess changes in the environment at the site.

During construction the Applicant proposes to sample quarterly at Stations 1, 3, 5 and 7 for water chemistry. The Staff claims that this is not frequent enough to detect moderate changes in water quality and proposes that the LWA, or CP, should be conditioned to require the following: "Water chemistry shall be sampled, in duplicate, at least once a month commencing with the beginning of construction for the parameters described in Section 6.1.3.2.6 of the Final Environmental Statement. The Staff shall continuously review all environmental monitoring programs and where these programs produce insufficient information, the Staff shall require appropriate changes so as adequately to assess and protect the environment." The Board finds that this is not an undue burden on the Applicant and accepts the Staff's proposal.

H. ALTERNATIVE SITES

The Applicant gave preliminary consideration to 40 site areas in Illinois. A summary description of these is given in the ER. Availability of cooling water was the dominant consideration in the initial screening. Many of the site areas initially identified proved on closer examination to be marginal in this respect and deficient in other respects. Several areas were reasonable for coal-fired plants because of proximity to mineable coal deposits but unattractive for nuclear plants because of remoteness from the Applicant's service areas.

On the basis that more remote sites were not superior in any other identified respects, the Applicant narrowed consideration to three sites in or adjacent to the central service area. These were the Clinton, Vermilion, and Metcalf sites. Viability of the Vermilion site depends on the future construction of a reservoir by the State of Illinois and on approval by the State of water use for either direct cooling or makeup. Although eventual construction of the reservoir appears likely, it is not certain and the question of water use is unsettled. The Staff decided, therefore, that the Vermilion site is not a realistic alternative at this time.

⁵⁴FES Tables 6-1 and 6-7 through 6-10.

The Staff independently analyzed a number of sites, among them being Hennepin-1 which appeared to the Staff to be the most realistic and viable alternative.

The Metcalf site is viable only for a coal-fired plant. A reservoir of about 4000 acres surface would be needed resulting in the removal of approximately 5500 acres of farmland from use. Makeup water would have to come from the Wabash River, through about 30 miles of pipeline. Proximity to the coal mine would tend to compensate for these disadvantages for a coal-fueled plant, but for a nuclear plant the Staff believes that either Hennepin or Clinton would be clearly superior. Since the environmental and economic comparisons made by both the Applicant and the Staff lead to the conclusion that the nuclear alternative is preferable, the Staff concluded that Metcalf is not a realistic alternative.

The applicant expects that the electric energy produced by the station will be consumed largely within the Applicant's central service area. The Clinton site is only 16 miles from the geographic center of this service area versus 88 miles for Hennepin-1. According to the Applicant's estimates, about 40 miles of transmission-line right-of-way would be needed for Clinton versus about 190 miles for Hennepin-1.

An economic comparison of Clinton and Hennepin-1⁵⁵ shows a difference of \$62 million (1980 dollars) in total life-of-plant cost favoring Clinton. Of this, about \$25 million is the estimated difference in transmission-line costs, about \$18 million is the estimated difference in plant construction costs (mainly reflecting the greater cost of Hennepin-1 cooling towers relative to Clinton Lake), and about \$19 million reflects the greater efficiency and reduced maintenance effort expected for the lake-cooled plant.

Based upon the foregoing, and the detailed Staff analysis in the FES, the Board concludes that the Clinton site is an appropriate location for the nuclear power station.

I. PLANT SYSTEM ALTERNATIVES

The Staff in the FES discusses cooling systems, intake structures, discharge structures, chemical and sewage disposal systems, biocide systems and transmission lines. With respect to intake structures, the Staff has considered alternative locations and designs and found that no improvement in total environmental cost would result from their use. The discharge structure has an

⁵⁵FES Table 9.3.

energy dissipative diffuser. The water discharged over the dam will traverse a concrete apron and a rip-rap channel. The Staff concludes no alternative design would provide significantly better protection.

The Staff expects that no chlorine will be measurable at the spillway because of the long residence time in the cooling lake. The alternative transmission line corridors appear to have similar impacts.

The alternative cooling methods were examined in greater detail. The Staff concluded that the cooling lake would be satisfactory, both environmentally and economically.

The cooling lake has also been examined extensively by EPA as discussed *supra*.

Based on the FES and the entire record, the Board finds that adequate consideration has been given to Plant System Alternatives.

J. PABST HISTORICAL SITE

The National Register of Historical Places now contains the Pabst Site, located upon the CPS site. This was a camping ground for American Indians some 8,000-12,000 years ago. An agreement has been recently signed by the Nuclear Regulatory Commission, the Advisory Council on Historic Places, and the Illinois Department of Commerce, providing that the site will be excavated and the artifacts preserved by an archaeological team under the supervision and direction of the Director of the Illinois State Museum. The Applicant will donate facilities, equipment, and over \$40,000 for this excavation and preservation effort. Had it not been for the proposed CPS it is unlikely that the Pabst Site would have been discovered.

Without objection from the other parties, the Staff's motion of September 10, 1975, to admit the "Memorandum of Agreement," with attachment, as Staff's Exhibit 6, is granted.

K. COST-BENEFIT ANALYSIS

As required by Appendix D to 10 CFR Part 50 and the Notice of Hearing, the Board has independently considered the costs to the environment and the benefits to society of the proposed facilities. In this process the Board reviewed the Environmental Report and the Final Environmental Statement and requested particular information from the Staff and other parties.

The summary and analysis of the Staff set forth in Chapter 10 of the FES, pages 10-8 through and including 10-11, accurately and appropriately consider the benefits and costs of the proposed nuclear power station.

The principal benefits from the construction and operation of CPS will be:

- (a) annual production of about 13.5 billion kwh of electrical energy at the lowest cost among viable alternatives;
- (b) increased system reliability;
- (c) development of a recreational facility in a recreational-facility-deficit area;
- (d) local economic advantages from a large construction project and permanent employment of station personnel;
- (e) discovery, excavation, and salvage of the Pabst Historical Site.

The principal costs to society and the environment will be:

- (a) displacement of approximately 89 families;
- (b) removal of 7,000 acres of crop land from production over the life of the facility;
- (c) expenditure of 1.7 billion dollars for construction and operation of the facility;
- (d) removal of 6,500 acres of land from its present use as pasture, woodlands, and stream bottom;
- (e) consumption of about 37,000 acre-feet of water per year;
- (f) radiological impact of less than a few percent of natural background and occupational exposure of 900 man-rems per year, well within 10 CFR Part 20;
- (g) some loss of aquatic biota due to entrainment and impingement which is not expected to adversely affect the lake ecosystem;
- (h) during construction, a temporary increase in road traffic.

Additionally, the Board has reviewed Tables S-3 and S-4 of 10 CFR §51.20 which summarize environmental considerations for the uranium fuel cycle, as normalized for a reactor of a size approximating the Clinton units, and the transportation of fuel and waste to and from a light-water-cooled reactor, respectively.

The Board finds, considering the above matters, that the benefits to society outweigh the costs and that the costs are minimized by the construction of CPS to satisfy the needs of society for additional electrical power in the early 1980s.

IV. FINDINGS OF FACT—SITE SUITABILITY AND LIMITED WORK AUTHORIZATION

The applicant has requested by letter dated October 25, 1974, the issuance of a limited work authorization (LWA). The request appears in the record as Exhibit 1 attached to the testimony of Mr. Leonard J. Koch, following Tr. 1348, and contains an itemization of the work proposed to be performed under the LWA. The Board has examined the request and determined that all of the proposed work falls within the scope of that permitted under 10 CFR

§50.10(e)(1). The Board has, therefore, reviewed the proposed site pursuant to 10 CFR §50.10(e)(2) and has determined that, based upon the available information and review to date, there is reasonable assurance that the proposed site is a suitable location for a nuclear power reactor of the size and type proposed by the Applicant from the standpoint of radiological health and safety considerations under the Atomic Energy Act and rules and regulations promulgated by the Commission pursuant thereto. The basis for this determination is set forth below and is founded primarily on information contained in the Staff's Site Suitability Report (hereafter SSR) which appears following Tr. 425.

Supporting information, which has been examined by the Board, for the SSR appears in the Applicant's Preliminary Safety Analysis Report⁵⁶ (PSAR), the Applicant's Environmental Report⁵⁷ (ER), the Staff's Safety Evaluation Report⁵⁸ (SER), the Staff's Final Environmental Statement⁵⁹ (FES) and the transcripts of the hearing.

The Board's review has been guided by the reactor site criteria given in the Commission's regulations on site suitability as related to radiological health and safety (10 CFR Part 100). The factors considered are the population density and use characteristics in the site environs, potential influence of nearby industrial, military or transport facilities and the physical characteristics of the site, including meteorological, hydrological, geological and seismological characteristics of the site. Each of these factors has been considered in detail by qualified experts in the technical disciplines involved. These experts performed independent studies and calculations and made visits to the proposed site.

The proposed facility will be located in DeWitt County in central Illinois near Clinton, Illinois, in Harp Township. The facility will consist of two boiling water reactors and vapor suppression containments of a size, type and design similar to that reviewed and approved for other nuclear power plants now under construction. Each unit of the CPS will have a General Electric Company nuclear steam supply system designed for a thermal output of 2894 megawatts and a net electrical output of 933 megawatts. The Staff's site evaluation has been conducted for a thermal rating of 3039 megawatts.

The station site is in a farming area and the surrounding region is rural in character. Based upon the 1970 census, the population within one mile of the station was 48 persons, and was 202 persons within the 2.5-mile low population zone. The largest city within 10 miles of the station is Clinton, which had a 1970 population of about 7,570 persons. The nearest population center is Decatur (1970 population 90,397), located 20 miles SSW of the site. The 1972

⁵⁶ Applicant's Exhibit 2.

⁵⁷ Applicant's Exhibit 2.

⁵⁸ Applicant's Exhibit 3.

⁵⁹ Staff's Exhibit 1.

population within 5 miles of the site was 1,199. The 1970 populations within 10 miles and 50 miles of the site were 13,143 and 720,998, respectively.⁶⁰

The Staff has compared the population data and the projection of population growth made by the Applicant for a radius of 50 miles around the site with independent projections made by the U. S. Department of Commerce, Bureau of Economic Analysis (BEA). The areas selected from the BEA study are roughly twice the size, but include nearly all of the region within 50 miles of the site. The Staff finds the Applicant's population projections to be in reasonable agreement with those of the BEA.⁶¹

The Applicant has selected an exclusion radius of 3,200 feet (975 meters). There will be no residences within the exclusion radius when the station is operational. The Applicant will have the authority to control all activities including exclusion or removal of personnel from the property. For the selected exclusion zone radius of 3,200 feet (0.6 mile), the Staff finds that there is a reasonable assurance that adequate engineered safety features can be provided to meet the guideline values for the accident doses indicated in 10 CFR Part 100.11(a)(1).⁶²

The Applicant has selected a low population zone (LPZ) radius of 2.5 miles. The permanent residences within the LPZ are predominantly farm homes scattered throughout the area. In addition to the resident population, there will be a transient population within the LPZ estimated to include as many as 4,700 people peak attendance at the recreational facilities at Clinton Lake, and an estimated maximum of 50 persons during the summer months at a church camp located about 2 miles west of the site. The Staff analyzed the 2.5-mile low population zone distance and concluded that appropriate protective measures could be taken to protect the resident and transient population in the event of a serious accident.⁶³ The Staff identified no unusual features for this site which would prevent a favorable conclusion with regard to the feasibility of developing appropriate emergency plans, and concluded that there is reasonable assurance that adequate engineered safety features can be provided to meet the guideline values for accident doses indicated in 10 CFR 100.11(a)(2).⁶⁴ The nearest population center, Decatur, Illinois, is 20 miles SSW of the site. The CPS site is located far enough from current and potential population centers to conform to 10 CFR Part 100.11(a)(3) which requires the population center boundary to be at least $1\frac{1}{3}$ times the LPZ radius.⁶⁵ The Board finds that the proposed site complies with the population density and land use characteristic criteria of 10 CFR Part 100.

⁶⁰SSR, p. 2-1.

⁶¹*Ibid.*

⁶²*Id.* at p. 2-2.

⁶³*Ibid.*

⁶⁴*Id.* at p. 2-3.

⁶⁵*Ibid.*

The nearest transportation facilities are State Highway 54 and the Illinois Central Gulf Railroad, which run parallel to one another and are located about 3400 feet from the proposed reactor containment building. The Staff has evaluated the effect on the plant of major accidents which could occur on the highway and railroad and concluded that these transportation facilities need not be considered in the design of the proposed facility.⁶⁶

There are four small airfields located between five and ten miles from the site. The nearest is six miles ESE from the plant. Three of these fields serve only single-engine private aircraft, while the fourth accommodates only a single-engine helicopter. The nearest commercial airfield is Decatur Airport, about 22 miles south of the site. On the basis of previous Staff studies, the probability of impact on a station located at the given distances from the airports described above and with the general overflight activity associated with this site is acceptably small. The Staff concludes that the proposed facility need not be designed nor operated with special provisions to protect the facility against the effects of an aircraft crash.⁶⁷

The closest active military facility, Chanute Air Force Base, is 37 miles ENE of the site. The site is also located more than five miles from the nearest flight path of a low-altitude, high-speed, military training route. The Staff concludes that the distances of these military facilities from the site are such that they need not be considered in the design of the plant.⁶⁸

All industrial facilities within 15 miles of the site are located in Clinton, six miles west of the plant. The Staff has evaluated the materials stored at these facilities to determine the types and quantities of potentially hazardous or volatile chemicals. Based on the distance of these facilities from the proposed plant and the types and quantities of materials located there, the Staff concludes that the effect of an industrial accident or an inadvertent chemical release need not be considered in the design of the proposed CPS.⁶⁹

Six pipelines carrying natural gas, oil or petroleum products cross the site and its vicinity. Four of these lines approach no closer than 12,000 feet from the plant. They include a 2-inch diameter natural gas pipeline 12,000 feet away, and a 24-inch diameter pipeline and two 8-inch diameter pipelines, all carrying liquefied petroleum gas (LPG) and all located 13,700 feet from the plant. The Applicant has proposed no relocation of the 2-inch and 24-inch pipelines and only minor relocation of the two 8-inch lines, where the closest point of approach to the plant would remain unaltered. The Applicant will replace those sections of the lines which pass under the cooling lake with new river grade

⁶⁶ *Id.* at p.3-1.

⁶⁷ *Ibid.*

⁶⁸ *Id.* at p. 3-2.

⁶⁹ *Ibid.*

pipeline. The Staff finds that these four lines, at their present locations and proposed relocations, will pose no threat to the safe operation of the plant.⁷⁰

An 8-inch diameter pipeline owned by the Ashland Oil Company approaches within 250 feet of the proposed plant. The Applicant has stated in recent amendments this pipeline will be abandoned and capped prior to station operation. The Staff finds that when this line is abandoned and capped it will pose no threat to the safe operation of the plant.⁷¹

A 14-inch diameter pipeline owned by the Shell Oil Company carries petroleum products, including LPG or propane, at a maximum flow rate of 4500 barrels per hour and at pressures of about 1000 psi. This line presently passes within 1000 feet of the proposed plant. A pumping station for this line is located about one mile SSE of the proposed plant. The Staff and the Applicant performed analyses of possible accidents involving this line and agree that a double-ended rupture of the line followed by a delayed ignition event of a propane-air cloud is the controlling event in determining a possible hazard to the plant. As a result of its analysis, the Staff finds a minimum distance of about 4600 feet to be required from the pipeline to the plant to limit the overpressure from a postulated detonation so that it does not exceed the 3.3 psi which the Applicant states that station Category I structures will be designed to withstand. The Applicant has agreed to relocate this pipeline to be no closer than 4600 feet from the nearest Category I structure. In agreeing to this larger separation distance, the Applicant has stated that it may present during the next calendar year further information that might make a shorter separation distance acceptable to the Staff. The Staff has agreed to review this additional information, but reserves the right to reject a shorter distance should the new information fail to satisfy Staff concerns in this matter.⁷²

At the time of the hearing, the Applicant did not have an agreement authorizing it to move the line. Such an agreement has subsequently been reached and has been provided to the Board as an attachment to an affidavit dated August 7, 1975, by Spottswood B. Burwell attesting that the Staff finds the agreement to be satisfactory. Without objection from the other parties, the Staff's motion of August 7, 1975, to admit Mr. Burwell's affidavit as Staff's Exhibit 5 is granted.

The Staff finds that the pipelines, modified as described above, pose no threat to the plant.⁷³

The Board finds that the potential effects of nearby industrial, military, and transport facilities satisfy the criteria of 10 CFR Part 100.

⁷⁰*Id.* at pp. 3-2 and 3-3.

⁷¹*Id.* at p. 3-3.

⁷²*Id.* at p. 3-4.

⁷³*Id.* at pp. 3-2 through 3-6; Affidavit of Burwell.

A description of meteorological conditions at the site, including the climatology of the region, local meteorological conditions, and expected severe weather, is presented in Section 2.6 of the FES. The CPS site is located in a region where average atmospheric dispersion conditions are superior to the majority of other nuclear station sites reviewed by the NRC Staff. A comparison of the short-term atmospheric dispersion values at the proposed CPS site with similar values for other sites evaluated by the Staff indicates that the dispersion conditions for the CPS are better than those of about $\frac{3}{4}$ of the other sites.⁷⁴

An onsite meteorological measurements program was initiated in April 1972. The program is commensurate with the recommendations and intent of Regulatory Guide 1.23 (Onsite Meteorological Programs, February 1972).⁷⁵ The Applicant has submitted onsite joint frequency distributions of wind speed and direction at the 10-m level by atmospheric stability (as defined by vertical temperature gradient between 10 m and 60 m) for the period May 1972 through April 1973 in the format suggested in Regulatory Guide 1.23. These data were used in the calculation of accident and annual average relative concentration values. The Staff concludes that the onsite joint frequency data for the period May 1972 through April 1973 provide an acceptable basis to make conservative and representative estimates of atmospheric dispersion characteristics for routine and accidental gaseous releases from the plant. The Applicant's meteorology program is continuing and will provide an expanded data based upon which the operating technical specification may be established.⁷⁶

All Category I structures exposed to tornado forces and needed for safe shutdown of the station are being designed to resist a tornado with a rotational velocity of 290 mph at a radius of 150 feet, a translational velocity of 70 mph, and an external pressure drop of 3 psi within a 1.5 period acting upon fully enclosed areas. The design conditions are in agreement with the design basis tornado characteristics for Region I given in Regulatory Guide 1.76.⁷⁷ The Staff concludes that there are no meteorological characteristics that would preclude acceptability of this site for nuclear reactors of the type and size proposed.⁷⁸ The Board concurs in this finding.

The Staff has reviewed the flood protection design of the proposed facility as it relates to the probable maximum flood at the cooling lake dam and the consequent backwater effect at the plant and greenhouse sites and to local flooding in the station area and finds that the design is adequate for safe operation of the reactors.⁷⁹

⁷⁴*Id.* at p. 4-1.

⁷⁵ SSR, p. 4-1.

⁷⁶*Id.* at p. 4-2.

⁷⁷*Ibid.*

⁷⁸*Id.* at p. 4-3.

⁷⁹*Id.* at pp. 5-2 and 5-3.

To determine the adequacy of the lake for cooling, the Applicant used a 100-year mean recurrence interval drought as the design basis drought. The resulting water surface was estimated at 682.4 feet msl. Since this elevation is 7.4 feet above the top of the submerged dam of the ultimate heat sink, 675 feet msl, and 5.4 feet above the low water design operating level, 677 feet msl, a 100-year drought will not affect the performance of the emergency pond or plant operation. In the event of a more severe drought, plant operation will be curtailed. The Staff has reviewed the Applicant's drought analysis and finds it acceptable. In the unlikely event of a failure of the cooling lake dam, emergency plant shutdown and cooldown will be accomplished with cooling water stored in the ultimate heat sink, which is designed to seismic Category I, and located in the basin of the lake itself.⁸⁰

The Staff conducted an independent transient analysis using its own estimates of conservative hydrometeorological parameters and confirmed that the water supply inventory contained within the emergency pond is adequate and provides additional margin to assure a continued cooling supply to maintain shutdown for a period of time considerably longer than 30 days. Furthermore, the Staff's analysis demonstrated that the maximum plant intake temperature will not exceed the design basis temperature, 95°F. Therefore, the Staff concludes that adequate cooling water can be stored and made available at the site to achieve a safe shutdown for the type and size of nuclear reactors proposed in the event the Clinton Lake Dam is breached.⁸¹

The surface water of the Salt Creek is not used for drinking purposes. Groundwater usage in the vicinity of the plant is limited to public, domestic, and agricultural water supply. Twenty-five public water wells are located between five and fifteen miles from the plant, none of which are industrial wells. Within five miles of the plant site, the principal aquifer is the Mahomet Bedrock Valley outwash deposit, a defined aquifer. This is effectively isolated from the plant by several layers of thick and tight glacial till. As requested by the Staff, Applicant provided a conservative analysis of the effects of a postulated accidental spill of liquid radioactive wastes into the groundwater and found a groundwater travel time of about 11 years from the radwaste building to the lake shore. The Staff found that the procedures and conclusions reached by Applicant are conservative and acceptable. Through an independent analysis, the Staff determined that the dilution of liquid radwaste by dispersion would occur by mixing with the surface waters of the reservoir's North Fork. The Staff has concluded that there are no hydrological characteristics that would render this site unacceptable.⁸²

The Board finds that the proposed site satisfies the hydrological criteria of 10 CFR 100.

⁸⁰ *Id.* at p. 5-3.

⁸¹ *Id.* at pp. 5-4 and 5-5.

⁸² *Id.* at pp. 5-5 through 5-7.

The site is located within the Glaciated Till Plain section of the Central Lowland Physiographic Province. The terrain of central Illinois is typical of the province and consists of undulating low relief topography formed by glacial drift. Bedrock consists of a sequence of alternating beds of shale, sandstone, limestone, siltstone, clay and coal of Pennsylvania age. The Precambrian basement rock is primarily granitic and contiguous with the Canadian shield rocks which outcrop to the north. There are no known structures or features in the deeper stratigraphic sequence beneath the Clinton site which present a geologic hazard to the nuclear plant. Three faults have been identified within the region. These are the Oglesby, Tuscola and Sandwich faults. All are inactive and have not experienced movement within recent geological time. They are well removed from the site. The Staff concludes that these three faults need not be considered as impacting the station design at the selected site.⁸³

The site is located within the Central Stable Region Tectonic Province. Three shocks of intensity VII, six of intensity VI, eleven of intensity V, as well as many smaller events, occurred between 1881 and 1970 within approximately 200 miles of the site. Consequently, the Staff assumes that the structures in the vicinity of the site have seismogenic potential similar to those elsewhere in the Central Stable Region, some of which have generated earthquakes of intensity VII-VIII. This, together with the frequent occurrence of an intensity of VII within 200 miles of the site, causes the Staff to conclude that an earthquake of intensity VIII occurring in the vicinity of the site must be considered in establishing the Safe Shutdown Earthquake (SSE) for the station design. Ground motion at the site resulting from this postulated earthquake may be characterized as multifrequency shaking of relatively short duration (up to 15 seconds) with peak ground accelerations of about 0.25 g at building foundation levels.⁸⁴

The seismically active Mississippi Embayment earthquake zone is located to the south of the site. The Applicant took the position that the Mississippi Embayment earthquake zone is terminated on the northeast by structures of the fluorspar fault complex in southern Illinois. Attendant to that position, the Applicant asserted that the historical earthquake activity in the Wabash Valley fault zone, northeast of the Rough Creek fault zone, which forms the northern boundary of the fluorspar fault complex, reflects a separate zone of tectonism that is unrelated to the Mississippi Embayment earthquake zone. As an extension of these positions, the Applicant asserted that earthquakes as large as the 1811-12 sequence centered in the Mississippi Embayment zone near New Madrid, Missouri, could not occur further north than the fluorspar fault complex region in southern Illinois, about 200 miles south of the site. A number

⁸³*Id.* at pp. 6-1 through 6-3.

⁸⁴*Id.* at pp. 6-4 and 6-5.

of detailed geological and seismological arguments were made by the Applicant in support of these positions.⁸⁵

The Staff considers the structural relationship between the Rough Creek-Cottage Grove fault zone and the zone of faulting that extends from the Mississippi Embayment northeastward into the Wabash Valley to be unresolved by the available geological and geophysical data and cannot accept the fluorspar fault complex as the northeastern terminus of the Mississippi Embayment earthquake zone. The Staff takes the conservative position that the Mississippi Embayment earthquake zone may continue northeastward as far as indicated by historical seismicity in the Wabash Valley areas.⁸⁶

The Staff has assumed that an earthquake equal in magnitude to those of the 1811-12 series could occur within the Wabash Valley area 110 miles southeast of the site. An earthquake of intensity XII (MM) is, therefore, postulated to occur 110 miles southeast of the site. Such a quake would result in an intensity of VIII-IX at the site. For this earthquake the ground motion may be characterized as sinusoidal-like motion representative of surface waves in the earth's crust. The frequency of the shaking is predominantly in the period of 1 to 3 seconds and the duration may last from 1 to 2 minutes. About 60 cycles of shaking with peak accelerations of about 0.15 g would result based on Staff estimates.⁸⁷

The Staff concludes that the characteristics of the SSE used for station design should be derived from both the intensity VIII earthquake occurring in the vicinity of the site and the intensity XII earthquake occurring in the Wabash Valley. The Applicant has incorporated the ground motion described previously for the intensity VIII earthquake occurring in the vicinity of the site in the Clinton SSE. This has been reviewed and accepted by the NRC Staff.⁸⁸

The Applicant, although it has agreed to incorporate a long duration, low frequency period of ground motion into the design criteria, has not accepted the specific criterion proposed by the Staff. Its position is based on its view that the intensity XII earthquake could not occur in the Wabash Valley and should not be considered to have a possibility of occurrence closer than about 190 miles from the site. Discussions on this matter are continuing between the Staff and the Applicant.⁸⁹

Despite this disagreement, the Staff concludes that resolution of the matter does not impact the work to be performed under the authority of the Limited Work Authorization and that the current Staff recommended criteria will not preclude a feasible design and construction of the station Category I structures. Should it ultimately be found necessary to include the long duration, low

⁸⁵ *Id.* at pp. 6-5 and 6-6.

⁸⁶ *Id.* at p. 6-7.

⁸⁷ *Id.* at p. 6-8.

⁸⁸ *Id.* at pp. 6-8 and 6-9.

⁸⁹ *Id.* at p. 6-9.

frequency ground motion with peak accelerations of 0.15 g in the SSE for station design currently recommended by the Staff, this can be done at any time prior to the start of construction of station Category I structures.⁹⁰ This matter will be resolved prior to issuance of the Construction Permit.⁹¹

The Staff has reviewed the undisturbed foundation soils beneath the reactor buildings and attached structures and has concluded that it is possible to design suitable foundations for the structures at the site. Also the Staff concludes that the selected structural fill material is suitable for this application and that the criteria for fill material placement and compaction assure an adequate base upon which to place the CPS structures.⁹²

From the Staff analysis and evaluation of available geologic, seismicity, and subsurface data, including the results of investigations performed by the Applicant, the Board concludes that there are no corresponding considerations that would preclude the acceptability of the site for reactors of the size and type proposed.⁹³

As stated *supra*, the Board had determined that, based upon the available information and review to date, there is reasonable assurance that the proposed site is a suitable location for this facility.

V. CONCLUSIONS OF LAW AND DECISIONAL CONDITIONS

The application and the proceeding thereon to date comply with the requirements of the Atomic Energy Act of 1954, as amended, and the Commission's Rules and Regulations. As noted above, the Board is issuing this Partial Initial Decision limited to a review of the record to date on environmental matters and on the matter of site suitability. The record will be continued for the subsequent submission of additional evidence on radiological health and safety matters, after which the Board will review the entire record in this proceeding and will render its ultimate Initial Decision regarding the issuance or denial of construction permits based upon the remaining issues designated in the Commission's Notice of Hearing herein.

The Board has reviewed the entire record in this proceeding, including all of the proposed findings of fact submitted by the parties. Those proposed findings submitted by the parties which are not incorporated directly or inferentially in this Partial Initial Decision are herewith rejected as being unsupported in fact or in law, or as being unnecessary to the rendering of this decision.

⁹⁰*Id.* at pp. 6-9 and 6-10.

⁹¹The Board notes that a recent amendment to the PSAR (Amendment 32) provides additional commitments on this matter. The Staff's views on this new material are still unknown.

⁹²SSR, p. 6-11.

⁹³*Ibid.*

The Board has given careful consideration to all of the documentary and oral evidence presented by the parties. Based upon our review of the entire record in this proceeding and the foregoing findings, and in accordance with 10 CFR §50.10(e) and Appendix D of 10 CFR Part 50 of the Commission's Regulations, the Board has concluded as follows:

(a) The environmental review performed by the Staff pursuant to the National Environmental Policy Act of 1969, as presented in the FES (Staff Exhibit 1), and as further augmented and modified by the Staff's supplemental written and oral testimony in this proceeding, has been adequate.

(b) The certification issued to the Applicant on August 25, 1975, by the Illinois Environmental Protection Agency pursuant to Section 401(a)(1) of the Federal Water Pollution Control Act Amendments of 1972, (FWPCA) satisfies the requirements of Section 401 of said FWPCA.

(c) The conditions imposed by the State of Illinois (Applicant Exhibit 9) in the Section 401 FWPCA certification shall be incorporated as conditions in the LWA and the construction permits, if issued, pursuant to the provisions of Section 401(d) of the FWPCA.

(d) The requirements of §102(2)(C) and (D) of the National Environmental Policy Act of 1969 and Appendix D of 10 CFR Part 50 have been complied with in this proceeding.

(e) Having given independent consideration to the final balance among conflicting environmental factors set forth in the record of this proceeding with a view to determination of the appropriate action to be taken and having weighed the environmental, economic, technical and other benefits against the environmental costs and considered available alternatives, the Board has determined that the appropriate action to be taken (if this Board, after hearing the evidence in the radiological health and safety phase of this proceeding should make affirmative findings on issues 1, 2 and 3, and a negative finding on issue 4 set forth in the Notice of Hearing) is issuance of construction permits for the proposed Clinton Power Station facility, subject to the following conditions for the protection of the environment:

(i) Those conditions set forth by the Staff in the FES at page iii, para. 7;

(ii) Those construction related commitments of the Applicant set forth in the FES at §4.5.1 and augmented by the Staff at §4.5.2; and

(iii) Those additional monitoring activities set forth in the FES as modified in section III G, Environmental Monitoring, of this Partial Initial Decision.

(f) Based on the available information and review to date, there is reasonable assurance that the CPS site is a suitable location for nuclear power reactors of the general size and type proposed from the standpoint of radiological health and safety considerations, under the Atomic Energy Act of 1954, as amended, and the rules and regulations promulgated by the Commission pursuant thereto.

In sum, the Board concludes that the action to be taken at this time is the issuance of this Partial Initial Decision covering all environmental issues and certain site suitability issues, subject to the conditions recited herein, recognizing that such action will permit the Director, Division of Reactor Licensing, to issue the Limited Work Authorization requested by the Applicant.

VI. ORDER

Based upon the Board's Findings and Conclusions, and pursuant to the Atomic Energy Act of 1954, as amended, and the Commission's Regulations, IT IS ORDERED that this Partial Initial Decision (as it subsequently may be modified) shall constitute a portion of the ultimate Initial Decision to be issued upon completion of the radiological health and safety phase of this proceeding.

It is further ORDERED, in accordance with Sections 2.760, 2.762 and 2.764 of the Commission's Rules of Practice, 10 CFR Part 2, that this Partial Initial Decision shall be effective immediately and shall constitute the final action of the Commission thirty (30) days after the date of issuance hereof, subject to any review pursuant to the Rules of Practice. Exceptions to this Partial Initial Decision may be filed by any party within seven (7) days after service of this Partial Initial Decision. A brief in support of the exceptions shall be filed within fifteen (15) days thereafter (twenty (20) days in the case of the Regulatory Staff). Within fifteen (15) days after the service of the brief of appellant (twenty (20) days in the case of the Regulatory Staff), any other party may file a brief in support of, or in opposition to, the exceptions.

THE ATOMIC SAFETY AND
LICENSING BOARD

Lester Kornblith, Jr., Member

J. Venn Leeds, Jr., Member

Robert M. Lazo, Chairman

Dated at Bethesda, Maryland,
this 30th day of September, 1975.

[The Appendix (List of Exhibits) is omitted from this publication but is available at the Commission's Public Document Room, Washington, D. C.]

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ALAB-292

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Alan S. Rosenthal, Chairman
Dr. John H. Buck, Member
Richard S. Salzman, Member

In the Matter of
LONG ISLAND LIGHTING COMPANY

Docket Nos. 50-516
50-517

(Jamesport Nuclear Power Station,
Units 1 and 2)

Mr. Howard Blau, Jericho, New York, for the appellant, Oil Heat Institute of Long Island, Inc.

Mr. W. Taylor Reveley, III, Richmond, Virginia, (with whom Messrs. Edward J. Walsh, Jr. and Jeffrey L. Futter were on the briefs) for the applicant, Long Island Lighting Company.

Mr. William Massar (Mr. James R. Tourtellotte on one of the briefs) for the NRC Staff.

Upon appeal from Licensing Board's denial of untimely petition for leave to intervene, Appeal Board unanimously concludes that petitioner failed to make a substantial showing of good cause for failure to file its petition on time within the meaning of 10 CFR 2.714(a). The members of the Board were not in agreement respecting petitioner's standing to intervene and each member filed his own separate opinion.

Licensing Board order affirmed.

RULES OF PRACTICE: NON-TIMELY INTERVENTION PETITIONS

In deciding whether a petitioner has shown "good cause" for its failure to file an intervention petition on time, a board is not to confine itself to a consideration of whether the petitioner has advanced an adequate excuse for being late. Even if lateness is entirely unjustified, a board must nonetheless look at the four factors spelled out in 10 CFR 2.714(a). *West Valley*, CLI-75-4.

RULES OF PRACTICE: NON-TIMELY INTERVENTION PETITIONS

In considering the first factor under 10 CFR 2.714(a) ("the availability of other means whereby the petitioner's interest will be protected"), the inquiry is not whether other parties will adequately protect the interest of the untimely petitioner, but rather whether there are other available means whereby that petitioner can itself protect its interest.

RULES OF PRACTICE: NON-TIMELY INTERVENTION PETITIONS

The fourth factor under 10 CFR 2.714(a) ("the extent to which petitioner's participation will broaden the issues or delay the proceeding") includes only that delay which can be attributed directly to the tardiness of the petition.

RULES OF PRACTICE: NON-TIMELY INTERVENTION PETITIONS

While the delay factor under 10 CFR 2.714(a) is particularly significant, it is not dispositive; all four factors must be weighed in determining whether there has been "good cause" for the untimely filing of an intervention petition.

DECISION

October 2, 1975

The Oil Heat Institute of Long Island, Inc. (OHILI) has appealed to us under 10 CFR 2.714a from the July 1, 1975 order of the Licensing Board denying its untimely amended petition for leave to intervene in this construction permit proceeding.¹ Upon full consideration of the briefs and oral arguments of the respective parties, we unanimously conclude that the Licensing Board correctly determined that OHILI had failed to make "a substantial showing of good cause for failure to file [its petition] on time" within the meaning of 10 CFR 2.714(a). Accordingly, the order under appeal is *affirmed*.

Although in agreement as to the required outcome, the members of this Board are not of one mind respecting the appropriate treatment and disposition of certain subsidiary questions which were raised and discussed by the parties during the course of the appeal. Each member has therefore prepared his own separate opinion.

As appears from those opinions, Mr. Rosenthal and Dr. Buck are in disagreement only with respect to whether OHILI's intervention petition should have been denied on the alternative basis that there is an absence of sufficient allegations of "injury in fact"; in all other respects Dr. Buck subscribes to the views set forth in Mr. Rosenthal's opinion. On the other hand, Mr. Salzman

¹ LBP-75-37, NRCI-75/7 23.

agrees with Mr. Rosenthal on the "injury in fact" question but cannot go along with significant portions of the balance of Mr. Rosenthal's discussion pertaining to OHILI's standing. In these circumstances, although Mr. Rosenthal's opinion is not being denominated as the opinion of the Board, each of the conclusions reached therein has the general support of a majority of the Board.

It is so ORDERED.

FOR THE ATOMIC SAFETY AND
LICENSING APPEAL BOARD

Margaret E. DuFlo
Secretary to the Appeal Board

OPINION OF MR. ROSENTHAL:

This appeal comes to us on these facts:

On September 20, 1974, the Commission published its notice of hearing on the application of the Long Island Lighting Company for permits to construct Units 1 and 2 of the Jamesport Nuclear Power Station, to be located in the vicinity of the Town of Riverhead, Suffolk County (Long Island), New York. 39 F.R. 33817. The notice established October 21, 1974 as the last day for the filing of petitions for leave to intervene.

OHILI did not seek to intervene until March 11, 1975—more than 4½ months after the expiration of the prescribed deadline. In its petition, OHILI sought to justify its untimeliness on the ground that it had not been aware of the notice of hearing for an unspecified period following issuance and, after it learned of the notice, "some months" elapsed while it sought to retain counsel and to raise sufficient funds from its members to cover the expense of legal representation in the proceeding.

OHILI's interest in the proceeding was said to stem from the fact that it is a trade association representing more than 300 home heating oil dealers doing business in Nassau and Suffolk counties. According to the petition, over 80% of the approximately 770,000 homes located in those counties are now heated by oil. Each of the Jamesport units would be capable of supplying the heating requirements of 100,000 homes. Thus, it was alleged, the consequence of the construction and operation of those units would be that present or potential customers of OHILI members would be serviced instead by the nuclear facility.

This in turn would have "patently adverse economic effects on" the OHILI members.

10 C.F.R. 2.714(a) requires intervention petitions not merely to establish the petitioner's interest but, as well, to identify the specific aspect or aspects of the subject matter of the proceeding as to which intervention is sought and to set forth with particularity the basis for the petitioner's contentions with regard thereto. Although it appears from the petition that OHILI's counsel was aware of Section 2.714(a), and had at least some familiarity with its terms, no attempt was made to comply with the contentions requirement. Nor was there observance of the additional requirement that the petition be under oath or affirmation and be accompanied by a supporting affidavit.

In its answer to the petition, the NRC staff took the position that OHILI had alleged a sufficient interest and that it had also made "a substantial showing of good cause for [the] failure to file [the petition] on time" within the meaning of Section 2.714(a). The staff urged that OHILI be given 30 days within which to cure the above-noted defects in the petition.

For its part, the applicant asserted that the petition should be denied outright. Contrary to the view of the staff, it insisted that there had not been a substantial showing of good cause for the untimely filing. Beyond that, the applicant questioned OHILI's standing on the ground, *inter alia*, that no basis had been assigned for believing that electricity generated by the Jamesport facility would in fact be used by homeowners in the stead of OHILI members' heating oil.

On April 30, 1975, the Licensing Board entered an order which, without reaching the issues of untimeliness and standing, granted OHILI fifteen days in which to submit an amended petition. Such a petition, duly verified, was filed within the prescribed period. In addition to reasserting its previous averments regarding the cause of its untimeliness and the basis of its interest, OHILI advanced numerous contentions in such safety and environmental areas as the need for the power to be generated by the proposed nuclear facility; the environmental suitability of the selected site; the applicant's financial qualifications to construct and operate the facility; compliance with the Commission's siting criteria established by 10 C.F.R. Part 100; transportation of radioactive wastes; and the sufficiency of the applicant's quality assurance and security programs.

Based upon its belief that the amended petition cured the defects in the initial petition, the staff urged that it be granted. The applicant, however, continued to press the views which it had previously advanced in opposition to the grant of intervention.

In its July 1 order, the Licensing Board concluded that good cause had not been shown for the late filing; that "the question of interest [had not been] established"; and that OHILI's contentions "have been developed by other

parties who are very capable of thorough participation in this proceeding.” NRCI-75/7 at 25.¹ OHILI thereafter noted a timely appeal.

I

Section 2.714(a) provides that an untimely intervention petition “will not be entertained absent a determination by [the Licensing Board] that the petitioner has made a substantial showing of good cause for failure to file on time . . .” In deciding the “good cause” question, the Board is not to confine itself to a consideration of whether the petitioner has advanced an adequate excuse for being late. Even if the lateness is entirely unjustified, the Board must nonetheless look at four factors spelled out in Section 2.714(a):

- (1) The availability of other means whereby the petitioner’s interest will be protected.
- (2) The extent to which the petitioner’s participation may reasonably be expected to assist in developing a sound record.
- (3) The extent to which petitioner’s interest will be represented by existing parties.
- (4) The extent to which the petitioner’s participation will broaden the issues or delay the proceeding.

See *Nuclear Fuel Services, Inc.* (West Valley Reprocessing Plant), CLI-75-4, NRCI-75/4R 273 (April 17, 1975), reversing ALAB-263, NRCI-75/3 208 (March 28, 1975). See also *Virginia Electric and Power Co.* (North Anna Station, Units 1 and 2), ALAB-289, NRCI-75/9 395 (September 18, 1975).

In addition to those four factors, which come into play only in circumstances where the intervention petition is untimely, Section 2.714(a) refers to three other factors which are detailed in Section 2.714(d) and are to be considered in passing upon *all* intervention petitions—whether or not tardy:

- (1) The nature of the petitioner’s right under the Act to be made a party to the proceeding.
- (2) The nature and extent of the petitioner’s property, financial, or other interest in the proceeding.
- (3) The possible effect of any order which may be entered in the proceeding on the petitioner’s interest.

Neither the Commission nor this Board found it necessary to address these factors explicitly in *West Valley*, for the reason that on the facts of that case no

¹In this last respect, the Board had previously granted intervention petitions filed by Suffolk County, New York; the Town of Riverhead; the League of Women Voters of Suffolk County; Concerned Citizens of Suffolk County; the Environmental Protection and Progress Committee of Local 25, International Brotherhood of Electrical Workers; and the New York State Atomic Energy Council (as an “interested State” within the meaning of 10 C.F.R. 2.715(c)).

question was presented respecting the petitioner's interest or how it might be affected by the outcome of the proceeding.² Here, however, the situation is markedly different—a substantial question has been raised respecting whether OHILI's interest, as articulated in its petition, is sufficient to confer standing to intervene in the proceeding. OHILI's standing therefore must be considered here; indeed, it is appropriately treated at the threshold since, if standing is manifestly lacking, the petition was rightly denied without regard to any other considerations.

A. In its answer to the OHILI petition, the applicant suggested that the petition "provide[d] no grounds for belief that electricity from Jamesport would *in fact* be used by home owners in lieu of [OHILI] members' heating oil" (emphasis in original). The Licensing Board apparently had this suggestion in mind when, in its order denying the petition, it characterized OHILI's allegation of a "unique interest because of a potential economic loss if possible future potential customers do not use oil heat" as being "entirely speculative and conjectural." NRCI-75/7 at 25. And, although not altogether clear from the order, it seems likely that the Board's ultimate conclusion that "the question of interest is not established" flowed from this characterization.

I cannot accept this analysis. True enough, since the facility has not been built (let alone placed in operation), OHILI has not as yet suffered any actual injury. Moreover, there is no way of determining at this juncture—many years before the first electron would be dispatched from Jamesport if built—precisely what competitive impact might be felt by OHILI members. But it scarcely follows that OHILI's assertions regarding injury in fact are subject to being dismissed as pure conjecture.

Neither the Atomic Energy Act nor the Commission's implementing regulations require, as a precondition to intervention, that it be established that the asserted interest of the petitioner *will* be affected by the licensing proceeding in question. Rather, the standard which has been adopted is whether that interest "may" be affected. Section 189a. of the Act, 42 U.S.C. 2239(a); 10 C.F.R. 2.714(a). The reason seems clear. Prior to the commencement of construction of the facility, it is unlikely that any harm could materialize; indeed, some types of harm would occur, if at all, only after construction has been completed and the operational stage has been reached. Consequently, at the inception of a licensing proceeding, it will generally not be possible for a would-be intervenor to establish more than the *potentiality* of his sustaining injury.

It seems to me beyond doubt that OHILI has alleged sufficient facts to establish that its members *may* be injured in fact if Jamesport is constructed and placed in operation. Indisputably, both oil and electricity can be and are employed for the purpose of heating residences and, in the past, there frequently

² The same was true in *North Anna 1 and 2*, ALAB-289, *supra*.

has been vigorous competition between oil suppliers and electric utilities for some heating customers. Given the present situation regarding the quantum of available electric power, the competition may have abated in some areas; the applicant has called attention to the fact that, by agreement with the New York State Public Service Commission, since April 1974 it has not been promoting the use of electricity for heating purposes by advertising or otherwise. There is no reason to suppose, however, that the *status quo* in this regard will be preserved indefinitely, particularly if significant new power generating sources (such as Shoreham and Jamesport³) become available to the applicant. And if, as seems more probable than not, the price of oil continues to escalate, electricity may prove to be a most formidable competitor for the heating dollar of the home owner in Nassau and Suffolk Counties.

It follows that, if properly asserted injury in fact (existing or potential as the case may be) is enough to confer standing to intervene in a NRC licensing proceeding, OHILI plainly has the requisite standing here. The Supreme Court has held, however, that, in judicial proceedings at least, actual or threatened injury in fact is not sufficient, in and of itself, to create standing to challenge past or prospective federal administrative action. *In addition*, it must appear that "the interest sought to be protected by the complainant is arguably within the zone of interests to be protected or regulated by the statute or constitutional guarantee in question." *Association of Data Processing Service Organizations v. Camp*, 397 U.S. 150, 153 (1970).⁴ It is noteworthy that *Data Processing Service*, as the present case, involved a claim of standing grounded solely upon threatened competitive injury; specifically, the plaintiffs were challenging as unlawful a ruling of the Comptroller of the Currency which allowed national banks under his supervision to provide data processing services which otherwise might have been performed by the plaintiffs themselves. And the majority's adoption of the "zone of interests" test represented a non-acceptance of the view of two members of the Court that "standing exists when the plaintiff alleges . . . that the challenged action has caused him injury in fact, economic or otherwise," and that "no further inquiry is pertinent to its existence." 397 U.S. at 172-73.⁵

³A construction permit for the Shoreham Nuclear Power Station, also to be located in Suffolk County, was issued in April 1973. See ALAB-156, 6 AEC 831 (1973). The Shoreham and Jamesport facilities would have a total generating capacity of approximately 3100 MWe.

⁴See also *Sierra Club v. Morton*, 405 U.S. 727, 731-33 (1972); *United States v. SCRAP*, 412 U.S. 669, 686 (1973).

⁵The separate opinion of Justice Brennan expressing this view, joined in by Justice White, related to both *Data Processing Service* and *Barlow v. Collins*, 397 U.S. 159 (1970). In *Barlow*, the majority of the Court applied the same "zone of interests" test in determining the standing of tenant farmers to challenge an administrative regulation affecting an economic (albeit not a competitive) interest possessed by them.

In light of *Data Processing Service*, there are two questions which are central to the resolution of the standing issue here. The first is whether OHILI has asserted any interest which might arguably be within the "zone of interests" to be protected or regulated by either or both of the statutes enforced by this Commission in licensing proceedings—the Atomic Energy Act and the National Environmental Policy Act. The second question is whether, assuming that the "zone of interests" test is not satisfied in this instance, a less restrictive standard governs the determination of standing to intervene in a NRC administrative proceeding. What this question essentially comes down to is whether the provision in Section 189a. of the Atomic Energy Act for the admission to such a proceeding of persons "whose interest may be affected by the proceeding" means that only "injury in fact" need be shown.

B. Neither *Data Processing Service* nor any subsequent Supreme Court decision of which I am aware contains a precise articulation respecting what must appear in the terms or legislative history of a statute in order to justify the conclusion that a particular asserted interest "arguably" falls within the "zone of interests" to be protected or regulated by that statute. It is reasonably apparent, however, from such decisions as *Arnold Tours v. Camp*, 400 U.S. 45 (1970), that it is enough if the statute or its history discloses some broad congressional purpose which at least indirectly touches upon the asserted interest in issue. See also *Investment Company Institute v. Camp*, 401 U.S. 617, 620-21 (1971).

1. It seems manifest that OHILI's interest in avoiding the competition which allegedly would be engendered by the construction and operation of the Jamesport facility is wholly foreign to the policy underlying the Atomic Energy Act. The only reported judicial decision applying the "zone of interests" test to determine standing under that Act found "[t]hat policy, stripped of its verbiage, [to be] simply to make certain that this country would continue to lead all other countries in the research, development and application of atomic energy." *Nuclear Data, Inc. v. Atomic Energy Commission*, 31 Ad. L. 2d 63, 71 (N.D. Ill. 1972), citing the declaration of policy set forth in Section 1 of the Act, 42 U.S.C. 2011. This statement may well reflect an unduly narrow perception of the bounds of the "zone of interests" protected or regulated by the Act; it does not appear, for example, to take into account the radiological health and safety, common defense and security or antitrust provisions of the statute. Be that as it may, however, the Act and its history are barren of the slightest manifestation of a possible legislative concern (in other than an antitrust context) for the protection of the competitive position of commercial entities engaged in the sale of fossil fuels. To the contrary, from all objective indicia one would have to conclude that the furtherance of that kind of interest was far removed from the contemplation of the sponsors of the Act.

2. Section 2 of the National Environmental Policy Act, 42 U.S.C. 4321, establishes the purposes of that Act to be:

To declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation; and to establish a Council on Environmental Quality.

This statement of purpose is buttressed by the Congressional declaration of national environmental policy contained in Section 101, 42 U.S.C. 4331:

(a) The Congress, recognizing the profound impact of man's activity on the interrelations of all components of the natural environment, particularly the profound influences of population growth, high-density urbanization, industrial expansion, resource exploitation, and new and expanding technological advances and recognizing further the critical importance of restoring and maintaining environmental quality to the overall welfare and development of man, declares that it is the continuing policy of the Federal Government, in cooperation with State and local governments, and other concerned public and private organizations, to use all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans.

(b) In order to carry out the policy set forth in this chapter, it is the continuing responsibility of the Federal Government to use all practicable means, consistent with other essential considerations of national policy, to improve and coordinate Federal plans, functions, programs, and resources to the end that the Nation may—

(1) fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;

(2) assure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings;

(3) attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;

(4) preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity and variety of individual choice;

(5) achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and

(6) enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

(c) The Congress recognizes that each person should enjoy a healthful environment and that each person has a responsibility to contribute to the preservation and enhancement of the environment.

Many of the judicial decisions concerned with NEPA standing have looked to one or both of these Sections for guidance in ascertaining the scope of the "zone of interests" protected by that Act. See *e.g. Harlem Valley Transportation Ass'n v. Stafford*, 360 F. Supp. 1057 (S.D. N.Y. 1973), *affirmed*, 500 F.2d 328 (2nd Cir. 1974); *Scherr v. Volpe*, 336 F. Supp. 882 (W.D. Wis. 1971), *affirmed*, 466 F.2d 1027 (7th Cir. 1972); *Sierra Club v. Hardin*, 325 F. Supp. 99 (D. Alaska 1971); *Ely v. Velde*, 321 F. Supp. 1088 (E.D. Va. 1971), *affirmed in part and reversed in part*, 451 F.2d 1130 (4th Cir. 1971). Beyond that, my research has not uncovered a single decision to the effect that the interests intended to be served by NEPA are any broader than those specifically identified in the statute itself. This is scarcely surprising in light of the Act's legislative history, which plainly shows that the underlying legislative design was to protect environmental values. See in particular S. Rep. No. 91-296, 91st Cong., 1st Sess. (1969), at pp. 4-8.

These considerations lead me to the conclusion that alleged economic harm comes within the ambit of the NEPA "zone of interests" if it is *environmentally* related; *i.e.*, if it will or may be occasioned by the impact that the federal action under consideration would or might have upon the environment. Thus, for example, marina operators unquestionably have standing to invoke NEPA to complain of the introduction of destructive shipworms to the vicinity of their places of business as the result of the operation of a nuclear power facility. See *Jersey Central Power and Light Co. (Forked River Nuclear Generating Station, Unit 1)*, ALAB-139, 6 AEC 535 (1973). Similarly, a commercial abalone fisherman may interpose a NEPA challenge to a nuclear power facility on the ground that the cooling water discharge from the facility will destroy the marine life upon which the abalone feed, with resultant injury to his livelihood. See *Pacific Gas and Electric Co. (Diablo Canyon Nuclear Power Plant, Units 1 and 2)*, ALAB-223, 8 AEC (RAI-74-8) 241 (1974).

Here, however, we are not faced with allegations of economic harm which have an environmental relationship. Although asserting that Jamesport will have various adverse environmental effects, OHILI does not claim that any of those effects will injure to any extent the business of its members.⁶ Rather, once again, the prospective injury of which it complains stems solely from the additional competition which might confront the OHILI members if Jamesport

⁶ Assuredly, the passing reference in its petition to "the economic and other interests of the OHILI, its members and the customers and employees of the members" (emphasis supplied) cannot be taken to constitute such a claim.

is built and placed in operation. That competition has, of course, nothing to do with any environmental aspect of Jamesport. Indeed, were the construction and operation of Jamesport to be ultimately found to have no potential adverse environmental impact at all, the threat of competitive injury would not be lessened one iota.

Insofar as I can determine, no court has held that an economic interest such as that sought to be vindicated by OHILI is sufficient, of itself, to confer NEPA standing. And, just recently, one court of appeals reached precisely the opposite result on facts indistinguishable from those at bar. *Clinton Community Hospital Corp. v. Southern Maryland Medical Center*, 510 F.2d 1037 (4th Cir. 1975), *certiorari denied*, ____ U.S. ____, 45 L.Ed. 2d 700 (1975). In that case, suit was brought by a hospital to enjoin the construction of a proposed, federally-assisted, hospital in the same area. The complaint alleged, *inter alia*, that the plaintiff had a pecuniary interest in the outcome of the proceeding since it would not be able to compete successfully with the proposed hospital and therefore would be forced to close. Although NEPA was invoked, it was not asserted that any environmental impact of the new facility would cause economic or other injury to the plaintiff. Affirming the district court's conclusion that the plaintiff lacked standing (374 F. Supp. 450), the Fourth Circuit observed:

If it has in fact suffered an injury, [plaintiff's] economic well-being vis-a-vis its competitors is certainly not "arguably within the zone of interests to be protected" by the Federal environmental laws. *Association of Data Processing Service Organizations, Inc. v. Camp*, 397 U.S. 150, 153, 90 S.Ct. 827, 25 L.Ed.2d 184 (1970).

510 F.2d at 1038. See also *Cumington Preservation Committee v. Federal Aviation Administration*, 37 Ad.L. 2d 126, 130 (D. Mass. 1975) in which the court cited the district court's decision in *Clinton Community Hospital* with approval and added:

NEPA was formulated to protect conservational, environmental and aesthetic interests. None of its admittedly broad terms protect individuals from economic loss. Congress did not intend this law to be a general enabling statute allowing opponents of federal projects to sue solely by invoking the magic word "environment" when their injury has factually nothing to do with the environment.

In my view, these two decisions plainly accord with the general understanding of the purpose and thrust of NEPA. I am therefore satisfied that OHILI's concern regarding enhanced economic competition is not, of itself, sufficient to provide a basis for NEPA standing.

This would be the end of this part of my inquiry into standing were it not for *National Helium Corp. v. Morton*, 455 F.2d 650 (10th Cir. 1971) and *Chemical Leaman Tank Lines, Inc. v. United States*, 368 F. Supp. 925 (D. Del.

(three-judge court) 1973). In *National Helium*, producers of helium sought to enjoin the termination of a helium purchase contract which the Government had entered into with them. The theory underlying the suit was that the contract termination would adversely affect the environment⁷ and, therefore, could not be accomplished by the Government in the absence of prior compliance with the requirements of NEPA. Obviously, the suit was prompted by the desire of the helium producers not to lose the economic benefits of the contract. Just as obviously, they were not asserting that the purported *environmental* effects of contract cancellation (see fn. 7, *supra*) would injure them economically or otherwise.⁸ Nonetheless, the Tenth Circuit held that they had standing to enforce their NEPA claim. Pointing to the fact that the companies alleged that “they were seeking to protect not only their own financial interests, but were also appearing as private attorneys general in order to protect the public interest in the helium program,” the court reasoned:

It cannot be denied that the companies have a genuine substantial financial interest in the termination of the contract. But it is their asserted representation of the public interest—which from their personal standpoint is admittedly less important than their private financial stake—which in final analysis justifies their seeking judicial review.

We are unable to say that the companies are motivated solely by protection of their own pecuniary interest and that the public interest aspect is so infinitesimal that it ought to be disregarded altogether. It is not part of our function to weigh or proportion these conflicting interests. Nor are we called upon to determine whether persons seeking to advance the public interest are indeed conscientious and sincere in their efforts. True, the plaintiffs are not primarily devoted to ecological improvement, but they are not on this

⁷ According to the complaint, the consequence of terminating the contract would be the loss of a valuable natural resource. This consequence was said to follow from the fact that, if helium is not extracted from its natural gas source before the natural gas is delivered to the consumer, it will be “vented into the atmosphere and lost” when the natural gas is consumed as fuel. See 455 F. 2d at 653. Apparently, without the government contract, there was no incentive to extract the helium.

⁸ The environmental impact of the loss of a natural resource is felt, of course, by those who, were the resource preserved, would benefit from its continuing availability. The helium producers did not come within that class; *i.e.*, once helium was delivered to the government (and paid for) it was of no importance to their pecuniary interest whether the helium was then preserved for future use or, instead, was dissipated. I therefore cannot accept the applicant’s attempt to distinguish *National Helium* from this case on the ground that there was a direct relationship between the economic interest of the helium producers and the environmental damage which was said to be the necessary consequence of the proposed federal action. No such relationship existed.

account disqualified from seeking to advance such an interest. No group has a monopoly on working for the public good.

455 F.2d at 653, 654-55.

In *Chemical Leaman*, *supra*, the three-judge district court explicitly endorsed this reasoning in upholding the standing of certain carriers to challenge, on NEPA grounds, an ICC rule which allowed other carriers to transport waste commodities in competition with them. 368 F. Supp. at 947. It did so notwithstanding the absence, insofar as the court's opinion reflects, of an express assertion in the complaint that the plaintiffs were seeking to vindicate the public interest in the protection of the environment (and not just their own, entirely non-environmental, interest in being free from the additional competition which the ICC rule would have created).

For reasons that need not be dwelt upon here, I think there to be considerable merit to the applicant's insistence that these two decisions are of dubious correctness.⁹ Nonetheless, in the absence of any judicial authority explicitly considering and rejecting the Tenth Circuit's rationale, it would seem unwise to rule out entirely the possibility that one whose own personal interest does not come within the "zone of interests" protected by NEPA may nonetheless have a right to air NEPA concerns under the banner of the public interest. To be sure, in its intervention petition OHILI did not attempt in so many words to clothe itself with the mantle of a "private attorney general." But, once again, neither apparently did the *Chemical Leaman* plaintiffs. All things considered, it does not seem to me that standing to intervene in one of our licensing proceedings should hinge upon whether the petitioner was sufficiently foresighted to include in his pleading a "public interest" incantation.

C. I therefore conclude that OHILI's asserted economic competition interest does not come within the "zone of interests" protected or regulated by either the Atomic Energy Act or NEPA. Thus, were this a judicial proceeding, OHILI's standing would be wholly dependent upon a willingness on the part of the court to adopt the *National Helium-Chemical Leaman* concept of "private attorney general" standing to enforce NEPA—and thereby to achieve a result diametrically opposed to that reached by the Fourth Circuit in *Clinton Community Hospital*, *supra*.¹⁰

The question remains whether, as OHILI maintains, the "zone of interests" test is inapplicable to NRC administrative proceedings, with the consequence that injury in fact might be all that it need to have alleged here in order to establish standing. The resolution of this question turns upon what Congress had in mind in providing in Section 189a. of the Atomic Energy Act for the

⁹ I go no further at this juncture than to observe that, if nothing else, they appear to sap the "zone of interests" test of any vitality as applied to NEPA.

¹⁰ No court has applied this concept to Atomic Energy Act standing and I do not think we should do so on our own initiative.

admission to such a proceeding of "any person whose interest may be affected by the proceeding." The crucial terms of this provision were, of course, carried over *verbatim* into 10 C.F.R. 2.714(a).¹¹

Section 189a. was enacted long before the "zone of interests" test was established in *Data Processing Service*. That test is, however, no more stringent—if anything less so—than the previously enunciated standard for determining whether a complainant had a sufficient interest to confer standing. See 397 U.S. at 153. Thus, a conclusion that Congress intended contemporary judicial standing precepts to govern in the administration of Section 189a. would not mean that intervention might now be denied to persons who, in 1954, would have qualified under then existing standing principles.

Unfortunately, nothing in the statute itself sheds any significant light upon the legislative intent in this regard. Neither in Section 189a. nor elsewhere is there a direct indication respecting the meaning which Congress attached to the term "interest." And the relatively scant legislative history of Section 189a. is equally inconclusive. See, in particular, S. Rep. No. 1699, 83rd Cong., 2d Sess. (1954), p. 28; 100 Cong. Rec. 10171 (July 16, 1954); 100 Cong. Rec. 10926, 10940 (July 22, 1954).

The staff tells us, however, that, even before *Data Processing Service*, the Commission in effect construed Section 189a. as imposing a "zone of interests" test. We are pointed to *Vermont Yankee Nuclear Power Corp.* (Vermont Yankee Nuclear Power Station), 4 AEC 75 (1968) and *Philadelphia Electric Co.* (Peach Bottom Atomic Power Station, Units 2 and 3), 4 AEC 151 (1968). Those decisions do contain language which lends support to the staff's thesis. See 4 AEC at 82-83 and 4 AEC at 152. But they do not constitute anything approaching a square holding on the point. What was involved at bottom in both cases was a jurisdictional question; *viz.*, whether, in a construction permit proceeding, municipal electric systems could raise questions going to their

¹¹ As the District of Columbia Circuit has observed:

Although by no means concomitant, "[t]he problem of right to intervene in administrative proceedings is closely related to and in some measure governed by the elaborate body of law concerning standing to challenge and to enforce administrative action" [L. K. Davis, *Administrative Law Treatise*, §8.11 at 564 (1958)]. Cases concerning the question of standing before one or the other tribunal have been used interchangeably in resolving questions of standing to intervene. Except for the adjustments necessary for assuring the manageability of administrative proceedings, the criteria for standing for review of agency action appear to assimilate the criteria for standing to intervene.

National Welfare Rights Organization v. Finch, 429 F. 2d 725, 732-33 (1970). That court went on, however, to note "[a] seemingly contrary viewpoint" that judicial standing "is not to be equated to participation in an administrative proceeding." *Id.* at 732, fn. 27. In any event, there "is no legal principle which prevents an administrative agency from allowing a broader range of appeals than are permitted in the federal courts." *Hi-Ridge Lumber Co. v. United States*, 443 F. 2d 452, 456 (9th Cir. 1971).

entitlement to access to some of the power which would be generated by the nuclear plant.¹² The Commission's discussion of "interest" must be read in that context.

In sum, there is an absence of clear guidance from the Congress and the Commission respecting the precise bounds of the term "interest" as employed in Section 189a. and 10 C.F.R. 2.714(a).¹³ I think it more probable than not, however, that, had the intent been to provide greater latitude for intervention in a nuclear licensing proceeding, one or the other of the two bodies would have so indicated. Moreover, even were we to assume that some relaxation of judicial standing doctrines was contemplated, it is inconceivable to me that either Congress or the Commission envisaged the allowance of intervention grounded upon an asserted interest in being free from competition having a nuclear source.¹⁴

II

Because my analysis of the question of OHILI's standing to intervene does not permit a finding that such standing is *manifestly* lacking, I find it necessary to go on to consider whether the Licensing Board correctly decided that "good cause" had not been established for the untimely filing of the intervention petition. This does not mean to me, however, that that extended analysis was an unwarranted, let alone futile, exercise. I have already noted that, in passing upon a late petition, we are under a Commission-imposed duty to take into account "[t]he nature of the petitioner's right under the [Atomic Energy] Act to be made a party to the proceeding." See p. 635, *supra*. The message which this command imparts to me is that a late petition is entitled to some greater measure of solicitude if its sponsors have a clearly cognizable interest than if the claim of standing rests upon a much shakier foundation. If I am right about that, it is highly relevant to the "good cause" determination here that, even had its petition been timely, OHILI's "right" to intervene would have been unclear.¹⁵

¹² The present antitrust provisions of Section 105 of the Act, 42 U.S.C. 2135, were not enacted until 1970.

¹³ None of the judicial decisions involving intervention under the Atomic Energy Act decides the question.

¹⁴ The staff suggested to us that, even if OHILI has no legal entitlement (*i.e.* standing) to intervene, we nevertheless have the discretion to allow intervention on the authority of the Commission's decisions in *Philadelphia Electric Co.* (Peach Bottom Atomic Power Station, Units 2 and 3), 4 AEC 34 (1967) and *Duke Power Co.* (Oconee Nuclear Station Units 1, 2 and 3), 4 AEC 57, 62 (1968). Assuming that those decisions go that far, I remain unconvinced that there are sufficiently unusual circumstances here to justify taking such an extraordinary step.

¹⁵ Whatever "right" one may have to become a party no longer is absolute if it is not exercised by the filing of an intervention petition within the period prescribed in the notice of hearing. *Duquesne Power and Light Co.* (Beaver Valley Power Station, Unit 2), ALAB-208, 7 AEC 959, 965, *affirmed*, CLI-74-24, 7 AEC 953 (1974).

Specifically, given the at best marginal basis for the asserted right, we can demand much more of OHILI in terms of a showing either (1) that its not having filed the petition on time was due to circumstances beyond its control or (2) that the four factors enumerated in Section 2.714(a) (see p. 635, *supra*) weigh heavily in OHILI's favor.

From this standpoint, this case is markedly different from *West Valley, supra*, in which the Commission reversed a split decision of an appeal board which had upheld the denial of an intervention petition as untimely. The *West Valley* petition was that of a county, seeking to advance its asserted (clearly cognizable) interest in the protection of the health and safety of the citizens of the county. To have excluded it from the proceeding would have had the effect of leaving those citizens without representation by their own local government on matters at the very heart of the Atomic Energy Act.¹⁶ When that case was before us, I repeatedly emphasized this consideration in support of my minority view that, notwithstanding the lack of a good excuse for the tardiness, the petition should have been granted on the basis of the four Section 2.714(a) factors. NRCI-75/3 at 217, 219-22, 225. And the Commission appears to have rested its own determination to allow intervention—made “with some reluctance”—in part upon the fact that the petitioner county was representing governmental interests “presumably broader” than those of the private intervenors in the case. NRCI-75/4R at 275. But for that fact, the Commission very possibly would have reached a quite different result.¹⁷

I now turn to whether OHILI has made the convincing showing required to overcome its failure to have filed its petition more promptly.

A. Although the Licensing Board's order does not explicitly address the adequacy of the excuse proffered by OHILI for its untimeliness, the only fair inference to be drawn from the order read as a whole is that that Board found the excuse insubstantial. In any event, it must be so regarded.

It is difficult to fathom any compelling reason why a trade association, representing significant commercial interests, should be allowed to plead

¹⁶In unmistakable terms, the Act gives effect to the legislative concern that the public health and safety not be endangered by the operation of nuclear facilities. See *e.g.* Section 104d., 42 U.S.C. 2134(d).

¹⁷The Commission stressed in *West Valley* that

Obviously, an important policy consideration underlying the [intervention] rule is the public interest in the timely and orderly conduct of our proceedings. As the Commission has recognized, “fairness to all parties . . . and the obligation of administrative agencies to conduct their functions with efficiency and economy, require that Commission adjudications be conducted without unnecessary delays.” 10 CFR Part 2, Appendix A. *Late petitioners properly have a substantial burden in justifying their tardiness. And the burden of justifying intervention on the basis of the other factors in the rule is considerably greater where the latecomer has no good excuse.*

NRCI-75/4R at 275; emphasis supplied. See also *North Anna 1 and 2*, ALAB-289, *supra*, NRCI-75/9 at 398.

ignorance of a notice duly published in the *Federal Register*.¹⁸ That consideration to one side, the applicant has brought to our attention the fact that the proposed Jamesport facility and the prospect of near-term Commission licensing hearings in connection therewith had received extensive publicity in Long Island newspapers during the period immediately preceding the deadline for filing intervention petitions. Given this press coverage, it would defy reality to assume that neither OHILI nor any of its businessman members were aware in October 1974 that the applicant had pending applications for permits to construct Jamesport and that those applications were then in the process of entering formal adjudication. Cf. *Pennsylvania Power & Light Co.* (Susquehanna Steam Electric Station, Units 1 and 2), ALAB-148, 6 AEC 642, 643 (1973).

I find no better footing to OHILI's assertion that the additional delay, once it had belatedly learned of the notice of hearing, can be justified on the basis that it needed time to employ counsel to represent it and to obtain from its members the necessary funds to compensate him. It is readily understandable why OHILI might not have wished to file a *pro se* petition. What is much less apparent, however, is why, upon discovering that the time deadline for filing its intervention petition had already passed, OHILI did not promptly take at least the step of apprising the Commission of its interest in the outcome of the proceeding and of its intent to acquire counsel to pursue that interest on its behalf. In this connection, it is not unreasonable to attribute to an organization such as OHILI some degree of sophistication in the discharge of its function of protecting and furthering the interests of the business enterprises which constitute its membership.

B. In these circumstances, the question becomes whether OHILI has successfully shouldered its exceptionally heavy burden on the four Section 2.714(a) factors. I conclude that it has not.

1. The Licensing Board determined that the first factor—"[t]he availability of other means whereby the petitioner's interest will be protected"—weighed against OHILI for the reason that, since OHILI's contentions "mirror" those of already admitted intervenors in opposition to the facility, the "OHILI 'interest' will be propounded by the other parties." NRCI-75/7 at 24. As the Commission's *West Valley* opinion reflects, however, the inquiry on the first factor is not whether other parties will adequately protect the interest of the untimely petitioner. Rather, it is whether there are other available means whereby that petitioner can *itself* protect its interest. NRCI-75/4R at 276; see also my dissent in *West Valley*, NRCI-75/3 at 220, and this Board's decision in *North Anna 1 and 2*, ALAB-289, *supra*, NRCI-75/9 at 398.

¹⁸ The Federal Register Act expressly provides that such publication constitutes notice to "all persons residing within the States of the Union." 44 U.S.C. 1508.

Although the parallel between OHILI's contentions and those of other parties therefore is not relevant in the evaluation of the first factor,¹⁹ there is another consideration which does bear importantly upon that factor. OHILI is a party to an on-going proceeding being conducted before the New York State Board on Electric Generation Siting (hereinafter "Siting Board") on the Jamesport facility. So too are the applicant and all of the already admitted intervenors in the NRC proceeding. It appears that the Siting Board has the broad mandate of determining not only whether there is a need for the electricity which would be generated by the facility, but also whether (if present) that need would be best served by Jamesport, by a nuclear facility sited at some other location or by a fossil-fuel plant. As a consequence, we have been informed by the applicant without contradiction, the Siting Board is exploring in depth essentially all of the issues which would be considered in the NRC proceeding, with the exception of Jamesport's radiological effects.²⁰ And the Siting Board has the authority, should its resolution of those issues so warrant, to withhold approval of the construction of Jamesport.

It follows that, except with respect to radiological matters, OHILI patently has another available forum in which to protect its interests. Most particularly, the Siting Board hearing has provided OHILI with a full opportunity to present its views on the need for this additional energy source which might provide it with unwelcome competition. Cf. *North Anna 1 and 2*, ALAB-289, *supra*, NRCI-75/9 at 398-399.²¹

2. On the second factor—"[t]he extent to which the petitioner's participation may reasonably be expected to assist in developing a sound record"—OHILI fares little better. To begin with, I am unimpressed with the staff's argument that, as a party participant, OHILI might bring its "ostensible expertise as a home heating oil trade association" to bear upon "at least the question of whether there is a need for the electricity to be generated by the proposed facility."²² Our attention has been called to nothing to indicate that, by engaging in the business of selling fuel oil for home heating use, one might be

¹⁹ Instead, as will be seen, it comes into play in connection with the third factor. See p. 650, *infra*.

²⁰ It appears that the Siting Board hearing examiner has excluded radiological issues from consideration (presumably in light of *Northern States Power Co. v. State of Minnesota*, 447 F.2d 1143 (8th Cir. 1971), *affirmed*, 405 U.S. 1035 (1972)) but review is being sought of that action.

²¹ In *West Valley*, *supra*, the Commission determined that, "in the circumstances of [that] case," a limited appearance "probably would not be an adequate substitute for participation as a party . . ." NRCI-75/4R at 276. I will assume the same to be true here, although it might well be that a limited appearance would be sufficient insofar as the radiological issues excluded from the Siting Board proceeding are concerned. Not only has OHILI not independently raised any issues of that character, but also it understandably does not claim any special expertise in the area of radiological health and safety.

²² Along the same line, OHILI points out that, unlike itself, none of the existing intervenors is in the "energy business."

expected to acquire some special knowledge or insight respecting the ingredients of a long-range projection of electric power demands.²³

Insofar as the other OHILI contentions are concerned, there is a total absence of anything in the papers before us to suggest that OHILI would likely make a contribution beyond that of the already admitted parties who first advanced them. Without exception, those contentions involve either compliance with applicable health and safety requirements or the impact of the facility upon the environment. If OHILI is uniquely qualified to address questions such as whether the “[m]arine ecology at the proposed site will be materially, adversely affected by the construction and operation of” Jamesport (contention (1)) or whether “[r]adioactive releases from [Jamesport] will materially, adversely affect human ecology in the vicinity” of the proposed site (contention (p)), we have not been told about it.²⁴

I recognize, of course, that, even though not having readily at hand information or experience relevant to a particular issue, an intervenor may be willing and able to retain expert witnesses, to commission studies or to take like measures which might enable it to make a substantial contribution to the development of a “sound record” on that issue. OHILI represented at argument before us that it was prepared to expend some of its resources to that end and, indeed, had “already allocated several thousand dollars for certain studies” (App. Tr. 30). Its counsel implicitly conceded, however, that, to this point at least, there has been no commitment of funds to pay expert witnesses (*ibid.*).

The county government involved in *West Valley* had appropriated funds (\$5,000) to conduct “very preliminary specialized technical studies of selected aspects of the application.” In addition, it had resort to the results of the air and water quality monitoring activities conducted by two of its departments. See ALAB-263, *supra*, NRCI-75/3 at 222 (dissent). Although noting both these

²³ Those demands stem from a wide variety of residential, commercial and industrial uses of energy.

²⁴ In this connection, it is worthy of passing note that several of OHILI's contentions make no sense as presented. For example, contentions (c) through (f) read as follows:

(c) The Applicant has not and cannot demonstrate the effects of an energy conservation program as a viable alternative to the construction of the proposed plants.

(d) The Applicant has not and cannot demonstrate the effects of altering present rate structures to reduce demand for electricity as a viable alternative to the construction of the proposed plants.

(e) The Applicant has not and cannot demonstrate how reduced population growth curves negate the need to construct the proposed plants.

(f) The Applicant has not and cannot demonstrate how consumers' self-imposed reduction of electricity consumption negates the need to construct the proposed plants.

Although it may be that all that is involved is extreme inattention on the part of the pleader, this kind of submission does nothing to reduce my skepticism respecting the ability of OHILI to make a substantial contribution to the proceeding.

facts, the Commission nonetheless concluded that “[a]ssessment of the second factor . . . is inconclusive in this case.” NRCI-75/4R at 276, fn. *. Certainly, on the record before us, no conclusion more favorable to OHILI is permissible in this instance.

3. Moving on to the third factor—“[t]he extent to which petitioner’s interest will be represented by existing parties”—it is of course true that none of the other parties shares OHILI’s economic interest in avoiding Jamesport competition. But it does not necessarily follow that that interest will go entirely unprotected if OHILI is not permitted untimely intervention. At least some of the other intervenors appear to seek the same ultimate result in this proceeding as does OHILI; *viz.*, a denial of the applications for construction permits. And their opposition to the facility is founded upon claims essentially identical to those upon which OHILI has manifested a willingness to have its case against the facility rest. Granted, as OHILI stressed at argument, there is no way of telling in advance how effectively any specific intervenor will develop its position at trial. But, once again, OHILI has given us no reason to believe that it would succeed where others might fail.

Moreover, it must be borne in mind that, in all likelihood, OHILI’s personal economic interest is not cognizable in this proceeding. Beyond question, OHILI’s possible alternative interest as a “private attorney general” seeking to further the public good is one which it does not alone possess. To the contrary, it is fair to say that all of the other intervenors share that interest at least equally with OHILI and are no less qualified to protect it.

4. The fourth factor—“[t]he extent to which the petitioner’s participation will broaden the issues or delay the proceeding”—does provide assistance to OHILI. Since its intervention petition introduces no new issues, the scope of the proceeding would not be broadened by OHILI’s participation. And, discovery not having as yet been instituted, there is no real danger that the commencement of the evidentiary proceeding would be delayed.²⁵

In the totality of circumstances, then, the lateness of the OHILI petition could be overlooked only if Section 2.714(a) were read as making the fourth factor dispositive; *i.e.*, as manifesting a Commission judgment that, irrespective

²⁵ As the applicant correctly pointed out to us, the addition of OHILI to the list of participants might well extend the duration of the proceeding—at least if OHILI took an active role by presenting its own evidence and cross-examining the witnesses for the other parties. I do not believe, however, that the Commission intended this variety of potential delay to be considered in evaluating the fourth factor. Any time an intervention petition is granted—whether that petition was timely or belatedly filed—there is the consequential possibility that the evidentiary hearing will take longer to complete. In my view, the Commission had in mind only that delay which could be attributed directly to the tardiness of the petition. See *West Valley, supra*, NRCI-75/4R at 276.

of the conclusions reached on the other factors, an untimely petition should always be accepted so long as no broadening of issues or delay in the progress of the proceeding is involved. Such a construction of the Section is, however, wholly untenable.

Undeniably, the delay factor is a particularly significant one; indeed—barring the most compelling countervailing considerations—an inexcusably tardy petition would (as it should) stand little chance of success if its grant would likely occasion an alteration in hearing schedules.²⁶ But, equally plainly, we would be recasting Section 2.714(a) were we to hold that a petitioner for intervention may ignore established time deadlines with impunity if, in doing so, it presents no threat to the progress of the adjudication. More than that, we would be disregarding the teachings of the Commission's decision in *West Valley, supra*. There, as here, the scheduled commencement of the evidentiary hearing was still well in the distance when the petition was filed. Nonetheless, the Commission explicitly took into account all four Section 2.714(a) factors—three of which it found to weigh in the petitioner's favor—in reaching its "reluctant" conclusion that the petition should be granted. NRCI-75/4R at 275-76.

I therefore arrive at the same ultimate conclusion as do my two colleagues. Although no aspect of the standing question finds all three of us in accord, there is no disagreement that the OHILI petition was rightly denied by reason of its untimeliness.

OPINION OF DR. BUCK:

While I am in agreement with the Chairman that, for the reasons assigned in his opinion, OHILI has not made "a substantial showing of good cause for failure to file [its petition] on time" within the meaning of 10 CFR 2.714(a), it is my view that we need not reach that question. For, as a matter both of law and of policy, I find that the denial of the OHILI petition would have been required even if "good cause" for its lateness had been established.

Where I disagree with the Chairman is in his conclusion that the OHILI petition satisfies the requirements of the Atomic Energy Act and the Rules of Practice that a petitioner adequately demonstrate "injury in fact". By their express terms, both Section 189a. of the Atomic Energy Act, 42 U.S.C. 2239(a), and 10 CFR 2.714(a) grant the right to intervene only to a person "whose interest may be affected by the proceeding." To qualify for that right, such person must, *inter alia*, show "that it possesses a *substantial* interest in the outcome" of the proposed licensing action under consideration. *Cities of Statesville v. Atomic Energy Commission*, 441 F. 2d 962, 977 (D.C. Cir. 1969;

²⁶ This would be so even if, unlike here, the petitioner's standing were not dubious.

en banc, emphasis supplied). To do so, a potential intervenor must assert—by affidavit—facts which demonstrate that such licensing action may cause substantial actual harm to its interests. *Cf. Cities of Statesville with Sierra Club v. Morton*, 405 U.S. 727 (1972). In my opinion, OHILI's petition (as amended) falls far short of meeting that standard. Contrary to the Chairman's conclusion, the petition does not adequately allege that OHILI may be "injured in fact"—let alone that it may be "substantially" injured—if the Jamesport facility eventually is placed in operation. It thus follows that OHILI lacks standing irrespective of how one comes out on the questions whether the "zone of interests" test applies to NRC licensing proceedings and, if so, whether that test is satisfied here.¹

In its original petition to intervene,² OHILI asserted that

3. . . .

(b) OHILI is a trade association which represents more than three hundred home heating oil dealers maintaining their businesses within the counties of Nassau and Suffolk.

(c) There are approximately 770,000 homes within the counties of Nassau and Suffolk. Of these, approximately 640,000 (over 80%) are oil-heated. Approximately 17,000 (less than 3%) are electrically heated with the balance being gas-heated.

It is anticipated that in the event that the two 1150 Mwe nuclear fueled generating units are constructed and operational, that *each* of said units will be capable of supplying the heating requirements of 100,000 homes. It becomes obvious that space-heating customers to be served by the nuclear units will be either present oil-serviced customers or new-home residents, a great number of whom could have and probably would have been oil-serviced. Thus, there would be patently adverse economic effects on the home heating oil dealers represented by OHILI.

As a premise for its claim of "injury in fact," therefore, OHILI is, in effect, asking us to assume that the full output³ of the two Jamesport units will be used exclusively for space heating of homes. But it has given us no basis for making that assumption or, indeed, for assuming that the applicant's power usage mix will be any different after the two nuclear units are in operation than it is at present.

¹ Were it necessary to reach these questions, I would come to the same conclusions as did the Chairman.

² Petition of the Oil Heat Institute of Long Island, Inc. Pursuant to 10 C.F.R. Part 2, Section 2.714 for Leave to Intervene, dated March 11, 1975. This assertion was reaffirmed in OHILI's amended petition dated May 16, 1975.

³ A rough calculation indicates that, even assuming full time operation at 100% power load for the two plants, OHILI's assumption that 200,000 additional homes could be heated is quite optimistic.

In its reply to OHILI's statement of interest, the applicant refers us to the staff's Draft Environmental Statement⁴ (DES), which asserts that

Historically, the applicant promoted the use of off-peak electric energy for water and space heating through employee lead programs, cooperative advertising programs for electric heating contractors, and direct-mail bill enclosures. However, in April 1974 (ER, Amend. 2, Question BC-13), the applicant, in agreement with the New York State Public Service Commission, stopped all advertising that promotes the use of electric heat, and allowances to builders who install electric heat were suspended (ER, Amend 1, Question 1.1a). The applicant presently does not have any programs under way or planned for the promotion of increased electric consumption. Further, the applicant has encouraged energy conservation by customers through newspaper advertisements, local radio and television commercial spots, direct mailing, course instructions, and seminars (ER, Amend. 1, Question 1.1a).

As indicated above, OHILI's amended petition for intervention concedes that less than 3% of the homes in Nassau and Suffolk Counties are presently heated by electricity. The applicant has succeeded in obtaining just this small percentage of the home heating business only after engaging in an apparently heavy advertising campaign and subsidy program over a number of years. OHILI gives no explanation as to how, or why, the addition of two reactors with no promotional activity could suddenly cause the number of electrically heated homes to increase from 17,000 to anything approaching 217,000.

I fail to see how OHILI's assumptions are the result of anything more than an "Alice in Wonderland" nightmare. They clearly do not fulfill the requirement that a petition for intervention be accompanied by an affidavit

setting forth with particularity . . . the facts pertaining to [the petitioner's] interest.

10 CFR 2.714(a).⁵ This requirement, as I read it, mandates that a petitioner allege *some* facts which would show that it may suffer injury; it does not contemplate that a board go out of its way to hypothesize—as I believe my colleagues are doing—some conceivable set of facts which might have been suggested by the petitioner but were never in fact asserted.

In my opinion, no showing of "injury in fact" has been made. This consideration, of itself, provides a sufficient basis for denying the petition and, as I see it, should be invoked for that purpose.⁶

⁴ Draft Environmental Statement, February 1975, at pp. 8-10; footnotes omitted.

⁵ This requirement has been characterized by a Court of Appeals as "clearly reasonable." *BPI v. Atomic Energy Commission*, 502 F.2d 424, 429 (D.C. Cir. 1974).

⁶ While I express no view as to whether the Commission's rules would permit the grant of OHILI's petition as a matter of discretion, even though OHILI has not established its right to intervene, I fully agree with the Chairman's conclusion that the record presents us with no showing of the unusual circumstances which might justify our taking such an extraordinary step.

OPINION OF MR. SALZMAN:

The Chairman's opinion points out, cogently and correctly in my judgment, that (1) the Oil Heat Institute of Long Island dawdled inexcusably for months before petitioning to intervene; (2) the Institute can (and is) adequately protecting its interests by participation in an ongoing state proceeding parallel to this one; (3) little likelihood has been shown that the Institute will contribute significantly to the proceeding at hand; and (4) virtually all its interests are effectively being represented by other parties who have already intervened in the proceeding. Given the foregoing circumstances, I must agree with the Chairman that the fact that the Institute's untimely intervention will not necessarily delay the commencement of formal trial proceedings is insufficient to justify its having ignored the mandates of the Commission's Rules of Practice. Basically, these reasons persuade me that the Licensing Board properly denied the Institute's petition to intervene. 10 C.F.R. §2.714; *Nuclear Fuel Services, Inc.* (West Valley Reprocessing Plant), CLI-75-4, NRCI-75/4R, 273 (1975); *Virginia Electric and Power Company* (North Anna Station, Units 1 and 2), ALAB-289, NRCI-75/9 395 (September 18, 1975). I would therefore be inclined to join in the Chairman's opinion were it not for that portion which discusses the Institute's "standing" to intervene in the case. With all deference to my colleague, the views there expressed seem to be sufficiently far off the mark to merit at least brief discussion.

In legal parlance, to inquire into a party's "standing" is to question whether that litigant is entitled to have a tribunal decide the merits of a dispute or issues within that dispute. *Warth v. Seldin*, 422 U.S. ____, 45 L.Ed.2d 343, 354 (1975). At least in theory, a party's standing does not depend on the merits of its case. In other words, whether a party is correct about the issue it wants litigated does not bear on its right to be heard. *Data Processing Service v. Camp*, 397 U.S. 150, 153 (1970). The federal court test for standing is two-pronged. A litigant who would invoke that jurisdiction must demonstrate, first, that one of its own interests has in fact been injured by the action it seeks to challenge and, second, that the interest injured is "arguably within the zone of interests to be protected or regulated" by some law or constitutional provision. *Ibid.*¹

It is this test which the Chairman's opinion discusses at length with considerable, if painfully acquired, erudition.² My problem with that discourse

¹ See also *Sierra Club v. Morton*, 405 U.S. 727, 731-33 (1972), and *United States v. SCRAP*, 412 U.S. 669, 686 (1973).

² See *Data Processing Service v. Camp*, *supra*; *Investment Company Institute v. Camp*, 401 U.S. 617 (1971); *Arnold Tours, Inc. v. Camp*, 428 F.2d 359 (1st Cir.), *reversed per curiam*, 400 U.S. 45 (1970).

involves its application to the issue before us. The Supreme Court has told us that "standing" in the federal courts turns on questions of constitutional limits on their jurisdiction as well as on judicial and congressional restraints placed on its exercise. *Warth v. Seldin*, *supra*. The answers to those questions, however, do not perforce control whether a party should be permitted to intervene before one of our licensing boards. To be sure, if a party is entitled as a matter of right to invoke the jurisdiction of the federal courts to review a Commission decision because it meets the tests for standing in those tribunals, then of course it has standing to appear before the licensing boards; obviously it would be senseless to suggest otherwise. But we are not constrained by Article III considerations in deciding who shall be heard. Nor need our determinations of such matters be measured by the allegedly overcrowded state of the federal judicial docket. Federal administrative agencies may, for reasons sufficient to their own missions as they see them, elect to hear parties who have no right (*i.e.*, "standing") to seek judicial review of the ultimate disposition of the cause. This is neither a new concept nor one erected for the special benefit of environmental or ecological groups. *Alexander Sprunt & Son v. United States*, 281 U.S. 249 (1930) (Brandeis, J.); *Freeport Sulphur Co. v. United States*, 199 F.Supp. 913 (S.D.N.Y. 1961). As the Chairman's opinion itself notes, a court of appeals has recently observed that there "is no legal principle which prevents an administrative agency a broader range of appeals than are permitted in the federal courts." *Hi-Ridge Lumber Co. v. United States*, 443 F.2d 452, 456 (9th Cir. 1971).³ Indeed, in *Cities of Statesville v. AEC*, 441 F.2d 962, 976-77 (1969), the District of Columbia Circuit told the Commission that it is entitled to be "accorded broad discretion" in determining the extent of public participation allowable in its proceedings beyond that of parties who have an absolute right to intervene.⁴

Whether the Institute has "standing" to intervene in this proceeding turns then on the answers to questions which, though similar, are not precisely those pursued by the Chairman. The first is whether it would be entitled to seek court review of the Commission's decision, *i.e.*, does it have "judicial" standing. If it does, then it also is a proper intervenor in our proceedings. On this point I agree with the Chairman's reasoning—and hence must disagree with Dr. Buck—that the Institute has sufficiently alleged that it may be injured in fact if the Jamesport nuclear facility is ultimately licensed and operated. It is the other prong of the judicial standing test which I think the Chairman has misconceived.

³But compare *National Welfare Rights Organization v. Finch*, 429 F.2d 725, 732-33 (D.C. Cir. 1970).

⁴*Statesville* was an appeal from the Commission's decision in *Vermont Yankee Nuclear Power Corporation* (Vermont Yankee Nuclear Power Station), 4 AEC 75 (1968). The AEC there held only that the cities had no right to intervene to press certain antitrust contentions under the then-existing state of the law. Given the court's comment on the Commission's discretion to hear additional parties, I think the staff's reliance on *Vermont Yankee* and its Commission progeny as authority for the proposition that the Commission still applies judicial tests for standing to its own administrative proceedings is misplaced.

He is persuaded that the National Environmental Policy Act does not encompass within its "zone of interests" the right to be free from environmentally harmful competition.⁵ See p. 643, *supra*. There are, however, judicial decisions which suggest otherwise. See, e.g., *National Helium Corporation v. Morton*, 455 F.2d 650 (10th Cir. 1971), and *Chemical Leaman Tank Lines v. United States*, 368 F.Supp. 295 (D. Del. 1973) (three-judge court). Whatever may be said about the applicability of the *National Helium* holding,⁶ *Chemical Leaman* cannot be easily cast aside. The plaintiffs there were waste carters who challenged an Interstate Commerce Commission award to competing truck lines of authority to carry waste products. Plaintiffs' only injury was to their pocketbooks. Yet they were held to have standing in court to invoke the protection of NEPA. In my judgment, the staff is correct in its analysis that their standing under NEPA cannot fairly be distinguished from that of the Institute in this case.⁷

True, as the Chairman says, in *Clinton Community Hospital Corp. v. Southern Maryland Medical Center*,⁸ the Fourth Circuit reached a contrary conclusion, apparently holding that injured competitor status alone is insufficient to bring a party within NEPA's zone of interests. But that *per curiam* decision is devoid of reasons for reaching that result. It seems to rest more firmly on its alternate holding, which is simply that the plaintiff Clinton Hospital was reading NEPA backwards; it was arguing about the "impact of the *existing* environment on the *proposed* hospital" instead of *vice versa*. See 510 F.2d at 1038 (emphasis in original).⁹

⁵ In light of the Atomic Energy Act's express declaration of purpose to "encourage widespread participation in the development and utilization of atomic energy for peaceful purposes to the maximum extent consistent . . . with the health and safety of the public;" 42 U.S.C. §2013, the Institute has no valid claim under the Act to be free from nuclear competition.

⁶ The Chairman is particularly familiar with this litigation.

⁷ Staff Memorandum of September 10, 1975, p. 3.

⁸ 510 F.2d 1037 (4th Cir.), certiorari denied, ___ U.S. ___, 45 L.Ed. 2d 700 (1975) (one Justice dissenting).

⁹ In *Cumington Preservation Committee v. F.A.A.*, *supra*, cited by the Chairman (p. 19) as approving the Fourth Circuit's *Clinton Community Hospital* decision, the plaintiffs' complaint had alleged injury solely to their economic interests. The district judge went on to rule that:

The court has no doubt that the plaintiff organization, if allowed to amend its complaint, could successfully allege, for purposes of standing, environmental injuries to its members. The court would normally allow such an amendment. Yet this would further delay the final disposition of the case. Delay would mean additional construction costs and penalties to the FAA. It would also mean a further postponement of a badly needed project. Therefore, to clear up this matter as expeditiously and efficiently as possible, the court will proceed to decide the merits of the case.

37 Ad. L. 2d at 131. In other words, the court was willing to allow the environmental tail to wag the economic cow. (Plaintiffs had alleged that a radar facility at a proposed site would endanger the operation of their dairy farm.) This strikes me as no more than "lip service" to the theory that NEPA protects environmental but not economic interests.

In light of the conflicting decisions, the Chairman is certainly correct that the perimeter of the NEPA "zone of interests" has not been definitively surveyed. Indeed, it is doubtful whether a line so fine can ever be discerned not only for NEPA, but for any enactment.¹⁰ No statute comes from the legislature with a map of its "zone of interests" neatly appended. The best perusal of legislative history, even when conducted by knowledgeable searchers, can prove to be a totally unreliable guide to that boundary. *E.g.*, *Arnold Tours, Inc. v. Camp*, 408 F.2d 1147 (1st Cir. 1969), *vacated and remanded*, 397 U.S. 315, *on remand*, 428 F.2d 359 (1st Cir.), *reversed per curiam*, 400 U.S. 475 (1970). See *Barlow v. Collins*, 397 U.S. 159, 176-78 (1970) (Brennan, J., dissenting). I therefore agree with the Chairman that, in this cloudy atmosphere, any administrative agency would be unwise to hold in advance of a controlling judicial determination that injury to a party's competitive economic interests is not sufficient to confer standing on it to raise NEPA-related issues.

Logically the discussion could end here. But my senior colleagues' opinions imply that in due course the courts will find "injured competitor" status to lie outside the NEPA interest zone. I take a moment therefore to express, briefly, my *dubitante*. It is always hard and frequently fruitless to predict what the courts will hold that Congress had in mind about issues the legislature did not discuss. But the past, it is said, is prologue (at least sometimes). And the history of judicial decisions (under other enactments, to be sure) is replete with examples of courts discerning congressional intent, not always visible to others, to give competitors "standing" to intervene and to challenge as violative of statute government action touching their purse. See, for example, *F.C.C. v. Sanders Bros. Radio Station*, 309 U.S. 470 (1940); *American Communication Ass'n v. United States*, 298 F.2d 648 (2nd Cir. 1962); *National Coal Ass'n v. F.P.C.*, 191 F.2d 462 (D.C. Cir. 1951); *Associated Industries v. Ickes*, 134 F.2d 694 (2nd Cir. 1943).¹¹ This is by no means surprising. The common law has always zealously regarded competition as inherently desirable,¹² and traditionally in American (and English) practice the potential of financial harm to the litigants has been the spur thought most effective to insure the development of the fullest record on which to base a decision. It is but relatively recently that noneconomic forms of injury have come to be recognized, in some cases, as equally efficacious.¹³

¹⁰ See Scott, *Standing, Participation and Who Pays*, 26 Ad. L. Rev. 423-80 (1974).

¹¹ Vacated as moot, 320 U.S. 707.

¹² *Associated Industries v. Ickes*, *supra*, 134 F.2d at 705. See also section 1 of the Atomic Energy Act, 42 U.S.C. §2011b.

¹³ See *Sierra Club v. Morton*, *supra*, 405 U.S. at 735-38.

Under NEPA, Congress has been held to have conferred standing on students to challenge an Interstate Commerce Commission decision relating to rate increases for the railroad carriage of recyclable goods. *United States v. SCRAP*, 412 U.S. 669 (1973). The rationale underlying the decision was the Court's acceptance of the plaintiff's argument that the increase would discourage recycling and thereby result in increased accumulations of refuse in local parks allegedly frequented by the plaintiffs. Accepting as we must the correctness of that decision, it seems at least equally reasonable, if not more so, to infer that Congress intended NEPA to confer on financially affected businessmen the right—at least where federal permission must first be obtained—to be free from environmentally irresponsible competition, to accord them standing to assert that right in the courts and, by so doing, to obtain their private assistance in effectuating the public goals of NEPA. Such a conclusion is certainly in the mainstream of American jurisprudence. See *Associated Industries v. Ickes*, *supra*, (per Frank, J.). And, as the Tenth Circuit reminds us, in the environmental area “[n]o group has a monopoly on working for the public good.” *National Helium Ass'n v. Morton*, *supra*, 455 F.2d at 655.

To return to the central theme, my brethren and I agree that it cannot be said for sure whether the Institute would have “standing” in the federal courts under NEPA. For the same reasons it is unclear whether that party would have an absolute right to intervene before this agency, had it made timely application to do so. The question we must face, then, is the one posed by the NRC staff: whether the Institute could have been allowed to intervene “in the sound exercise of administrative discretion.”¹⁴ I agree with the staff that the answer should be yes. I am unpersuaded that the Commission intended its intervention regulations (10 C.F.R. §2.714) to be construed in the manner suggested by my colleagues. To accept their reading would bar any intervenor who would not also have an absolute right to be heard in court from participation in NRC adjudicatory hearings. The unfortunate (and in my view unnecessary) consequence of this reading of the rules can perhaps best be illustrated in the context of safety rather than environmental considerations. Suppose, for example, the American Nuclear Society wished to participate in a licensing proceeding because it believed a proposed reactor design unsafe and was prepared to support its view with probative evidence. The Society, *qua* Society, would have no standing in court to present that position. “A mere ‘interest in a problem,’ no matter how longstanding the problem and no matter how qualified the organization is in evaluating the problem, is not sufficient by itself to [confer standing in the federal courts].” *Sierra Club v. Morton*, *supra*, 405 U.S. at 739. As my colleagues interpret the Commission rules, the Society would have no “standing” before us either. It seems to me that such a result is not compelled by the Rules of Practice and I would not adopt it.

¹⁴ Staff Response of August 29, 1975, pp. 17-18.

To reiterate, my point is that the stiff requirements for judicial standing were neither conceived nor designed to aid regulatory agencies accomplish their assigned tasks. My colleagues do not suggest otherwise. In my view, their opinions offer no satisfactory reason for following those rigid judicial standards willy-nilly. NRC procedures need to be flexible. This will not be achieved by attributing to the Commission the intention of importing standing tests akin "to the law of the Medes and Persians, which altereth not."

This Commission's obligations to the environment under NEPA are no less extensive than its commitment to safety under the Atomic Energy Act. *Detroit Edison Co.* (Greenwood Energy Center, Units 2 and 3), ALAB-249, RAI-74-12, 936, 943 (1974). It follows, at least in my view, that the Commission does not intend its Rules of Practice to keep out individuals, organizations or firms which might be in a position to make some genuinely significant contribution to a licensing proceeding. If the Institute had demonstrated that it would make such a contribution, then, in the discretion of the Board below, it might have been made a party to the proceeding even though it lacked "judicial" standing.¹⁵ It is not inconceivable that an organization of retail heating oil dealers may have some unique knowledge of aspects of the "need for power" in their service area, an issue in this proceeding. But the Institute was very late in seeking to intervene. In these circumstances we must place in the balance those factors which Rule 2.714 directs be considered and weigh them against the Institute's possible contribution to the hearing. For the reasons elaborated in the Chairman's opinion (pp. 648-649, *supra*), the Institute has not demonstrated that its potential contribution to the record would be significant. The minimal benefits its presence would add are outweighed by the need to preserve the integrity of the hearing process by discouraging the unjustifiably late filing of intervention petitions. I therefore agree that the Licensing Board properly denied the Institute's petition to intervene and, accordingly, that its decision should be affirmed.

¹⁵ Without necessarily intimating agreement with everything contained in its opinion, it seems to me that the Licensing Board's thoughtful exploration of whether a proponent of commercial geothermal power should be allowed to intervene in *Washington Public Power Supply System* (Hanford Units Nos. 1 and 4), LBP-75-11, NRCI-75/3, 252 (1975), is clearly preferable to the mechanical application by another Board of the judicial standing rules to the same party seeking to intervene in another case. See, *Washington Public Power Supply System* (Nuclear Projects Nos. 3 and 5), LBP-75-2, NRCI-75/1, 21 (1975).

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Alan S. Rosenthal, Chairman
Dr. John H. Buck, Member
Michael C. Farrar, Member

In the Matter of
**PUBLIC SERVICE COMPANY OF NEW
HAMPSHIRE, ET AL.**
(Seabrook Station, Units 1 and 2)

Docket Nos. 50-443
50-444

Upon referral by Licensing Board of its denial of a motion to defer consideration of certain environmental issues relating to the facility's cooling water system pending final determination by the Environmental Protection Agency of certain water-quality-related questions, Appeal Board rules that (1) in the absence of any limitation in a relevant statute or regulation, the Licensing Board correctly concluded that it is not legally precluded from now *taking evidence* on the cooling water system issues which are within its domain; and (2) the question whether the Licensing Board should do so is a scheduling question which is governed by the factors spelled out in *Douglas Point* (ALAB-277) and is not normally one warranting Appeal Board intervention, notwithstanding the circumstance that various licensing board members reached disparate conclusions thereon.

Referral dismissed.

APPEAL BOARD: SCOPE OF REVIEW

A scheduling controversy involving nothing more than a judgment regarding where the balance of convenience might lie is not normally the kind of question which warrants Appeal Board interlocutory consideration.

MEMORANDUM AND ORDER

October 16, 1975

The evidentiary hearings have been in progress for several months in this contested construction permit proceeding involving the two units of the proposed Seabrook Station. Now before us is the Licensing Board's October 3, 1975 order¹ in which it has referred for our consideration its denial, by a divided vote, of a motion of one of the parties to defer consideration of certain environmental issues in the proceeding relating to the facility's cooling water system. See 10 CFR 2.730(f). We decline to accept the referral.

The circumstances underlying the dispute respecting the scheduling of the cooling water system issues, as well as the views of both the majority and the dissenting member of the Licensing Board, are adequately set forth in the October 3 order and need not be rehearsed here. It suffices for present purposes to note that the disagreement stems essentially from the fact that (1) by virtue of the provisions of the Federal Water Pollution Control Act, as amended, 33 U. S. C. (Supp. II) 1251 *et seq.*, it falls to the Environmental Protection Agency (EPA) to decide certain water-quality-related questions such as whether the Seabrook facility will be required to employ cooling towers and (2) that agency still has not made a final determination on those questions. Although joining in the majority's holding that there is no legal barrier to Licensing Board consideration at this time of those cooling water system issues which will be for that Board to resolve, the dissenting member would defer, as a matter of discretion, such consideration until the EPA determination has been made.

In the absence of any limitation in a relevant statute or regulation, we are fully satisfied that the Board below reached the right result in concluding that it is not legally precluded from now *taking evidence* on the cooling water system issues which are within its domain.² *Potomac Electric Power Co.* (Douglas Point Nuclear Generating Station, Units 1 and 2), ALAB-277, NRCI-75/6 539, 544-47 (June 18, 1975). See also *Wisconsin Electric Power Co.* (Koshkonong Nuclear Plant, Units 1 and 2), CLI-74-45, RAI-74-12 928, 930 (December 17, 1974); *Southern California Edison Co.* (San Onofre Nuclear Generating Station, Units 2 and 3), ALAB-171, 7 AEC 37, 39 (1974). The only serious question is whether, all things considered, it should do so. This is scarcely the kind of question which might warrant our intervention. In *Douglas Point*, ALAB-277, *supra*, we spelled

¹ LBP-75-61, NRCI-75/10 693.

² Most particularly, the FWPCA does not, either expressly or by necessary implication, impose any such limitation. This is so irrespective of whether, as the Licensing Board has held, the Section 401 certification issued by the State of New Hampshire is currently effective. We need not and do not pass upon that matter.

out the principal factors which a licensing board should take into account in determining whether the hearing of a particular issue should be deferred. NRCI-75/6 at 547. We also there made it clear that it is generally to be left to that board to apply those factors to the specific circumstances of the case before it. *Id.* at 547-48. Although not entirely excluding the possibility that a truly exceptional situation might arise in which our views justifiably could be solicited, we see nothing in this case to warrant injecting ourselves into a scheduling controversy involving nothing more than a judgment regarding where the balance of convenience might lie. The fact that the members of the Licensing Board struck disparate balances does not, standing alone, alter matters.

The referral therefore must be, and hereby is, *dismissed*. *Commonwealth Edison Co. (Zion Station, Units 1 and 2), ALAB-116, 6 AEC 258 (1973)*.³

It is so ORDERED.

FOR THE ATOMIC SAFETY AND
LICENSING APPEAL BOARD

Margaret E. DuFlo
Secretary to the Appeal Board

³After the time for the filing of responses has expired, we will decide in a separate order the petition of the New England Coalition on Nuclear Pollution for an order directing certification of certain other scheduling questions which have been ruled upon by the Licensing Board.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ALAB-294

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Richard S. Salzman, Chairman
Michael C. Farrar, Member
Dr. W. Reed Johnson, Member

In the Matter of

Docket Nos. 50-440
50-441

CLEVELAND ELECTRIC
ILLUMINATING
COMPANY, *et al.*

(Perry Nuclear Power Plant,
Units 1 and 2)

Exceptions to Licensing Board's Supplemental Initial Decision on Site Suitability and Environmental Matters (LBP-75-53) were filed by a person not a party to the Board proceedings; on applicant's motion to dismiss the exceptions the Appeal Board holds that such an individual has no standing to appeal.

Appeal Board also requests the applicant and the NRC staff to respond to certain questions concerning the effect on the existing limited work authorization (LWA) and on the issuance of a further LWA of two recently unearthed anomalous structures at the facility site.

Motion granted; applicant and staff directed to respond to questions; review deferred.

RULES OF PRACTICE: APPELLATE PROCEDURE

In cases before the NRC, as in the federal courts, it is the general rule that an individual must have sought to intervene and participate as a party in the trial proceedings in order to be allowed to appeal from the resulting decision.

LWA: REQUIRED DETERMINATIONS

A Licensing Board order permitting the authorization of an LWA would appear to violate Commission regulations if it permitted LWA activities to be performed without making the requisite environmental, safety and site suitability determinations.

MEMORANDUM AND ORDER

October 17, 1975

I

On September 15, 1975, Mr. J. Paul Cotton filed timely exceptions to the Licensing Board's Supplemental Partial Initial Decision on Site Suitability and Environmental Matters rendered on September 9, 1975.¹ Thereafter the applicant, joined by the NRC staff, moved to dismiss those exceptions on the ground that Mr. Cotton was not a party to the proceeding, having made only a limited appearance in the hearings below. Mr. Cotton, responding *pro se* to that motion, did not contest the correctness of that characterization of his status.

In cases before this agency, as in the federal courts, it is the general rule that an individual must have sought to intervene and participate as a party in the trial proceedings in order to be allowed to appeal from the resulting decision.² We therefore must grant the motion to dismiss. Of course when we undertake our customary review of the entire record the points suggested by Mr. Cotton's "exceptions" will not be overlooked.³

II

1. Construction permits to build Units 1 and 2 of the Perry Nuclear Power Plant have not yet been authorized. In the proceeding which led to the Licensing Board's September 9 Supplemental Initial Decision the Board was called upon to decide (among other things) two matters related to limited work authorizations at the Perry site: First, whether a limited work authorization previously issued⁴ under 10 C.F.R. §50.10(e) (1) ("LWA-1") should be allowed to continue in effect and, second, whether an additional LWA under 10 C.F.R. §50.10(e) (3) ("LWA-2") should now be allowed. LWA-1 authorized a number of site preparation activities including "excavation for facility structures."⁵ LWA-2 contemplates the "preparation of excavations for foundation construction," the

¹ LBP-75-53, NRCI-75/9, 478 (1975).

² *Tennessee Valley Authority* (Bellefonte Nuclear Plant, Units 1 and 2), ALAB-231, RAI-74-10, 654 (1974); *Easton Utilities Commission v. A.E.C.*, 424 F.2d 847, 850-52 (D.C. Cir. 1970) (*in banc*).

³ See, e.g., *Public Service Electric & Gas Company* (Hope Creek Generating Station, Units 1 and 2), ALAB-251, RAI-74-12, 993, 994 (1974).

⁴ See LBP-74-69, RAI-74-9, 538 (1974), and LBP-74-76, RAI-74-10, 701 (1974).

⁵ See Appendix A to LBP-75-53, *supra* n. 1.

“installation of underdrain system manholes, including base mats and pump chambers,” and the construction of numerous “Safety Class structures.”⁶

On August 28, 1975, after the evidentiary hearings below had closed, the staff advised the Licensing Board that the Applicant’s excavations under LWA-1 had revealed “two anomalous structures in the underlying bedrock.”⁷ These were described as:

- (1) a thrust fault in the shale that extends for an undetermined distance found under the proposed location for the reactor building, and (2)
- “folding” in the Chagrin shale under the proposed location of the Unit 2 reactor building.⁸

Staff counsel informed the Board that the “NRC staff believes that these features may affect both the foundation design and the design of the dewatering system, although, at the present time, there is not sufficient information available to determine the impact, if any, of these features.”⁹

Apparently no evidence bearing on the “thrust fault” or the “folding” in the shale under the reactor sites was presented to the Board. The staff, however, undertook to explore the matters and represented to the Board that, even were it authorized to do so, it “would not issue the LWA-2 until it had completed its investigation of the anomalies.”¹⁰

Approximately two weeks later the Board issued its September 9 decision. In paragraph 37 the Board found that there are “no unresolved environmental concerns or safety issues associated with the proposed pressure relief underdrain system;” . . . “no hydrological factors that would preclude a finding of site suitability;” . . . “no reason for further suspension of the work on the underdrain system;” and “no unresolved environmental or safety issues associated with the underdrain system that affect the requested LWA-2 activities, as modified, and which would constitute good cause for withholding authorization of these activities.” However, it qualified those findings with the caveat that

. . . in view of the fact that certain anomalous features have been found in the bedrock underlying the site of the proposed PNPP facility (see paragraph 16, supra), the Board considers that the findings of this paragraph could possibly be rendered invalid. Hence, the Board will require a showing by the Applicants that the cited anomalies do not constitute a compromise to these findings. (Ibid.) (Emphasis added).

The Board then entered an order based on those findings which reflected its concern that the recently uncovered “bedrock anomalies might invalidate [its]

⁶ See Appendix B to LBP-75-53, *supra* n. 1.

⁷ LBP-75-53, paragraph 16.

⁸ *Ibid.*

⁹ *Ibid.*

¹⁰ LBP-75-53, paragraph 19.

prior determination of the suitability of the proposed PNPP site.”¹¹ As we read the Board’s order, it (1) authorizes the Director of Nuclear Reactor Regulation to permit the applicants to undertake further site excavations *only for the limited purpose* of investigating the extent and consequences of the “bedrock anomalies”; (2) contemplates a further evidentiary hearing before the Board on the results of investigations into these matters; and (3) while not formally ordering the Director to suspend LWA-1, appears to preclude any further work under that authorization until “subsequent” to a “satisfactory resolution” by the Board of the site suitability problems raised by the belated discovery of the “thrust fault” and “folding” under the proposed reactor site. The Board’s order also authorizes the Director to issue LWA-2 but to permit work thereunder only to the extent “consistent with the terms of this Decision.”¹²

2. Commission regulations preclude the approval of limited work authorizations before a licensing board has made a final determination that the requirements of the National Environmental Policy Act have been satisfied,¹³ that the proposed site is a suitable location for a nuclear power reactor under the Commission’s regulations¹⁴ and, in the case of LWA-2, “that there are no unresolved safety issues relating to the . . . activities that may be authorized . . . that would constitute good cause for withholding authorization [of LWA-2].”¹⁵

At least on first reading, the Board’s order appears to violate those regulations by authorizing activities under limited work authorizations in advance of making the requisite environmental, safety and site suitability determinations.¹⁶ This has been a complicated case, however, with a number of partial initial decisions on site suitability. Our reading of the Board’s order may therefore misconstrue its intent. Accordingly, we direct the applicant and the staff to advise us whether we have correctly interpreted the decision and order of September 9, and, if so, how they conform to the Commission regulations cited. If in the judgment of those parties we have misread that decision and order, then we wish to be advised of the interpretation they place upon it and how their interpretation harmonizes with the Commission’s regulations governing limited work authorizations.

3. The matters of our concern go to the validity under Commission regulations of the authorized LWAs. For this reason we direct that the responses called for from the applicant and the staff be *in our hands* no later than noon

¹¹ LBP-75-53, page 496; see, also, *Id.* at 495.

¹² *Ibid.*

¹³ 10 C.F.R. § 50.10(e) (2) (i).

¹⁴ 10 C.F.R. § 50.10(e) (2) (ii).

¹⁵ 10 C.F.R. § 50.10(e) (3) (ii). In the case before us, this regulation calls for consideration of the reactor site criteria, 10 C.F.R. Part 100 and, in particular, Appendix A thereto, “Seismic and Geologic Siting Criteria.”

¹⁶ Compare Paras. 96 and 100 of LBP-74-69, *supra*, RAI-74-9 at 578.

Thursday, October 30, 1975. For the same reason, requests for additional time to respond will not be looked on with favor. The other parties to the proceeding below may, if they so choose, also respond to the questions we have posed to the applicant and the staff. Any such responses similarly should be in our hands no later than October 30th.

Exceptions of Mr. Paul J. Cotton *dismissed*; the applicant and staff shall respond to questions posed in Part II as there directed; review of other uncontested issues *deferred* until further order of this Board.

It is so ORDERED.

FOR THE ATOMIC SAFETY AND
LICENSING APPEAL BOARD

Margaret E. DuFlo
Secretary to the Appeal Board

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ALAB-295

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Alan S. Rosenthal, Chairman
Dr. John H. Buck, Member
Michael.C. Farrar, Member

In the Matter of
**PUBLIC SERVICE COMPANY OF
NEW HAMPSHIRE, et al.**
(Seabrook Station, Units 1 and 2)

Docket Nos. 50-443
50-444

Messrs. John A. Ritsher and Thomas G. Dignan, Jr. and Ms. Eleanor Acheson, Boston, Massachusetts, for the applicants, Public Service Company of New Hampshire, *et al.*

Mr. Anthony Z. Roisman, Washington, D. C. for the intervenor, New England Coalition on Nuclear Pollution.

Mr. Frederic S. Gray for the NRC staff.

Upon petition by intervenor for the Appeal Board to invoke 10 C.F.R. 2.718(i) for the purpose of directing the Licensing Board to certify two questions concerning the time at which evidence on the need for power to be generated by the facility should be taken, Appeal Board concludes that such certification is not warranted.

Petition denied.

RULES OF PRACTICE: APPELLATE REVIEW

An appeal board is disinclined to become involved at an interlocutory stage in a scheduling controversy arising before a licensing board which does not bring to the fore any limitations imposed by law upon the licensing board's jurisdiction or authority, and which does not involve any "truly exceptional situation."

RULES OF PRACTICE: APPELLATE REVIEW

Although it is generally to be left to a licensing board to determine whether the hearing of a particular issue should be deferred, the Appeal Board will entertain, upon appeal of a licensing board's initial decision, a claim that a particular scheduling determination of the board worked a denial of procedural due process. See *San Onofre*, ALAB-212, 7 AEC 986.

MEMORANDUM AND ORDER

October 28, 1975

One of the intervenors, New England Coalition on Nuclear Pollution (NECNP), has petitioned us to invoke 10 CFR 2.718(i) for the purpose of directing the Licensing Board to certify two questions in connection with this construction permit proceeding involving Units 1 and 2 of the Seabrook facility. The procedure followed by NECNP is a permissible one. ALAB-271, NRCI-75/5 478, 482-83 (May 21, 1975). Finding no warrant for certification of either question, however, we deny the petition.

Both questions concern the time at which the Licensing Board should take evidence on the need for the electric power which would be generated by the facility. The first would have us decide whether, if the Licensing Board were to defer its consideration of environmental issues relating to the facility's cooling water system pending an Environmental Protection Agency determination of certain water-quality-related matters now before that agency, the exploration of the need for power issue should be likewise deferred. The second assumes that the "existence of outstanding and unresolved safety problems will postpone the conclusion of the evidentiary hearings" and asks whether, in such event, the need for power issue should also be postponed. By raising these questions, NECNP's objective is to have the need for power issue considered "at or near" the end of the evidentiary hearings.

The first question need not detain us long. Subsequent to the filing of the petition for certification, we issued ALAB-293, NRCI-75/10 660 (October 16, 1975), in which we declined to accept the Licensing Board's referral of its ruling (by a divided vote) that it would *not* await EPA action before proceeding to hear the cooling water system issues within the domain of that Board. Thus, the contingency underlying the first question has not materialized.

What was said in ALAB-293 also appears to be pertinent to the matter of whether a certification of the second question should be directed. As we there endeavored to make plain, we are disinclined to become involved at an interlocutory stage in scheduling controversies which may have arisen during the course of a licensing board proceeding—at least where (as is equally true here) the controversy does not bring to the fore any limitations imposed by law upon

the licensing board's jurisdiction or authority. We pointed out that, in *Douglas Point*,¹ we recently had "spelled out the principal factors which a licensing board should take into account in determining whether the hearing of a particular issue should be deferred * * * and make it clear that it is generally to be left to that board to apply those factors to the specific circumstances of the case before it". ALAB-293, *supra*, NRCI-75/10 at 661-662.²

We adhere to the views expressed in ALAB-293. And, there being nothing in the NECNP petition to suggest the existence of the "truly exceptional situation" which might justify a departure from our general practice of forbearance,³ we therefore follow the same course here. In doing so, we need add only that NECNP remains free to attempt to persuade the Licensing Board that, for the reasons advanced in its petition to us or on other grounds, the Board should reconsider the scheduling of the need for power issue.⁴

Petition for certification *denied*.
It is so ORDERED.

FOR THE ATOMIC SAFETY AND
LICENSING APPEAL BOARD

Margaret E. DuFlo
Secretary to the Appeal Board

¹ *Potomac Electric Power Co.* (Douglas Point Nuclear Generating Station, Units 1 and 2), ALAB-277, NRCI-75/6 539, 547-48 (June 18, 1975).

² On an appeal from an initial decision of a licensing board, we will, of course, entertain a claim that a particular scheduling determination of the board worked a denial of procedural due process. See *Southern California Edison Co.* (San Onofre Nuclear Generating Station, Units 2 and 3), ALAB-212, 7 AEC 986 (1974).

³ See ALAB-293, NRCI-75/10 at 662.

⁴ We have already made this point in an unpublished order entered on October 21, 1975. Although there denying NECNP's motion for a stay of the evidentiary hearing of the need for power issue pending our disposition of the certification petition, we stressed that the denial was "without prejudice to the right of NECNP to place the considerations set forth [in the motion] before the Licensing Board in an endeavor to induce that Board to defer hearing [that] issue." In that connection, we noted our uncertainty respecting whether one of those considerations—the alleged need of NECNP for additional time to prepare for trial—previously had been brought to the attention of the Licensing Board or ruled upon by that Board. Indeed, our perusal of all of the relevant portions of the record below leaves us in some doubt as to the extent to which the Licensing Board was called upon to focus at all upon the second question sought to be certified. Our disposition of the NECNP petition has not, however, been influenced by that doubt.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ALAB-296

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Michael C. Farrar, Chairman
Dr. John H. Buck, Member
Richard S. Salzman, Member

In the Matter of

Docket No. 50-332

ALLIED-GENERAL NUCLEAR
SERVICES, ET AL.

(Barnwell Nuclear Fuel Plant
Separations Facility)

Mr. Townsend M. Belser, Jr., Columbia, South Carolina, for the intervenors, Environmentalists, Inc., *et al.*

Mr. J. Gustave Speth, Washington, D. C., presented oral argument on behalf of the Natural Resources Defense Council as *amicus curiae* in support of the intervenors.

Mr. Bennett Boskey, Washington, D. C., for the applicants, Allied-General Nuclear Services, *et al.*

Mr. Randolph Mahan, Assistant Attorney General, Columbia, South Carolina, filed a brief for the State of South Carolina.

Mr. Joseph Gallo (with whom Mr. William Massar was on the brief) for the Nuclear Regulatory Commission staff.

Because of an assertedly deficient final environmental statement and the incomplete nature of the Commission's generic environmental study of the use of mixed oxide fuel (GESMO), intervenors moved to stay a Licensing Board hearing on whether (1) applicants' permit to construct a fuel separation facility should be modified or suspended and (2) a license to operate that facility should be granted. In denying relief, the Appeal Board concludes that: (1) hearings on all issues need not be deferred in these circumstances; (2) the Licensing Board is in the best position to determine which issues need to be deferred; (3) generally,

the considerations outlined in *Douglas Point* (ALAB-277) govern such matters; and (4) the Licensing Board correctly decided to proceed with hearings on certain issues.

Motion denied.

RULES OF PRACTICE: STAY OF PROCEEDINGS

The same four factors applied in the federal courts control Appeal Board determinations on whether proceedings before another tribunal should be stayed: (1) Has the movant made a strong showing that it is likely to prevail on the merits of its appeal? (2) Has the movant shown that, without such relief, it will be irreparably injured? (3) Would the issuance of a stay substantially harm other parties interested in the proceeding? (4) Where lies the public interest?

NEPA: FINAL ENVIRONMENTAL STATEMENT

The Commission's regulations recognize that evidence presented at a hearing may cause a licensing board to arrive at conclusions different from those in an FES. In that event, the FES is simply deemed amended *pro tanto*. 10 C.F.R. §51.52(b)(3).

NEPA: FINAL ENVIRONMENTAL STATEMENT

Subsequent to its issuance of a Final Environmental Statement, the NRC staff retains its obligation to bring to the attention of a licensing board any significant new or updated information it acquires, even if such information will require that the FES be amended.

RULES OF PRACTICE: SCHEDULING OF HEARINGS

Neither NEPA nor the Commission's rules automatically precludes the hearing of some environmental issues while the Final Environmental Statement is being redrafted as to other issues.

RULES OF PRACTICE: APPELLATE REVIEW

The Appeal Board ordinarily will not review a licensing board's discretionary rulings on whether the hearing of particular issues should be deferred. See *Seabrook*, ALAB-293 and ALAB-295.

RULES OF PRACTICE: SCHEDULING OF HEARINGS

In determining whether hearings should proceed pending related developments, a licensing board must weigh, for each issue before it, the advantages and disadvantages of proceeding and make a decision accordingly. *Douglas Point*, ALAB-277, NRCI-75/6 539.

RULES OF PRACTICE: STAY OF PROCEEDINGS

Mere litigation expense, even substantial and unrecoupable cost, does not constitute irreparable injury for the purpose of determining whether proceedings before another tribunal should be stayed. *Renegotiation Board v. Bannerkraft Co.*, 415 U.S. 1, 24 (1974).

RULES OF PRACTICE: STAY OF PROCEEDINGS

When environmental hearings on a completed facility are sought to be enjoined, there is no occasion to consider the questions relevant to a stay of construction (*i.e.*, whether the facility's construction will cause immediate injury to the environment or whether, by reason of the increasing commitment of funds or resources, further construction will prejudice the outcome of the ongoing NEPA review), inasmuch as holding the hearings will not cause any such adverse effects.

DECISION

October 30, 1975

In 1970 the Atomic Energy Commission authorized the applicants to construct the Barnwell fuel separation facility. No attempt has ever been initiated to stay the construction of the facility, which is being built in South Carolina next to the federal government's Savannah River Plant; it is now almost finished. For some time, the Licensing Board has been holding hearings to determine whether (1) the Barnwell construction permit should be modified or suspended to afford further protection to the environment and (2) the applicant should be granted a license to operate the plant.

An array of citizens' groups intervened in those hearings to argue that the facility is both unsafe and environmentally unsound. Fifteen days of trial had been concluded when the hearings recessed last autumn. In early August of this year the intervenors asked that we enjoin, not the completion of construction, but the resumption of those hearings. Although their immediate concern was directed to an evidentiary session scheduled to begin on August 26th,¹ they also sought a stay of all subsequent hearings.

¹The August 26 session was being convened to receive evidence on three specific subjects: (1) the state of existing krypton removal system technology; (2) the differences between the Barnwell plant and two other reprocessing plants which, the intervenors claimed, had suffered problems demonstrating that reprocessing was not feasible; and (3) the possibility of accidental releases of radioactive materials from transportation accidents.

A variety of grounds are advanced in support of their claim that neither the issues set to be heard in August nor any others should presently be allowed to go forward. Generally, those grounds are outgrowths of intervenors' assertions that (1) the Final Environmental Statement (FES) for Barnwell is inadequate and (2) the Commission's ongoing generic environmental study of the use of mixed oxide fuel (*i.e.*, plutonium recycling)—usually referred to by its acronym GESMO—and related "safeguards" matters should be completed before the Barnwell licensing proceeding resumes.

Because the August hearing was imminent, we ordered the matter briefed and argued on an accelerated timetable.² On August 22, the day after oral argument, we issued a brief order informing the parties that we would not enjoin the August 26 resumption of the hearings but that when that session was concluded, further evidentiary proceedings should await the issuance of an explanatory opinion. That opinion follows. It explains our reasons for refusing to interfere with the August hearings as well as why we decline to accept the intervenors' invitation to inject ourselves further into the proceeding at this interlocutory stage.

I. BACKGROUND

A. The applicants obtained a construction permit for the Barnwell facility³ on December 18, 1970. In 1971, significant aspects of the Atomic Energy Commission's then-existing policies for implementing the National Environmental Policy Act (NEPA) were invalidated. *Calvert Cliffs' Coordinating Committee v. AEC*, 449 F. 2d 1109 (D.C. Cir.). Its environmental-consciousness-level having thus been raised, the former Commission directed that a NEPA review complying with the Court of Appeals' directives be conducted for those

²On August 11, we ordered that briefs be filed by August 18 and indicated that oral argument, if necessary, would be held shortly thereafter. On August 19, after examining the briefs that had been filed, we directed that oral argument be held on August 21.

³The permit authorized construction only of facilities for receiving spent fuel from reactors, separating that fuel, and recovering its various constituents. Subsequently, the applicants began to construct additional facilities for (1) converting the recovered uranium nitrate into uranium hexafluoride; (2) converting recovered plutonium to plutonium oxide; and (3) solidifying waste. The applicants and staff advised the Board that, as they see it, such facilities are to be licensed under Part 70 and thus may be constructed without first obtaining a permit such as is required for facilities covered by Part 50. (Certain preconstruction clearance appears required. See 10 CFR 70.21(f) and 70.23(a)(7).) Although mandatory hearings are not required under Part 70, the staff has announced that opportunity will be provided for hearing on each of the three additional facilities.

facilities, including Barnwell, which had been licensed for construction after the effective date of NEPA but before *Calvert Cliffs*' was handed down.⁴ Recognizing that a full NEPA review would take some time, the Commission indicated that it would determine whether, on consideration of certain key factors, construction of any of those facilities ought to be suspended pending completion of that review.⁵

On November 30, 1971, the Director of Regulation determined that construction of Barnwell could proceed, at the applicants' risk, pending completion of a full NEPA review. His decision to that effect was promptly published in the *Federal Register*.⁶ It was accompanied by a notice that persons who disagreed with the decision could request a hearing on the matter. No one filed objections to the decision and, consequently, construction of Barnwell was allowed to continue unimpeded.⁷

In due course, the AEC regulatory staff prepared and circulated for comment a draft environmental statement on the Barnwell facility. On the basis of that draft and the comments received, the final Barnwell environmental statement (FES) was issued in January 1974. The Commission had by then given notice that a formal hearing would be held to determine whether the Barnwell construction permit should be suspended or conditioned to protect environmental values (see pp. 673, 674-675, *supra*). Three allied South Carolina citizens groups successfully sought to intervene in that environmental proceeding and six of their contentions were accepted for consideration there. At that point the applicant's request for an operating license also became ripe for hearing. The same intervenors sought and obtained a hearing on the operating license, and their six contentions were accepted for consideration in that proceeding also.⁸ The two proceedings have been consolidated for trial.

Fifteen days of hearings were held in September and October of 1974; the hearings were then recessed. For reasons which need not be discussed here, that

⁴10 C.F.R. (1972 ed.) Part 50, Appendix D (particularly Section B). Provisions comparable to those embodied in Appendix D have since been enacted as a separate Part 51 of Title 10 of the *Code of Federal Regulations*.

⁵*Id.* at Section E.

⁶36 *F.R.* 23333 (December 8, 1971).

⁷No claim has been made here by the intervenors that they were unaware of that decision to permit construction to proceed. We note that their counsel had previously made a limited appearance statement in opposition to the plant at the 1970 construction permit hearing.

⁸The intervenors later attempted to add three new contentions. While the Board accepted one and rejected another, it deferred ruling on the third, which had as its basis the pendency of the Commission's generic study of the environmental effects of recycling, for use as reactor fuel, the plutonium that could be recovered at a reprocessing facility. See pp. 676-677, *infra*.

recess turned out to be a lengthy one. Following a prehearing conference on June 4, 1975, the Board below issued an order on July 9th calling for a resumption of the hearings on August 26th. Its order anticipated that evidence would be taken at that time on the three matters specified above.⁹

B. At the June 4th prehearing conference, questions were brought up involving the relationship of the Commission's study of plutonium recycling to this proceeding.¹⁰ Owing to the significance of that study to the matter now before us, we mention its status briefly here.

The Commission's study was undertaken to consider the implications of the fact that the use of ordinary uranium-based fuel in light-water reactors results in a conversion of some of that uranium to plutonium. It is possible to recover this plutonium, together with the portion of the uranium otherwise unused in the fission process, from the spent fuel at a separation facility. After further processing, the recovered materials can be used to make new fuel consisting of the mixed oxides of uranium and plutonium.

In August 1974, shortly before the Barnwell hearing first commenced, the AEC regulatory staff published a draft of its Generic Environmental Statement on Mixed Oxide Fuel. This draft version of GESMO deals essentially with the appropriateness of recycling plutonium. Pursuant to the dictates of NEPA, the draft GESMO considers several alternatives: (1) disposal of spent fuel without any reprocessing; (2) storage of spent fuel for reprocessing at some future time; (3) reprocessing of spent fuel, followed by the recycling of the recovered uranium but the disposal of the recovered plutonium; (4) reprocessing with recycling of uranium and the storage of plutonium for later use; (5) reprocessing with recycling of both uranium and plutonium; and (6) reprocessing with full recycling (as in #5) but with upgraded precautions taken to safeguard the plutonium.

The principal conclusion in the draft GESMO, as the Nuclear Regulatory Commission later described it, was that "utilization of plutonium resources as recycle fuel in the light water reactors should be approved."¹¹ However, the NRC announced that it was of the "provisional view" that it should not then endorse that conclusion. Rather, the Commission said, "a cost-benefit analysis of alternative safeguards programs should be prepared and set forth in draft and final environmental impact statements before a Commission decision is reached on wide-scale use of mixed oxide fuels in light water nuclear power reactors."¹²

As far as individual licensing proceedings were concerned, the Commission decided to leave it to the presiding boards to determine whether there was a

⁹ See fn. 1, *supra*, p. 673.

¹⁰ See p. 674, *supra*.

¹¹ See 40 *F.R.* 20142 (May 8, 1975).

¹² *Id.* at 20143.

need for "deferral of future licensing actions which are related to the wide-scale use of mixed oxide fuels . . .".¹³ But the Commission indicated, again provisionally, that boards should observe the following guidelines:¹⁴

(1) There should be no additional licenses granted for use of mixed oxide fuel in light water nuclear power reactors except for experimental purposes; and (2) with respect to light water nuclear power reactor fuel cycle activities (activities other than nuclear power reactor construction and operation) which depend for their justification on wide-scale use of mixed oxide fuel in light water nuclear power reactors, there should be no additional licenses granted which would foreclose future safeguards options or result in unnecessary "grandfathering."

At the Barnwell conference held in June (see p. 676, *supra*), the intervenors attempted to persuade the Licensing Board to defer any further hearings pending the outcome of the GESMO proceeding. Rejecting this argument, the Board issued an order in July confirming that the hearing would resume on August 26th on the three matters specified. See fn. 1, *supra*. On August 8th we received the intervenors' motion seeking to block resumption of the hearings.

II. DISCUSSION

The Commission's regulations prohibit interlocutory appeals except in circumstances not present here.¹⁵ Attempting to avoid that rule, intervenors have framed their attack on the propriety of the Licensing Board's determination to proceed with these hearings in the form of a proposed "certified question."¹⁶ It is manifest, however, that what they really seek is a stay of the Licensing Board proceeding. Under established principles which govern such relief we hold that a stay is not justified.¹⁷

Like the courts, we look to four factors in determining whether proceedings before another tribunal should be stayed: (1) has the movant made a strong showing that it is likely to prevail on the merits of its appeal? (2) has the movant

¹³ *Ibid.*

¹⁴ *Ibid.*

¹⁵ 10 C.F.R. § 2.730(f), 2.714a.

¹⁶ See 10 C.F.R. §§ 2.718(i) and 2.785(b); *Public Service Company of New Hampshire* (Seabrook Units 1 and 2), ALAB-271, NRCI-75/5 478, 482-83.

¹⁷ Because the intervenors are thus not entitled to the relief they seek, we pass the question of the interplay between the requirements for certification and for a stay in order not to lengthen this opinion unnecessarily. See generally *Seabrook*, ALAB-271, *supra*, and *Toledo Edison Company* (Davis-Besse Station), ALAB-290, NRCI-75/9 290 (September 19, 1975).

shown that, without such relief, it will be irreparably injured? (3) would the issuance of a stay substantially harm other parties interested in the proceeding? (4) where lies the public interest?¹⁸

We discuss each of these relevant criteria in turn. Before we do so, however, we should point out that there is one circumstance which makes this case unusual: construction of the project under consideration is virtually complete. The situation before us is thus markedly different from those in the line of decisions relied on by intervenors.¹⁹ The underlying projects in those cases were in relatively incipient stages or at least distant from completion. Consequently, the question the courts there faced was whether work on those projects should be enjoined lest it either cause immediate injury to the environment or, by virtue of the increasing commitment of funds and resources, prejudice the outcome of pending NEPA reviews. The decisions reflect understandable reluctance to allow further substantial undertakings in advance of a decision that the projects were environmentally justifiable.

Such an argument in this case comes years too late. Even accepting *arguendo* intervenors' assertions about the inadequacies of the Barnwell environmental review, the cases they cite are inapposite. Because for all practical purposes Barnwell has been built, no occasion remains for us to consider whether its construction threatens to hamper the effectuation of the policies embodied in NEPA. That contention was ripe for consideration in 1971 when, as we have noted, the Commission offered to hold a public hearing if any interested party wished to challenge the determination to allow construction to continue.²⁰ Had the intervenors come forward then with an argument about continued construction prejudicing dispassionate NEPA review, it might have been a viable one. Now that issue is not merely stale but moot. Nothing anyone can say or do will run time backwards to erase the fact that the plant is essentially completed.

The issue we must resolve in this case is quite different: should the Barnwell hearings—which unlike a construction project will not occasion any environmental injury—be stayed because the FES is allegedly deficient and the

¹⁸ See, e.g., *Southern California Edison Company* (San Onofre Units 2 and 3), ALAB-199, 7 AEC 478, 479 (1974); *Virginia Petroleum Jobbers Ass'n. v. Federal Power Commission*, 259 F.2d 921 (D.C. Cir. 1958); *Airport Comm. of Forsythe County v. Civil Aeronautics Board*, 296 F.2d 95, 96 (4th Cir. 1961).

¹⁹ See *Coalition for Safe Nuclear Power v. Atomic Energy Commission*, 463 F.2d 954, 956 (D.C. Cir. 1972); *Scherr v. Volpe*, 466 F.2d 1027, 1034 (7th Cir. 1972); *Environmental Defense Fund v. Tennessee Valley Authority*, 468 F.2d 1164, 1183-84 (6th Cir. 1972); *Sierra Club v. Morton*, 514 F.2d 856, 879 (D.C. Cir. 1975); *People of Enewetak v. Laird*, 353 F. Supp. 811, 821, fn. 15 (D. Hawaii 1972).

²⁰ We, of course, should not and do not intimate any opinion about the correctness of that decision; that matter is not before us.

Commission has not completed the GESMO proceeding? We review the four controlling factors for our answer.

1. *Probability of success on the merits.* In evaluating this factor, we look to the likelihood that intervenors' claim that the hearings are proceeding illegally or improperly will ultimately prove meritorious. That claim is grounded on the charge that the FES for the Barnwell project is deficient in a number of respects. This being so, the intervenors reason, further hearings must await the preparation of an adequate FES. In support of this conclusion they point to certain court decisions and the requirement in NEPA itself that an environmental impact statement be considered at every step of the agency review process. 42 U.S.C. §4332(C). They also rely upon the Commission's own regulations in furtherance of that requirement, which prohibit the staff from taking a position at the hearings until the FES has been published and require the introduction of the FES into evidence at those hearings. 10 C.F.R. §51.52(a), (b).

a. To begin with, the cases intervenors cite (see fn. 19, *supra*) do not support their claims. To be sure, they contain passages which seem to suggest that *any* action which furthers the project should be avoided until a fully adequate environmental review has been completed.²¹ In a sense, we suppose, licensing board hearings on the merits of a project can be said to "further" the project because they are, of course, a necessary step in the attempt to obtain project approval. But we stress again that the context of those judicial decisions makes clear that the courts were interested in halting any additional commitment of resources in circumstances where construction would harm the environment or increased expenditures might prejudice the decision-makers. See p. 678, *supra*. Those decisions lay down no general rule that, where such harm or prejudice cannot occur, a hearing on the merits of a project is still proscribed because it is a step in "furtherance" of the project. We can perceive no basis for concluding that permitting these hearings to proceed could prejudice the outcome of the required environmental review in this case. To the contrary, one purpose of those hearings is to investigate the merits of intervenors' claims that the Barnwell environmental review has thus far been inadequate or erroneous.

b. The deficiencies that the intervenors perceive in the FES (which document had not been introduced into evidence at the time we heard oral argument) are essentially threefold. As we discuss below, the intervenors may well be able to establish at the hearing that those deficiencies do exist, at least in some measure. Nonetheless, as we go on to explain, their existence does not demonstrate any substantial likelihood that the intervenors are correct in asserting that it was improper to take evidence on the three matters set for

²¹ See, e.g., *People of Enewetak, supra*, 353 F. Supp. at 821: "... there must be a severe limitation on the scope of all activity that furthers the project".

consideration at the August 26 hearing. Even less does it furnish a basis for predicting that the Licensing Board is likely to delve into improper subjects at future sessions of the hearing.

(1) One deficiency in the FES, say the intervenors, is that statements contained therein differ from staff testimony adduced at the hearing. The Commission's regulations, however, recognize that evidence presented at a hearing may cause a licensing board to arrive at conclusions different from those in the FES. In that event, the FES is simply deemed amended *pro tanto*. 10 C.F.R. §51.52(b)(3).²² To be sure, this provision ordinarily comes into play when other parties' evidence requires the board to reject or modify a staff position adopted in the FES. But we have been told no reason why the staff itself must be forever frozen in its FES position. Nor would there be any wisdom in such a rule. To the contrary, we think the staff is obliged in the performance of its duties to bring to the attention of the Board significant new or updated information.²³ The staff's (and the Commission's) obligation is to objective truth, not to the printed word.

Of course, in a given instance, the staff's evidence may depart so markedly from the positions espoused or information reflected in the FES as to require formal redrafting and recirculation for comment of the environmental statement (or at least those portions which are affected by the changes) before the licensing board gives any further consideration to the subjects involved.²⁴ In this connection, however, we are not persuaded that the changes embodied in the staff testimony are so significant as to require that to be done here.

(2) The staff concedes the existence of one of the deficiencies pointed out by the intervenors. Specifically, the intervenors and the staff do agree that the FES inadequately evaluates the impact of all the facilities—including those which are not the subject of the proceeding at bar—planned for the Barnwell site (see p. 674, fn. 3, *supra*). The intervenors insist that consideration must be given to the effect of the overall project, lest there occur an invalid "segmentation" of the adverse environmental impacts of the individual facilities.²⁵

We need not express any opinion now on the need to incorporate into the current FES a discussion of the impact of the additional facilities being built on the site. For, even if the FES must be so redrafted, the issues scheduled for

²²See, e.g., *Texas Utilities Generating Co.* (Comanche Peak Units 1 and 2), ALAB-266, NRCI-75/4R 376, 379.

²³See *Duke Power Company* (McGuire Units 1 and 2), ALAB-143, 6 AEC 623, 625-26 (1973); cf. *Georgia Power Company* (Vogtle Units 1 and 2), ALAB-291, NRCI-75/9 404 (September 24, 1975).

²⁴Cf. *Philadelphia Electric Company* (Limerick Units 1 and 2), ALAB-262, NRCI-75/3 163, 195-97.

²⁵Cf. *Limerick*, ALAB-262, *supra*, NRCI-75/3 at 200-01.

consideration at the August 26 session could be understood and resolved in the absence of such a discussion. And we perceive nothing either in NEPA or in the Commission's rules which would automatically preclude the hearing of all environmental issues while the impact statement is being redone as to some.

On the other hand, the intervenors perhaps can demonstrate that, if the FES does need to be recast in part, certain other issues should not be heard until that is done. But that fact does not afford us any basis for taking action now. We are ordinarily disinclined to review a licensing board's discretionary rulings on whether the hearing of particular issues should be deferred. See *Public Service Company of New Hampshire* (Seabrook Units 1 and 2), ALAB-293, NRCI-75/10 660 (October 16, 1975); and ALAB-295, NRCI-75/10 668 (October 28, 1975). Here, the Licensing Board has not yet been called on to determine which issues can appropriately be heard at various future stages. Certainly, in advance of its having ruled, there is even less justification for us to become actively involved in scheduling the hearings.

(3) The third—and presumably most serious—of the asserted deficiencies in the FES stems from the pendency of the Commission's study of plutonium recycling (see p. 676, *supra*). The intervenors claim that a valid FES for Barnwell cannot be prepared until the GESMO and related safeguards studies are completed. As they see it, the conclusions emanating from GESMO must be taken into account before a valid NEPA cost-benefit balance for Barnwell can be struck. In a similar vein, they argue that to proceed to hearing now on the issues pending in Barnwell will lead to an inordinate duplication of effort. This is true, they say, because the same issues will also have to be heard in the GESMO proceeding and, thereafter, might possibly have to be considered even a third time when the results of GESMO are sought to be applied to Barnwell.

Our consideration of this argument properly commences with an analysis of the Commission's "provisional views" on GESMO (see pp. 676-677, *supra*). In adopting those views, the Commission left it to the boards in individual licensing cases to consider the need for "deferral of future licensing actions." It also furnished guidelines which, insofar as are relevant here, indicate that "no additional licenses" should be granted for fuel cycle activities "which depend for their justification on wide-scale use of mixed oxide fuel" for reactors, if those licenses "would foreclose future safeguards options or result in unnecessary 'grandfathering.'"

It is clear from these guidelines that the Commission has not purported to call a halt to all hearings involving issues which bear a relationship to GESMO. Indeed, a literal reading of the Commission's provisional views indicates that it may have intended not to stop hearings but only to place limitations on the actual granting of certain licenses. This does not mean, of course, that the boards are entirely free to proceed with hearings on all issues, stopping just short of authorizing the issuance of licenses. For, as will be seen, considerations beyond

those set forth in the guidelines must come into play as well.²⁶ But it does mean that nothing in the provisional views alone commands that hearings cease in all proceedings to which the guidelines apply.

The Commission's provisional views not having imposed a different rule, a board's determination on whether to go ahead with hearings on particular issues should turn on considerations similar to those which we discussed in *Potomac Electric Power Company* (Douglas Point Units 1 and 2), ALAB-277, NRCI-75/6 539. There, as here, it was argued that proceeding to hearing on particular issues rather than awaiting future developments would lead to unjustified duplication of effort, eventual repetition of some or all the hearings, and unnecessary expense to the litigants. In that case, we rejected the contention that the entire hearing must be deferred. Rather, we ruled the board should weigh certain factors in order to decide whether it should proceed with each pending issue.

We believe that this matter should be handled in similar fashion. Of course, because the suggestions that the hearings be deferred arose from different circumstances in the two cases, factors other than those relevant in the *Douglas Point* situation may have to be taken into account here. But the underlying principle is the same—for each issue before it, the Board must weigh the advantages and disadvantages of proceeding now rather than waiting until the GESMO is completed. This may require the Board to draw fine lines, particularly since it is not clear at this juncture either (1) what the precise extent of any GESMO hearings will be or (2) that a Commission decision against plutonium recycling would automatically sound the death knell for Barnwell.²⁷ What is clear, however, is this: first, as in *Douglas Point*, it is not appropriate to lay down a blanket rule that hearings on all issues should or should not proceed now; and, second, the Licensing Board is in a better position than we are to determine which, if any, particular issues need to be deferred. We are convinced that the board below correctly decided to go ahead with the three issues set for the August 26th session. There is no reason for us to step in in advance of its determination on other issues.²⁸

We need only add that, in evaluating the likelihood that the intervenors can establish that the hearings are proceeding illegally, we have considered the district court decision in *West Michigan Environmental Action Council v. Atomic Energy Commission* (Docket No. G-58-73, W.D. Mich., June 19, 1974, as clarified October 3, 1974). In its first opinion, the court deferred action on

²⁶ The Commission contemplated that this would be the case, for it expressly recognized that a "variety of factual situations and legal considerations" might be presented in different licensing proceedings. 40 *F.R.* at 20143.

²⁷ See paragraph 2 of fn. 29, *infra*.

²⁸ See p. 681, *supra*.

the government's motion to dismiss (which was premised, *inter alia*, on a claimed lack of jurisdiction). In doing so, however, the court expressed the view that a Commission hearing on whether to permit use of additional amounts of mixed oxide fuel at the Big Rock Point reactor "cannot properly reach its conclusions without taking [GESMO] into account" and thus that that hearing "should be conducted only after [GESMO] has been finalized so that it can be fully considered." The *Big Rock Point* Licensing Board, after studying the court's statement, indicated that it intended to proceed to hear certain "local" issues before GESMO was completed. LBP-74-61, RAI-74-8 317, 319-20. In its clarifying opinion, the district court then approved that course of action, noting that it was "impressed by the argument for simultaneous hearings." In other words, the court held that it was permissible for the Licensing Board to hear certain issues while the generic study went on, so long as the GESMO eventually "was properly taken into account."

Considered in their totality, the district court's comments furnish no basis for us to hold that all issues in this proceeding must be deferred until GESMO is completed. To the contrary, the court's two opinions support the view that there may be distinct advantages gained by hearing certain issues at an early date. As the court observed in approving the plan to have the administrative proceedings move forward on two fronts simultaneously, "litigation need not necessarily be prolonged in order to be thorough." The court's comments do, however, underscore the need for the Licensing Board to distinguish carefully between those issues which should be heard before GESMO is completed and those better deferred.²⁹

²⁹ As it turned out, the Commission eventually determined that, as far as *Big Rock Point* was concerned, there was no necessity for awaiting the completion of GESMO. The Commission reasoned that NEPA's requirements could be met by the preparation of a discrete environmental statement, since the *Big Rock Point* proceeding did not involve the "wide-scale use of mixed oxide fuel." CLI-75-10, NRCI-75/8 188, 190 (August 11, 1975). We agree with the intervenors' assertions at oral argument (App. Bd. Tr. 39-42, 47-48) that the Commission's *Big Rock Point* decision does not justify the *Barnwell* Licensing Board in proceeding to a conclusion without awaiting the completion of GESMO. For, as the Commission's opinion itself makes clear, the factual situation surrounding the *Big Rock Point* application is considerably different from that which presently appears to be involved in *Barnwell*. See NRCI-75/8 at 190 and 191.

In that regard, our analysis suggests that, unless and until the applicants demonstrate otherwise, the *Barnwell* facility should be considered one "which depend[s] for [its] justification on wide-scale use of mixed oxide fuel" within the meaning of the Commission's provisional guidelines. For the draft GESMO which the Commission had before it when it issued those guidelines indicates (p. S-14) that "recovery and recycle of uranium are not now economically feasible unless plutonium is also recycled . . ." It is, of course, open to the applicants to attempt to show that that statement is incorrect and that the *Barnwell* facility can be justified even if there is to be no wide-scale use of mixed-oxide fuel.

2. *Irreparable injury.* We have already indicated (p. 13, *supra*) that, because construction of this facility was not opposed when the opportunity was presented and thus is now virtually completed, the denial of the stay the intervenors seek will not prejudice the NEPA decision-making process at all, much less irreparably. The only other claim of irreparable injury which the intervenors make is that if they are forced now to a hearing which, it is later determined, should not have been held or needs to be repeated, they will have suffered a needless expenditure of time and resources. The short answer to this has been given by the Supreme Court: "mere litigation expense, even substantial and unrecoverable cost, does not constitute irreparable injury." *Renegotiation Board v. Bannerkraft Co.*, 415 U.S. 1, 24 (1974).

The intervenors attempt to avoid the import of this doctrine by pointing to their limited resources. They say that the expense of participating in an improper hearing will severely curtail their ability to participate in the GESMO hearing itself or in the rerun of the Barnwell hearing which they foresee occurring. In this connection, they stress again that if the Barnwell hearing goes ahead now, it will be needlessly duplicative of the GESMO hearing.

We are not insensitive to the intervenors' situation. Nevertheless, we must decline to rule on the question in the abstract. Their claim in this regard can best be considered by the Licensing Board when it determines whether to proceed with particular issues. See *Douglas Point, supra*. Nothing the Licensing Board has done thus far indicates that it intends to schedule hearing sessions which can fairly be predicted to be duplicative and devoid of offsetting advantages. Accordingly, at this juncture we cannot perceive that the intervenors are threatened with irreparable injury.

3. *Injury to the adverse party.* The applicants claim that granting the requested stay will lead ineluctably to a delay in the operation of the Barnwell facility with consequent financial injury to them. At this point, of course, we cannot assume that the Barnwell facility should operate. It is precisely the purpose of the scheduled hearings to consider that question. But we can stress that the applicant is entitled to an answer to that question at the earliest practicable time. If a decision in its favor ultimately results, the applicant will indeed have been injured if there has been an unjustifiable delay in reaching that decision.

4. *The public interest.* Our consideration of the fourth factor follows much the same lines. We need not subscribe to the applicants' claim that its facility is vitally needed—that is an issue in the hearings—to agree that there is a compelling public interest in having an early decision on the Barnwell facility, whether that decision is positive or negative. This point need not be belabored. If this plant is safe and environmentally sound, then there is every reason to have

the facility approved promptly.³⁰ If, on the other hand, the plant fails to pass muster, the public interest will be served if this fact is known sooner rather than later. For, in that event, there will be a need either to initiate corrective action to bring the facility into compliance (if possible) or to develop some alternative solution.³¹

In sum, none of the factors governing our action on stay requests weighs in favor of the intervenors.³² Accordingly, there was no reason to halt the August 26th hearings and there is no cause to take from the Licensing Board the responsibility of determining which, if any, of the remaining issues should be deferred.

III. CONCLUSION

For all these reasons, we conclude that the intervenors have not made the showing necessary to obtain the relief they seek. Consequently, their motion is *denied*; the Licensing Board may conduct such further hearings as are justified in light of the views expressed in this opinion.

It is so ORDERED.

FOR THE ATOMIC SAFETY AND
LICENSING BOARD

Margaret E. DuFlo
Secretary to the Appeal Board

³⁰In this connection, see *West Michigan Environmental Action Council, supra*, where the court, anticipating the possibility that "the outcome of all . . . hearings" would be favorable to the applicant, indicated that the "potential benefits, whatever they may be," stemming from the applicant's proposal "should not be frustrated by prolonged litigation."

³¹*Cf. Douglas Point, ALAB-277, supra, NRCI-75/6 at 546, 547.*

³²Our order of August 11 setting an expedited briefing schedule instructed the parties to address, *inter alia*, questions concerning the possibility that the intervenors (1) were guilty of laches or (2) had stipulated away any right to object to the resumption of the hearings. The briefs we received convinced us that neither of these situations obtained. Accordingly, we have not taken any such considerations into account in reaching our decision.



UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

LBP-75-60

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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

In the Matter of

Docket No. 70-1729

ALLIED-GENERAL NUCLEAR SERVICES
ALLIED CHEMICAL NUCLEAR
PRODUCTS, INC.
GENERAL ATOMIC COMPANY

October 1, 1975

(Barnwell Fuel Receiving and Storage
Station)

Upon joint petition (by Environmentalists, Inc., South Carolina Environmental Action, Inc., and Piedmont Organic Movement) for leave to intervene in materials license proceeding, Licensing Board finds that petitioners meet the requirements of 10 CFR 2.714.

Upon petition by 221 Pickens Street Organization and untimely petition by the American Civil Liberties Union of South Carolina for leave to intervene, Licensing Board finds that neither petitioner has set forth its interest with sufficient particularity, as required by 10 CFR 2.714.

Joint petition granted and public hearing ordered; State of South Carolina admitted as an interested State pursuant to 10 CFR 2.715(c). Other petitions denied, but additional time granted both petitioners to file amended petitions.

RULES OF PRACTICE: NON-TIMELY INTERVENTION PETITIONS

In considering a late intervention petition, the question of timeliness is inextricably interwoven with the question of standing and right to intervene; it is first necessary to make a determination as to the standing factors set out in 10 CFR 2.714(d).

MEMORANDUM AND ORDER

On July 7, 1975, the Nuclear Regulatory Commission (Commission) published in the *Federal Register* (40 F.R. 28506) a Notice of Receipt of Application for Materials License; Notice of Consideration of Issuance of Materials License and Notice of Opportunity for Hearing in the captioned proceeding. The Notice provided, *inter alia*, that any person whose interest may be affected by the proceeding might file a petition for leave to intervene no later than August 6, 1975. The Notice also summarized the provisions of 10 CFR §2.714, the Commission's rule which prescribes the required content of petitions for leave to intervene.

Thereafter, timely petitions for leave to intervene with respect to issuance of the materials license were filed by (1) Environmentalists, Inc., South Carolina Environmental Action, Inc., and Piedmont Organic Movement (Joint Petitioners), and (2) the 221 Pickens Street Organization (Petitioner). A late petition for leave to intervene was filed on August 19, 1975, by the American Civil Liberties Union of South Carolina (Petitioner).

Allied-General Nuclear Services, *et al.*, the Applicants in this proceeding, have entered objections to each of the three petitions which have been filed. These objections are based, *inter alia*, on the sufficiency of the showing as to standing which the Petitioners have asserted and the allegation that the contentions set forth are either lacking in merit and without substance, or are lacking in the requisite specificity and particularity which Section 2.714 of the Commission's Rules of Practice require. In addition, Applicants argue that the admittedly late filing by the American Civil Liberties Union of South Carolina of its Petition to Intervene, should also result in its rejection.

The Staff of the Nuclear Regulatory Commission has filed answers to each of the petitions to intervene. For its part, the Staff takes the position that Petitioners 221 Pickens Street Organization and The American Civil Liberties Union of South Carolina have made an adequate showing of the interest of their members and how that interest may be affected by the proceeding. Also, with respect to the Petition filed by Ms. Ruth S. Thomas, President, Environmentalists, Inc., on behalf of Environmentalists, Inc., *et al.*, the Staff believes that the requirements for showing requisite interest under 10 CFR §2.714 have been complied with.¹

In the view of the Staff, each of the Petitioners, Environmentalists, Inc., *et al.*, and the 221 Pickens Street Organization, has asserted at least one admissible

¹Joint Petitioners' interest has been previously shown in *Allied General Nuclear Services, et al.* (Barnwell Nuclear Fuel Plant Separations Facility) Docket No. 50-332, and the Staff by Stipulation dated May 1, 1975, entered in that proceeding, has agreed that Joint Petitioners' interest has been adequately shown for purposes of any licensing proceeding involving the Barnwell Fuel Receiving and Storage Station.

contention, and therefore, adequate interest having been shown, both petitions for leave to intervene should be granted.

The Staff opposes the admission of any contention set forth in the petition to intervene of the American Civil Liberties Union of South Carolina on the ground that no contention set forth meets the substantive requirements of 10 CFR §2.714. In addition, the Staff urges that the tardy petition should not be accepted as Petitioner has failed to provide a sufficient showing of good cause for its late filing. However, the Staff has requested the Board to give Petitioner an opportunity to correct the deficiencies in its petition.

By letter dated July 9, 1975, the Assistant Attorney General of the State of South Carolina, Randolph R. Mahan, advised the Commission that the State of South Carolina intends to participate in this proceeding as an interested State pursuant to 10 CFR §2.715(c). The Staff has supported this request.

The Board has considered the three petitions which have been filed and the answers filed by Applicants and Staff, and now concludes that the joint petition for leave to intervene filed by Environmentalists, Inc., South Carolina Environmental Action, Inc., and Piedmont Organic Movement, meets the requirements of 10 CFR §2.714. Accordingly, the joint petition is *GRANTED* and a public hearing will be ordered in this proceeding. The Joint Petitioners are herewith admitted as a party (Joint Intervenors) to this proceeding.

The State of South Carolina is herewith admitted and may participate in the hearing as an interested State pursuant to the provisions of 10 CFR §2.715(c).

In its review of the petition filed by Joint Intervenors, this Board has determined that the petition includes at least one relevant contention which is set forth with reasonable specificity and with some basis assigned for it, so as to at least minimally meet the threshold requirements of 10 CFR §2.714(a) and (b). Specifically, Contention 47(b), which appears to be amenable to suitable particularization, alleges that the Staff's position regarding significant releases of radioactive materials from transportation accidents, etc., has not been justified. It is emphasized however, that the only matter decided at this time is that, as stated, the above contention is adequate to entitle Joint Petitioners to intervene in the proceeding. It remains for these Petitioners to establish, to the satisfaction of the hearing Board, which of its proposed contentions are genuine issues suitable for adjudication. If the Board is not so satisfied, it may summarily dispose of the proposed contentions on the basis of the pleadings, 10 CFR §2.749.

With respect to the petitions for leave to intervene submitted by the 221 Pickens Street Organization and the American Civil Liberties Union of South Carolina (ACLU), the Board is of the view that neither Petitioner sets forth its interest with sufficient particularity to show the requisite interest under 10 CFR §2.714.

For example, the petition to intervene describes the 221 Pickens Street Organization as "being in the process of becoming a non-profit educational

organization"; there is nothing to show that it is yet a legal entity, or if so, whether it is a corporation, an unincorporated association, or something else. Nor is there any showing as to how an organization not yet formed can have a person who "has been duly authorized to be the official representative of the above-named petitioner in this proceeding." Nor is there any showing regarding the identity of the members of the organization which it purports to represent, who live or conduct substantial activities in reasonable proximity to the facility site and whose interest may be affected and how such interest may be affected.

Even if such deficiencies in the petition to intervene were to be overlooked or were to be cured by amendment or supplemental showing, it should be noted that the petition makes various claims to be speaking on behalf of not only the petitioning organization's members but also their "supporters and others who are similarly situated", and on behalf of "persons who eat and drink at our restaurant and juice bar, those who use our services and purchase food and other materials from our store." Such claims that the petitioning organization is speaking for persons other than its own members are totally unsupported by the submission actually made, and in the absence of such proof must be rejected. Indeed, even with respect to its own members, the only person who has been named and identified in the submission is the person who has signed the petition to intervene and the accompanying affidavit. Moreover, as was held by the Atomic Safety and Licensing Board in *Mississippi Power and Light Company* (Grand Gulf Nuclear Station Units 1 and 2), Docket Nos. 50-416, 50-417 (Prehearing Conference Order of May 15, 1973, pp. 2-3), summarized in ALAB-130, 6 AEC 423, note 1 (June 19, 1973), class actions are not permitted under the Commission's Rules of Practice, and in any event the petitioning organization has not shown that its claims and interests are typical of the alleged class.

The ACLU petition contains no showing regarding the identity of the members of the organization in South Carolina who live or conduct substantial activities in reasonable proximity to the facility site and whose interest may be affected and how such interest may be affected. Nor is there any showing as to how the individual who has signed the petition "has been duly authorized to be the official representative of the above-named petitioner in this proceeding." Further, it is not clear that the South Carolina members have either requested to be represented or consented to be represented by the ACLU in this proceeding.

With respect to the matter of "timeliness" in the instant case, the Petitioner must, as a threshold matter, satisfy the requirements of the Rules as to good cause for its late filing; and, failing that, there is no need to examine the sufficiency of its showing of interest or of its contentions under Section 2.714(b), since the Petition must be dismissed. In this regard, the Rule states that, in examining the existence of good cause for late filing, the Board must be satisfied that, in effect, there was a reasonable justification for Petitioner's failing to file on time; and that the Board, in addition to the basic

factors as to standing to intervene set out in Section 2.714(d), is to consider whether there are other means available whereby the Petitioner's interest will be protected; whether the Petitioner's participation may reasonably be expected to assist in developing a sound record; whether Petitioner's interest will be represented by existing parties; and whether the Petitioner's participation will broaden the issues or delay the proceeding (i.e., the factors set forth in Section 2.714(a)(1)(4)).

It would appear, therefore, that the question of timeliness is inextricably interwoven with the question of *standing* and right to intervene; that is, it is first necessary to make a determination as to the factors set out in Section 2.714(d)—i.e., “(1) the nature of the Petitioner's right under the Act to be made a party to the proceeding; (2) the nature and extent of the Petitioner's property, financial, or other interest in the proceeding; (3) the possible effect of any order which may be entered in the proceeding on the Petitioner's interest”.

In logical progression, the next question for determination would be if—absent its untimely filing—the Petitioner does have standing to become a party, can it satisfy the provisions of Section 2.714(a)—i.e., has it shown good cause, and, as to this, what are the conclusions to be reached regarding the factors in subsections 1-4, quoted above. Only by this process of logic can the Board reach a reasoned conclusion in the circumstances of this case as to the status of the Petitioner as an intervenor.

Because of the aforementioned deficiencies, the petitions for leave to intervene filed by the 221 Pickens Street Organization and by the ACLU of South Carolina are *DENIED*. However, because these Petitioners may be able to cure the defects in the Petitions, the Board has concluded that each should be afforded additional time for that purpose. Both Petitioners are granted ten (10) days from the date of service of this Order to file an amended petition in accordance with the Commission's Rules of Practice as discussed hereinabove.

By separate Order, the Board will schedule a special prehearing conference in this proceeding to be convened in Columbia, South Carolina on Thursday, October 16, 1975, at 10:00 a.m., local time. The parties and the Petitioners for intervention or their counsel are directed to appear at the special prehearing conference, at which time the Board will consider all intervention petitions and if necessary, oral presentations by Petitioners who have filed amended petitions regarding the identity of the members of their organization which they purport to represent, and their arguments regarding the aforementioned individuals' interest and how that would be affected by the proposed operation of the Barnwell Fuel Receiving and Storage Station.

A Notice of Hearing implementing this decision is appended to this Memorandum and Order as Attachment A. The Notice scheduling the special prehearing conference for October 16, 1975, is appended hereto as Attachment B. [Attachments A and B are omitted from this publication but are available at the Commission's Public Document Room, Washington, D. C.]

In accordance with the provisions of 10 CFR §2.714a of the Commission's "Rules of Practice" this Order may be appealed to the Atomic Safety and Licensing Appeal Board of the United States Nuclear Regulatory Commission within five (5) days after service of the Order.

It is so ORDERED.

**FOR THE ATOMIC SAFETY AND
LICENSING BOARD**

designated to rule on petitions

Robert M. Lazo, Chairman

Dated at Bethesda, Maryland
this 1st day of October, 1975

Attachment A (Notice of Hearing on Application for Materials
License) and

Attachment B (Notice Scheduling Special Prehearing Conference)
are omitted from this publication but are available at the
Commission's Public Document Room, Washington, D. C.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

LBP-75-61

ATOMIC SAFETY AND LICENSING BOARD

Daniel M. Head, Chairman
Dr. Marvin M. Mann, Member
Dr. Ernest O. Salo, Member

In the Matter of
**PUBLIC SERVICE COMPANY OF
NEW HAMPSHIRE, et al.**
(Seabrook Station, Units 1 and 2)

Docket Nos. 50-443
50-444
October 3, 1975

Upon motion by several intervenors to stay further proceedings (particularly that portion concerning the facility's cooling water system) pending the outcome of Environmental Protection Agency (EPA) proceedings concerning the same cooling water system, Licensing Board concludes that (1) there is no legal bar to its going forward because the EPA proceedings, which will review previous EPA determinations, do not render invalid either those determinations or a state certification under Section 401 of the Federal Water Pollution Control Act (FWPCA) based thereon; and, in any event, to declare a Section 401 certification invalid would be to review the adequacy of the certification in contravention of Section 511(c) (2) (A) of the FWPCA; and (2) the Board, in its discretion, should proceed simultaneously with EPA so that each will reach its conclusions or decision in due course and with all reasonable dispatch.

Upon motion by another intervenor for reconsideration of the ruling on the stay motion insofar as it required proceeding on the need-for-power issue, and alternately for referral of that ruling to the Commission, Licensing Board declines to reconsider its previous ruling and concludes that a sufficient showing had not been made to warrant referral of the ruling insofar as it dealt with the need-for-power issue.

Stay motion denied; that ruling referred to Appeal Board; motion for reconsideration denied and referral of the latter ruling declined.

MEMORANDUM AND ORDER

The purpose of this Memorandum and Order is for the Atomic Safety and Licensing Board (the Board) to rule upon the motion of intervenor Donald B. Ross to stay further proceedings in the above-identified case. This motion was joined in by the intervenors Seacoast Anti-Pollution League (SAPL), Audubon Society of New Hampshire (Audubon) and Mrs. Elizabeth Weinhold. The motion was opposed by the Applicant and the U. S. Nuclear Regulatory Commission Staff (the Staff).

Following oral argument on the motion on August 27-28, 1975, the Board on August 29, 1975 denied the motion insofar as it relates to issues other than those involving the cooling water system and took the motion under advisement with regard to issues involving the cooling water system. (Tr. 5540-43) In addition, the intervenors SAPL and Audubon requested that the Board refer its ruling on the motion to the Commission. The Board stated at the hearing on September 10, 1975, that it would refer its ruling on the motion to stay to the Commission. (Tr. 6589-6600)

In addition, on September 16, 1975, intervenor New England Coalition on Nuclear Pollution (NECNP) filed a motion for reconsideration of the Board's ruling insofar as it required proceeding on the need for power issue and also requested that that matter be referred to the Commission. The Board will also cover the NECNP motion for reconsideration and referral in this Memorandum and Order.

On September 26, 1975, the Board by majority vote decided to deny the motion to stay insofar as it relates to the cooling water system issues. Dr. Salo and Dr. Mann voted to deny and Mr. Head dissented, voting to grant the motion with regard to the cooling water system issues. Each Board member gave a statement of his position on the record on September 26, 1975 and the Board indicated that it would issue this Memorandum and Order embodying its ruling and the dissenting opinion with regard thereto. (Tr. 8275-8300)

Further, after ruling on September 26, 1975 on the motion to stay, the Board by unanimous vote denied NECNP's motion for reconsideration and the request for referral on its decision to proceed with the need for power issue. With regard to referral, the Board did not consider that a sufficient showing had been made by NECNP that referral might prevent detriment to the public interest or unusual delay or expense.

The remainder of this Memorandum and Order will be divided into four sections identified as follows:

- I. Legal Issues Relating to the Motion to Stay
- II. The Majority Opinion and Ruling
- III. The Dissenting Opinion
- IV. Referral Order

I. LEGAL ISSUES

At the outset the Board had to consider whether there was a legal bar to proceeding with the case. The intervenors SAPL and Audubon argued that the 401 certification issued by the New Hampshire Water Supply and Pollution Control Commission on May 29, 1975 was no longer valid and that, therefore, the statutory prerequisite of certification under Section 401 of the Federal Water Pollution Control Act (FWPCA), 33 U. S. C. 1251 *et seq.*, had not been met. Section 401 provides that an Applicant for a federal permit to construct or operate facilities which may discharge into the navigable water, shall provide the licensing agency with a certification from the state in which the discharge originates, that the discharge will comply with the applicable provisions of Sections 301, 302, 306 and 307 of the FWPCA. The effluent limitations established on October 8, 1974 by the Environmental Protection Agency (EPA) pursuant to Sections 301 and 306 of the FWPCA require that steam electric power generating facilities such as Seabrook have closed cycle cooling, 10 CFR 423.13 and 423.15. However, under Section 316 of the FWPCA, an application can be made to EPA for a less strict limitation on the thermal component of the discharge if it can be established, after opportunity for a public hearing, that the thermal component of the discharge will assure the protection and propagation of a balanced, indigenous population of shellfish, fish and wildlife in and on the body of water involved. A plant owner can, therefore, apply to EPA under Section 316 for open cycle cooling.

In the instant case, the Applicant, pursuant to Section 316, requested approval by EPA of open cycle cooling as a less stringent effluent limitation than the closed cycle cooling requirement called for in 40 CFR Part 423. EPA, following a public hearing, approved the use of open cycle cooling by Determinations issued March 18, 1975 and modified on May 16, 1975.¹ The state certification pursuant to Section 401 of the FWPCA was issued on May 29, 1975, and was specifically conditioned upon the provisions of the EPA Determinations. Subsequently, requests for an adjudicatory hearing regarding the EPA Determinations were made by SAPL on July 16, 1975 and Donald B. Ross on July 18, 1975. These requests were granted by EPA. (See EPA's Public Notice of Adjudicatory Hearing issued August 28, 1975.)

Intervenors SAPL and Audubon argue that granting an adjudicatory hearing regarding the EPA Determinations stays the effect of the Determinations pursuant to EPA regulations 40 CFR 125.35(d)(2). And, since the 401 certification is conditioned upon the Determinations, the 401 certification is no longer

¹These "Determinations" left unresolved the location and final design of the cooling water intake which were also under consideration by EPA pursuant to Section 316(b) of the FWPCA.

valid and therefore does not meet the statutory requirement for certification under Section 401 of the FWPCA. These intervenors, therefore, urge that the absence of a valid 401 certification presents a legal bar to this Board issuing a decision with regard to the construction permits.

The Applicant and the Staff on the other hand oppose this legal interpretation. In particular, they point out that under Section 511(c)(2)(A) of the FWPCA the Board is precluded from reviewing the adequacy of any certification under Section 401. Both contend that the certification by the state is sufficient from a legal standpoint to permit this Board to proceed. The State of New Hampshire is also of this view. These parties urge that the decision on whether to stay or proceed is one within the sound discretion of the Board. |

The Board's analysis is that the fact that the Determinations of EPA are stayed by the granting of the adjudicatory hearing before EPA does not render the Determinations invalid. In the Board's opinion, this is analagous to a judgment being stayed pending appeal, rather than having the effect of vacating the "Determinations" so the Applicant would have to start *de novo* on its request for open cycle cooling under Section 316. Further, in the August 28, 1975 public notice by EPA granting the adjudicatory hearing, it is clear that any action taken by EPA as a result of the hearing would be an *amendment* of the Determinations. Such language implies that the Determinations remain viable until amended. It follows, if the Determinations remain valid, then the 401 certification conditioned upon them also must remain effective.

Further, the Board is of the view that it would be a review of adequacy of the 401 certification for this Board to declare the certification invalid. Under Section 511(c)(2)(A) of the FWPCA, the Board is precluded legally from taking such action. In light of this legal interpretation and the Board's conclusion above on the validity of the 401 certification, the Board holds that there is no legal bar to its continuing with the proceeding.

This, however, does not resolve the issue regarding the motion to stay the proceeding, since this is a matter within the discretion of the Board. In view of the ramifications of this ruling, it appears to be a matter for decision by all three Board members. Certain procedural and evidentiary issues are resolved by the Board chairman who is responsible for the conduct of the proceeding. However, this ruling does not fall into that category. Under Section VII(a) of Appendix A to the Rules of Practice, 10 CFR Part 2, the procedure of all Board members participating in a ruling during the course of a hearing is recognized. In fact, as has happened in this instance, there is specific authorization in that section for a majority vote of the Board to control on rulings during the course of a hearing. The Board, therefore, has taken into account the pertinent factors relating to the exercise of its discretion.

II. MAJORITY OPINION AND RULING

The majority position is that the Board should proceed with this hearing, taking all appropriate evidence, and render a decision.

We have carefully considered all pertinent factors, which have been ably set out and argued in both oral and written form by all counsel, and we believe it fair to characterize the question as one on which reasonable persons may differ.

We are now in the situation where EPA is in the midst of its consideration of Seabrook matters under Section 316 of the FWPCA, and this Board is in the midst of its evidentiary hearing on environmental matters. This is to say that both EPA and NRC are proceeding to discharge their respective responsibilities regarding this facility with such dispatch as is possible under the circumstances.

Both the Applicant and the NRC Staff appear ready to address the several alternative cooling systems and their designs, including those encompassed by EPA considerations to date. Preparation for this hearing by all parties has been in process for many months. Extensive discovery has been accomplished and, in our view, all parties have had reasonable time in which to prepare their cases. We recognize, and fully sympathize with, the logistic and financial problems which confront certain intervenors and the Applicant. We recognize also that in proceeding now, in parallel with the EPA, Applicant and certain intervenors may have to duplicate effort to some degree.

The positions and problems of all the parties deserve, and have received, our full consideration, but the weight to be accorded these positions is in our view overbalanced by that of the larger question of how the NRC should proceed in the public interest.

Currently, the EPA is engaged in two proceedings, one being adjudicatory in nature and having to do with exemption from certain effluent limitations under Section 316(a) of the FWPCA, and the other, under Section 316(b), having to do with the design and location of the intake structure. We have no firm estimates concerning completion date, or dates, of the EPA proceedings (Tr. 5278, *et seq.*). Estimates vary widely.

The "lead agency" concept mentioned in the June 5, 1975 draft of the proposed second Memorandum of Understanding between EPA and NRC appears to envisage a well-scheduled operation whereby the EPA would complete its considerations of matters such as those arising under Section 316 of the FWPCA, convey its views to NRC, and the NRC Staff would complete its FES comfortably prior to a timely public hearing. But the circumstances in this case do not comport at all with those envisaged by the proposed Memorandum. Moreover, that Memorandum specifically contemplates that it should be followed only where practicable. We believe that, considering the current special circumstances of this case, this Board should proceed, along with the EPA, so that each agency will reach its conclusions or decision in due course and with all

reasonable dispatch. Under the circumstances, we see only additional and indeterminate time consumed in arriving at a decision in this proceeding should we stay our hearing at this time.

Under certain conditions, our decision conceivably could interact with EPA's decision. As our colleague suggests (Tr. 8286-89), should EPA decide in favor of one cooling system, and this Board decide for another, we would be granting or denying a permit conditioned on action by another agency. In short, it might appear that EPA would in effect be making the final decision in this matter. In our opinion, however, that possible eventuality appears to be of no material import. In this connection, we note that EPA appears to find no difficulty with the possibility that NRC should proceed with its hearing.²

We seek only to reach a conclusion of this case, with fairness to the parties and to the public, with reasonable dispatch. Well scheduled and orderly procedure is axiomatically desirable. In the special situation of this case, we hold that proceeding to a decision by this Board will contribute to expeditious resolution of the issues and is in the public interest.

The majority, therefore, hereby rules that the motion to stay the proceeding insofar as it involves the cooling water systems issues is denied.

III. DISSENTING OPINION

The majority in Section II of this Memorandum and Order expressed the rationale which led them to rule that the proceeding should go forward. The arguments advanced therein have substantial merit and cannot be lightly ignored. In the view of this Board member, the question of whether to exercise the discretionary power to stay or to go forward was a very close issue and, as the majority points out, one upon which reasonable men can disagree.

It is unnecessary to reiterate in detail the arguments advanced in favor of going forward. It is sufficient to say that the principal point the majority relies upon is that the public interest will be served by this proceeding being terminated with reasonable dispatch. I also recognize that the delay occasioned by a stay could possibly work serious financial detriment to the Applicant. Additionally, it is possible that, should this Board deny the construction permits, the EPA 316 hearing would be unnecessary and therefore the added time and expense of that hearing would be saved both by the parties and the public.

However, in my opinion the arguments favoring a stay of the proceeding are more persuasive. First, there is the very real possibility that there would be a substantial duplication of evidence in this proceeding and the EPA proceeding since, if we go forward now, it will definitely be necessary to consider the environmental impacts of all reasonable alternate cooling water systems. Should

² Letter from John A. S. McGlennon to Frederic S. Gray, September 19, 1975.

we stay, it seems probable that our considerations in this regard could be limited to the environmental impact of the cooling water system approved as a result of the EPA 316 hearing. Such duplication would cause an added burden of time and expense to the parties and to the Government. This certainly is a situation that should be avoided if possible.

In addition to the possible detriment of duplication, the issue involves consideration of the proper relationship between two federal agencies in fulfilling their respective responsibilities in relation to the Seabrook Nuclear project. In view of the request under Section 316 of the FWPCA for once-through cooling, EPA has statutory responsibilities that it must discharge in resolving that issue. NRC, of course, has the overall responsibilities of determining whether to grant construction permits for the entire facility, including the cooling water system. Envisioning such concomitant responsibilities, the two agencies have been working upon a Memorandum of Understanding³ so there will be an orderly and expeditious resolution of such proceedings before both agencies. The Proposed Second Memorandum of Understanding has not to date been finally agreed upon by NRC and EPA, but the Staff advised the Board that such agreement is imminent. Therefore, while this draft document is not binding, certainly the concepts that lie behind it can be taken into account by the Board in considering the relationship between the agencies insofar as the relationship has an impact on the scheduling of this proceeding. In this Board member's view, the basic concept behind the Proposed Second Memorandum of Understanding is that EPA will make any required determinations under 316 of the FWPCA relating to the cooling water system of a facility in advance of NRC's consideration of that issue in its licensing hearing. The rationale underlying this is that NRC would have the benefit of knowing which type cooling water system the Applicant will be required to install prior to making its evaluation of the overall project. This appears to be an appropriate and orderly way for the agencies to proceed. While the Proposed Second Memorandum of Understanding does indicate that it shall be applied to maximum extent practicable for facilities such as Seabrook, this does not in my view warrant ignoring the basic concept of priority of agency action contained in the Proposed Second Memorandum of Understanding. In my opinion, the proper priority of action by the agencies is, therefore, a substantial factor favoring a stay of the proceeding.

Related to the interaction of the agencies is the consideration of the impact of going forward now on the various decisions that could be made by this Board after hearing evidence on alternate cooling water systems. There are two methods by which a decision under these circumstances can be final. The first would be if the Board were to deny the construction permits despite which cooling

³Proposed "Second Memorandum of Understanding and Policy Statement Regarding Implementation of Certain NRC and EPA Responsibilities," latest draft dated June 5, 1975.

water system might be used. This would not call into question the finality of the Board's decision. Conversely, if the Board were to grant the construction permits regardless of which cooling water system might be employed, again there would be no question of finality of the Board's decision.

However, there is a possibility, and this should not be construed as any evaluation on the merits, of this Board determining that the construction permits should be granted if one cooling water system were installed but should be denied if a different cooling water system were to be installed. This would mean that to proceed to decision the Board would have to make its authorization conditional. The result would be that the Board would authorize the granting of the construction permits with the acceptable cooling water system but condition its authorization so the permits would be revoked if EPA required the use of a different, unacceptable cooling water system. This would in effect give EPA a veto power over the construction permits. In my view, this would not be consistent with the statutory scheme under the FWPCA and Atomic Energy Act for federal regulation of projects such as Seabrook. It also would necessarily have the adverse effect of there being no finality to the initial decision which would result from this proceeding. These considerations also lend substantial support to granting the motion to stay.

Overall, in my view, the factors favoring a stay outweigh those in favor of going forward at this time, and I must disagree with my fellow Board members on this motion. Therefore, I would vote to stay the proceeding insofar as the cooling water system issues are involved until resolution by EPA of its hearing under Section 316 of the FWPCA.

IV. REFERRAL

The Board is referring its ruling to go forward with the proceeding to the Atomic Safety and Licensing Appeal Board (Appeal Board) pursuant to 10 CFR 2.730(f). This section provides that a Board may refer a matter to the Appeal Board if in its judgment prompt decision is necessary to prevent detriment to the public interest or unusual delay or expense.⁴

The Board has concluded that referral could prevent detriment to the public interest because of ramifications of the ruling on the interaction between the two federal agencies, NRC and EPA. Also, referral is in order because the ruling could, under certain circumstances, result in unusual expense to one or more of the parties to the proceeding. Accordingly, the Board hereby refers its decision to the Appeal Board pursuant to Section 2.730(f).

⁴Section 2.730(f) indicates that the referral will be made to the Commission but 10 CFR 2.785(b) (1) sets out, *inter alia*, that the Appeal Board will exercise the authority and perform the functions otherwise exercised by the Commission under Section 2.730(f).

One last point must be resolved by the Board in connection with the referral. The Board indicated on the record on September 26, 1975 (Tr. 8300) and is hereby specifically ruling that this referral to the Appeal Board does not stay this proceeding pending resolution of the referral by the Appeal Board. See 10 CFR 2.730(g).

**BY ORDER OF THE ATOMIC SAFETY
AND LICENSING BOARD**

Marvin M. Mann, Member

Ernest O. Salo, Member*

Daniel M. Head, Chairman

Dated at Bethesda, Maryland
this 3rd day of October 1975.

*Dr. Salo has authorized Dr. Mann to sign this Memorandum and Order for him.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

LBP-75-62

ATOMIC SAFETY AND LICENSING BOARD

Daniel M. Head, Chairman
Dr. Marvin M. Mann, Member
Dr. John R. Lyman, Member

In the Matter of
**PUBLIC SERVICE ELECTRIC AND
GAS COMPANY**

Docket Nos. STN 50-477
50-478

October 14, 1975

(Atlantic Nuclear Generating
Station, Units 1 & 2)

Upon motion by intervenor City of Brigantine to amend and expand its contentions, Licensing Board concludes that (1) the intervenor has shown sufficient grounds for the Board to consider the amended contentions, and good cause under 10 CFR §2.714(a) for the Board to consider the expanded contentions, on the merits; (2) the amended contentions should be admitted as stated, with the exception of one which is admitted as interpreted by the Board; and (3) the expanded contentions should be admitted in part and excluded in part.

Upon applicant's renewed motion to dismiss intervenor Atlantic County Citizens Council on Environment (ACCCE), Licensing Board rules that (1) ACCCE is in default under 10 CFR §2.707 as a result of its refusal to comply with a prior Board discovery order; and (2) in view of its continuing refusal to comply with legitimate discovery procedures, ACCCE should be dismissed as a party.

Motion of intervenor City of Brigantine to amend and expand contentions granted, subject to certain interpretations and exclusions.

Motion of applicant to dismiss intervenor ACCCE as a party granted.

RULES OF PRACTICE: EXPANSION OF CONTENTIONS

Where proposed expanded contentions present a totally new area of inquiry, 10 CFR §2.714(a) requires an intervenor to show "good cause" for its late filing of the new contentions. The entry and active participation of new counsel for the intervenor constitutes such "good cause", in circumstances where the

expanded contentions do not overlap the contentions of other intervenors, where the requesting intervenor might assist in developing a sound record with respect to those contentions, and where the addition of the expanded contentions would not appear unduly to broaden the issues or delay the proceeding.

LICENSING BOARD: DELEGATED AUTHORITY OR JURISDICTION

10 CFR §2.707, which empowers a licensing board to make such orders as are just in regard to a party's failure to comply with discovery, includes the authority to dismiss a recalcitrant party for refusing to comply with a direct order of the board.

THIRD PREHEARING CONFERENCE ORDER

The Third Prehearing Conference in the above-captioned proceeding was held before the Atomic Safety and Licensing Board (the Board) on August 13, 1975, in Bethesda, Maryland. As a result of that Prehearing Conference the Board makes the following orders:

I. THE MOTION TO AMEND AND EXPAND CONTENTIONS

A motion had been filed by the intervenor City of Brigantine to amend and expand its contentions. The Applicant opposed this motion and the U. S. Nuclear Regulatory Commission Staff (the Staff) supported the request to amend the contentions and supported, in part, the request to expand the contentions.

First, it is necessary to consider whether this intervenor has made a sufficient showing that this Board should consider the amended and expanded contentions on the merits. With regard to the justification for amending the contentions, the Board considers that the entry of new legal counsel for the City of Brigantine and his prompt and active participation since his appearance is sufficient grounds for the Board's considering the amendment of the contentions on the merits. Since the expanded contentions are totally new, the intervenor must show "good cause" under 10 CFR 2.714(a) for the late filing of the new contentions. In the Board's view, under the circumstances of this particular case, the entry and active participation of new counsel for the City of Brigantine does constitute good cause and is a sufficient basis for the Board to consider the expanded contentions on the merits. Further, the expanded contentions do not overlap the contentions of other intervenors. The City of Brigantine's participation with respect to those contentions might assist in developing a sound record, and, in light of the current status of this proceeding from a scheduling standpoint, the addition of any of the expanded contentions would not appear to unduly broaden the issues or unduly delay the proceeding.

Turning to the requested amendments to the six contentions that were admitted as issues in controversy by the Board in its First Prehearing Conference Order on July 29, 1974, the Board hereby grants the motion to amend. The Board's analysis of the requested amendment is that they do not affect the basic substance of the contentions. The Board, therefore, will admit the contentions as stated in the motion¹ as issues in controversy with one exception. Amended Contention 5 as presented and argued must be clarified. Accordingly, the Board interprets Amended Contention 5 as follows:

Under 10 CFR Part 100, an evacuation plan is necessary for Brigantine and the proposed site is unsatisfactory because of the great difficulties that would be involved in evacuating the population from Brigantine, especially in the summer months, in the event of an emergency situation created by an accident in the facility.

As interpreted, Amended Contention 5 is hereby admitted as an issue in controversy.

Regarding the motion to expand the Board makes the following rulings:

1. The Board interprets Expanded Contention 1 as asserting that the Applicant has given inadequate consideration in its cost-benefit balance to the adverse somatic and genetic consequences of marine, animal and plant life in and about the City of Brigantine, which consequences will result from radioactive effluents discharged in normal operation of the proposed facility. As interpreted, this contention is hereby admitted as an issue in controversy, on the basis of the environmental issue raised. Insofar as the contention attempts to raise a health and safety issue with respect to radioactive effluents from normal operations of the proposed facility endangering the health and safety of the public, the Board considers this an impermissible challenge to 10 CFR Part 50, Appendix I and to 10 CFR Part 20. As such, the Board hereby excludes this portion of Expanded Contention 1 as an issue in controversy.

2. The Board hereby excludes Expanded Contention 2 as an issue in controversy. Basically, this contention asserts that the present state of experience and scientific knowledge is not sufficient to provide reasonable assurance that the facility can be operated without undue risk to the health and safety of the public even if it is constructed and operated in such a manner to be as safe as possible in the light of existing experience and scientific knowledge. This contention constitutes a challenge to 10 CFR Part 50, Appendix M which governs the application for manufacturing license in the Offshore Power Systems proceeding (Docket No. 50-437), the companion proceeding which must be resolved prior to decision in the

¹The Board will refer to the amended and expanded contentions by the paragraph number in the motion, designating them as Amended Contention 1, etc., and Expanded Contention 1, etc.

instant case. Not only, therefore, is this an impermissible challenge to the regulations of the Commission, but it would appear that if such a contention were viable, it is more appropriate in the Offshore Power Systems case than in this cause.

3. The Board considers that Expanded Contention 3 raises the acceptable issue of the financial qualifications of the Applicant. The Board, therefore, hereby admits as an issue in controversy Expanded Contention 3 as stated in the motion.

II. THE RENEWED MOTION TO DISMISS

The next issue considered at the Third Prehearing Conference was a renewal by the Applicant of a motion to dismiss the intervenor Atlantic County Citizens Council on Environment (ACCCE). The history of the original motion is set out in the Applicant's renewed motion and can be summarized briefly as follows: On May 2, 1975, the Applicant filed a motion to dismiss or in the alternative to compel the taking of depositions. This motion was granted by the Board in a Memorandum and Order dated May 21, 1975 directing that three representatives of ACCCE appear on May 28, 1975 for the Applicant to take their depositions and directing that they answer questions put to them at said deposition. One of the representatives of ACCCE did appear on May 28, 1975 but refused to answer any questions substantively on the basis that ACCCE could not proceed without legal counsel.

The Applicant, therefore, filed the renewed motion to dismiss ACCCE as a party to the proceeding. ACCCE did not file any opposition to the renewed motion to dismiss but it was opposed by the intervenor City of Brigantine and by the Staff. The City of Brigantine argued that a sanction would be in order because of the failure of ACCCE to obey the Board Order of May 21, 1975, but asserted that the Board is without authority to dismiss ACCCE as a party. The Staff argued that a lesser sanction than dismissal would be more appropriate under the circumstances of this case.

Representatives of ACCCE did appear at the Third Prehearing Conference and the Board heard oral argument from them in connection with their failure to obey the Board Order directing that they appear and respond to appropriate questions at the deposition. After discussing with them ACCCE's responsibility as a party intervenor, the Board asked them whether, should the Board reorder the depositions to be taken, they would still maintain their position and refuse to answer questions by the Applicant. ACCCE maintained its position that it would not answer questions without counsel. (Third Prehearing Conference Tr. 315-316)

In view of the refusal to comply with the Board Order of May 21, 1975, the Board hereby holds that ACCCE is in default under 10 CFR 2.707. Further, in

view of the continuing position by ACCCE not to comply with legitimate discovery procedures, the Board hereby grants the Applicant's motion to dismiss ACCCE as a party in this action.

In the Board's opinion, the power to dismiss a party under such circumstances as have arisen in the present case is contained in 10 CFR 2.707, where the Board may make such orders in regard to failure to comply with discovery as are just. This empowers the Board to dismiss a recalcitrant party for refusing to comply with a direct order of the Board. *See Washington Public Power Supply System, Nuclear Projects 1 and 4*, Board Order on the record, May 15, 1975 (Evidentiary Hearing Tr. 569-572).

Accordingly, the Board hereby orders that the intervenor ACCCE is dismissed as a party to the proceeding.

BY ORDER OF THE ATOMIC SAFETY
AND LICENSING BOARD

Daniel M. Head, Chairman

Dated at Bethesda, Maryland
this 14th day of October 1975.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

LBP-75-63

ATOMIC SAFETY AND LICENSING BOARD

Douglas V. Rigler, Chairman
John M. Frysiak, Member
Ivan W. Smith, Member

In the Matter of

THE TOLEDO EDISON COMPANY
and THE CLEVELAND ELECTRIC
ILLUMINATING COMPANY

Docket Nos. 50-346A
50-500A
50-501A

(Davis-Besse Nuclear Power
Station, Units 1, 2 and 3)

THE CLEVELAND ELECTRIC
ILLUMINATING COMPANY, ET AL.

Docket Nos. 50-440A
50-441A

(Perry Nuclear Power Plant,
Units 1 and 2)

October 20, 1975

Upon applicants' motion for summary disposition of the issue whether one applicant's present refusal to wheel PASNY power to intervenor has any meaningful nexus or relationship to activities under the designated nuclear licenses, Licensing Board finds that: (1) a ruling in applicants' favor would not result in the likelihood of expediting the hearing process; (2) the legality of the applicant's present refusal to wheel PASNY power to intervenor may have a direct or material bearing on the monopolization issues, irrespective of the legality of that refusal standing alone; and (3) the motion is predicated upon an inadequate and irrelevant factual basis, in that it deals with only one of the two theories of the relevance of wheeling PASNY power which have been advanced.

Motion denied.

**ATOMIC ENERGY ACT: RELATIONSHIP BETWEEN LICENSED
ACTIVITIES AND SITUATION INCONSISTENT WITH ANTITRUST LAWS**

Individual elements of a situation allegedly inconsistent with the antitrust laws may not be singled out and eliminated from a proceeding as lacking "nexus", so as to prevent the consideration of a group of activities, each perhaps lawful in and of itself, as collectively constituting a situation inconsistent with the antitrust laws.

**RULING OF THE BOARD ON APPLICANTS'
MOTION FOR SUMMARY DISPOSITION
OF SEPTEMBER 23, 1975**

By Motion of September 23, 1975, Applicants moved for summary disposition on the issue of whether CEI's

refusal of AMP-Ohio's request to wheel 30 mw of PASNY power *now* to the City of Cleveland ("City") over CEI's *existing* transmission facilities—has any meaningful nexus or relationship to activities under the designated nuclear licenses.*

The City of Cleveland (City), the Department of Justice (Justice) and the State of Ohio (Ohio) all have filed responses opposing the grant of summary disposition on the issue designed by Applicants. On October 6, 1975, the Staff filed an opposition to Applicants' Motion.† Applicants on October 7 filed a Motion for Leave to Reply to Oppositions to Refile Motion for Summary Disposition. The City, on October 8, 1975, filed a further reply opposing acceptance of Applicants' Motion of October 7 to file a reply. Justice filed a motion to strike Applicants' Motion as an unauthorized pleading. Applicants' Motion to file a reply is hereby granted.

Applicants contend that CEI's refusal to wheel 30 mw of PASNY power now for AMP-O standing alone does not constitute a situation inconsistent with the antitrust laws and, therefore, fails to meet the *Waterford* nexus standard.‡ Applicants concede that a favorable ruling on their Motion would not bar other parties from referring to the PASNY incident as bearing on CEI's intentions or motives underlying its dealings with the City.

*In their moving papers, Applicants incorrectly indicated that this Motion was filed "pursuant to the request of the Licensing Board" at the September 18, 1975 prehearing conference. The Board granted leave to Applicants to refile their summary disposition motion then pending against AMP-O, but did not request Applicants to do so. Tr. p. 1183-86.

†The October 6 filing presumably was predicated on the ten days allowed by the rules for Staff reply (10 CFR Section 2.730(c)) plus three additional days for mail service. We had indicated at the sixth prehearing conference that the Staff would be allowed a ten day period prescribed by the rules in the event the Staff desired to file a reply. The additional three days based upon mail service, however, is inconsistent with our earlier ruling that local parties make hand delivery for the express purpose of reducing necessary reply time. We assume that Applicants made hand delivery of the September 23 Motion to the Staff and we remind the Staff that it is our intent, consistent with what we understood to be the desire of the parties for expedition, to eliminate waiting periods dependent upon mail service.

‡In the Matter of Louisiana Power & Light Company (Waterford Steam Electric Generating Station, Unit 3), Memorandum and Order of February 23, 1973, RAI-73-2 48 and Memorandum and Order of September 28, 1973, RAI-73-9 619.

Applicants also argue that because the PASNY incident is isolated and because no other party has contested facts alleged to be material in Applicants' Motion, there is no genuine issue of fact, and summary disposition therefore should be granted. It is stated that because the PASNY incident was singled out by AMP-O as a situation inconsistent with the antitrust laws in and of itself, Applicants should not be deprived of the opportunity to obtain a ruling as to whether the PASNY event did constitute such a situation. Applicants state that a favorable ruling on their pending Motion may in some way foreshorten the hearing process in that the Board need not consider certain evidentiary or factual issues.

We are not persuaded that if Applicants were to prevail on their Motion, the hearing process would be expedited in any way. Applicants themselves conceded at the sixth prehearing conference that evidence relating to the PASNY incident could be presented arguably in support of opposition parties' effort to prevail in certain issues in controversy. Explanations as to why a favorable ruling would somehow reduce the body of evidence to be presented are unconvincing.

Notwithstanding our inability to perceive any likelihood of expediting the hearing process, there is a fundamental reason why Applicants' Motion must be denied. The Motion for Summary Disposition properly should relate to "all or any part of the matters involved in the proceeding," 10 CFR Section 2.749(a). Although the PASNY incident in some respects may be considered a "matter" involved in the proceeding in that all opposition parties have expressed an intent to introduce evidence of the PASNY incident as *bearing* on an antitrust situation, we do not understand how granting the Motion might eliminate or curtail any of the issues in controversy. The PASNY incident was not singled out by the Board as an issue in controversy so that the suggested benefits of the ruling Applicants request seem illusionary.*

Parties opposing the Motion have responded generally on the common ground that the Motion should be denied because opposition parties are required to prove only a nexus between a situation inconsistent with the antitrust laws and activities under the license. Individual elements of the situation may not be singled out and eliminated on a piece by piece basis so as to prevent a group of activities, each perhaps lawful in and of itself, to qualify as a concerted attempt to abuse the antitrust laws. See, e.g., *United States v. Aluminum Co. of America*, 148 F.2d 416 (2d Cir. 1945).

*This discussion concerns policy reasons for denying the Motion. This is not to say, however, that even though the Board sees no benefit through curtailment of issues or reduction of evidence in granting the Motion, it would not be granted if, as a matter of law, the Board agreed with Applicants' contentions. As will become apparent, we deny Applicants' Motion not only on grounds that the Motion serves no useful function in terms of the advancement of these proceedings, but because, as a matter of law, we hold the Motion insufficient.

Although the Board considers the Justice opposition correctly to set forth the law applicable to decide this Motion, we refer in addition to a recent decision by Judge Edelstein in the IBM litigation.* In a ruling made August 6, 1975,† the Court denied partial summary disposition in circumstances which closely parallel the rationale or the argument advanced by Applicant. Defendant IBM moved for summary disposition on the basis that the Government conceded that defendant's so-called bundling practices do not constitute a violation of law. Thus, since there remained no genuine issue of fact, defendant argued that the portion of the complaint relating to IBM's bundling practices as violating Section 2 of the Sherman Act should be dismissed. The Government responded that the issue was not whether bundling in and of itself was legal, but whether it was engaged in by IBM as part of a scheme of monopolization. The Court ruled that there existed a genuine issue of fact because:

Plaintiff's contentions about bundling raised issues other than the legality of those practices in and of themselves. Indeed, the gravamen of those paragraphs is that those practices were engaged in as part of an illegal scheme of monopolization; such an allegation raises questions of the defendant's intent, i.e., the purpose for which IBM engaged in bundling.

The Court continued:

The Government in a monopolization case . . . need not prove that each practice of the defendant is in itself illegal.

The same principles seem fully applicable to the situation before us.‡ Applicants are incorrect in asserting that irrespective of the legality of the PASNY incident, it had no direct or material bearing on the monopolization issues set forth in the issues in controversy adopted by this Board.

Additionally, Applicants' Motion fails because it is predicated upon an inadequate and irrelevant factual basis. It should be recalled that two theories of the relevance of wheeling PASNY power have been advanced. The principal theory, shared by Justice, Ohio, Staff, City and, initially by AMP-O, is that the refusal to wheel PASNY power is related to a larger monopolization issue, or that the refusal to wheel, notwithstanding physical capacity, independently constitutes a situation inconsistent with the antitrust laws. The second theory, advanced by AMP-O alone was that Perry nuclear generation would directly diminish the capacity to wheel PASNY power by overloading transmission facilities. This contention, made in its Supplemental Petition to Intervene, was

**United States v. International Business Machines*, U. S. District Court, Southern District of New York, No. 69 Civ. 200 (DNE).

†1975 CCH Trade Cases ¶60,495.

‡See, also, *United States v. IBM*, also issued August 6, 1975, denying defendant's Motion to Dismiss based on a failure to state exclusionary conduct constituting the willful acquisition or maintenance of monopoly power in 1975 CCH Trade Cases ¶60,494.

clearly an effort by AMP-O to introduce a direct physical nexus between the activities under the license and the availability of PASNY power. None of the other parties urge this contention. The Board reservedly admitted AMP-O as an intervenor under this theory subject to later clarification of technical, economic and marketing relationships.

Applicants' Motion for Summary Disposition dated August 15, 1974, was limited to the factual issue of overloading transmission capacity. Applicants sought to dismiss AMP-O as an intervenor. As required by 10 CFR 2.749(a), Applicant submitted a Statement of Material Facts simply acknowledging the refusal to wheel, but asserting that there is now and will be ample transmission capacity to wheel PASNY power. The attached Davidson affidavit was similarly limited to statements of transmission capacity. Applicants' renewed motion filed August 18, 1975, contained no additional factual grounds for summary disposition.

In its present motion, Applicants seek a resolution of the entire issue of nexus between the refusal to wheel and activities under the license. Applicants seemingly try to broaden their arguments to include the entire antitrust consideration of refusal to wheel and the contentions advanced by Justice, Staff, Ohio and City. However, Applicants continue to rely solely upon their original Statement of Material Facts and upon the Davidson affidavit. Applicants' Statement of Material Facts, required under 10 CFR 2.749(a), does not bear upon refusal to wheel as that contention is made by the surviving adverse parties or bear upon our view of that issue under the principles of *ALCOA* and *IBM, supra*. Even if the Board were to find it expeditious to rule for the Applicants, the most that would result would be a determination that Cleveland Electric Illuminating Company can now wheel and later will be able to wheel PASNY power but that it refuses now to do so. As we stated above, there would remain genuine and triable issues of material fact.

MOTION DENIED.

ATOMIC SAFETY AND
LICENSING BOARD

John M. Frysiak, Member

Ivan W. Smith, Member

Douglas V. Rigler, Chairman

Dated at Bethesda, Maryland
this 20th day of October 1975.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

LBP-75-64

ATOMIC SAFETY AND LICENSING BOARD

Edward Luton, Chairman
Gustave A. Linenberger, Member
Dr. John R. Lyman, Member

In the Matter of

COMMONWEALTH EDISON COMPANY

(Byron Station, Units 1 & 2,
and Braidwood Station,
Units 1 & 2)

Docket Nos. STN 50-454
STN 50-455
STN 50-456
STN 50-457

October 29, 1975

Upon petition by applicant in uncontested proceeding for a supplement to its Limited Work Authorization (LWA), Licensing Board issues a second partial initial decision, confirming or modifying (as appropriate) prior findings with respect to environmental matters and making findings requisite to issuance of the LWA supplement.

**TECHNICAL ISSUES DISCUSSED: CAPABILITY OF FAULT;
QUALITY ASSURANCE PROGRAM**

APPEARANCES

Michael I. Miller, Esq., John W. Rowe, Esq., and Paul M. Murphy, Esq., of Isham, Lincoln & Beale, One First National Plaza, Chicago, Illinois; For the Applicant, Commonwealth Edison Company;

and

Myron Karman, Esq., Charles A. Barth, Esq., and Steven Sohinki, Esq., Office of the Executive Legal Director, Nuclear Regulatory Commission, Washington, D. C.; For the NRC Regulatory Staff.

SECOND PARTIAL INITIAL DECISION— 10 CFR SECTION 50.10(e)(3) ACTIVITY

I. PRELIMINARY STATEMENT

1. On September 20, 1973, the Atomic Energy Commission, the predecessor of the Nuclear Regulatory Commission (the "Commission"), docketed the application of the Commonwealth Edison Company (the "Applicant") for authorization to construct and operate four substantially identical pressurized water reactors at sites in Illinois designated as Byron and Braidwood.

2. In July 1974 the Regulatory Staff (the "Staff") issued Final Environmental Statements for both Byron and Braidwood Stations. On July 10, 1974, the Applicant requested that limited work authorizations (LWA's) be issued for both stations authorizing certain activities covered by 10 CFR §50.10(e)(1). Hearings were subsequently held concerning the environmental effects of these facilities and the suitability of the sites for nuclear power plants of the general size and type proposed. Thereafter, on December 6, 1974 with respect to Byron Station and on January 8, 1975 with respect to Braidwood Station, the Atomic Safety and Licensing Board (AS&LB) (the "Board") issued Partial Initial Decisions in which it made all of the findings required by Appendix D to 10 CFR §50 and determined that there is reasonable assurance that the proposed sites are suitable locations for nuclear power plants of the size and type contemplated. Those findings will not be repeated herein except when needed for clarity.

3. The Directorate of Licensing issued limited work authorizations permitting various activities within the scope of 10 CFR §50.10(e)(1) on December 13, 1974, for Byron Station, and January 14, 1975, for Braidwood Station.

4. On January 9, 1975, the Commission issued a "Notice of Reconstitution of Board" whereby it appointed Edward Luton, Esquire, as Chairman of the Atomic Safety & Licensing Board established to consider applications in this matter in lieu of Carl W. Schwarz, Esquire, who was unable to continue as chairman due to a schedule conflict.

5. This Second Partial Initial Decision deals with those matters relevant to a request by the Applicant for authorization to conduct certain activities, including subsurface preparation and foundation installation, pursuant to 10 CFR §50.10(e)(3)(i) in addition to those activities previously authorized. The specific work for which additional authorization is requested is included herein as Appendix A. [Appendix A is omitted from this publication but is available at the Commission's Public Document Room, Washington, D. C.] The Board, by Order of August 8, 1975 (40 *F.R.* 34203), set an evidentiary hearing for consideration of all matters relevant to Applicant's request, as well as any other matters which might be appropriate for consideration at that time.

6. In accordance with its Order, the Board convened an evidentiary hearing on August 26, 1975, in Bethesda, Maryland. In addition to items particularly relevant to additional work that the Applicant desires to conduct, the Board considered whether a recently discovered fault at the Byron site would affect the validity of the Board's earlier finding that the Byron site is suitable for nuclear reactors of the general size and type proposed; whether compliance with the recent Commission Opinion in RM 50-2 would be likely to alter significantly the cost/benefit analysis for the Byron and Braidwood stations; and, at the Applicant's request, whether the Board's prior decision, which imposed certain site clearing techniques as conditions to the issuance of the limited work authorization, should be modified to allow disposal of trees to be removed from the Braidwood site by burning rather than by chipping and burial.

7. The record in this case consists of the entire record including exhibits previously considered by the Board in reaching its Partial Initial Decisions concerning site suitability and environmental matters, all material pleadings filed since the issuance of those decisions, the transcripts of the evidentiary hearing held on August 26, 1975; 50 exhibits introduced by the Applicant on August 26, 1975, including the updated Preliminary Safety Analysis Report (PSAR) for the Byron and Braidwood Stations (Westermeier Exhibit 1) and 12 exhibits introduced by the Staff on August 26, 1975, including the Safety Evaluation Report (SER), the report of the Advisory Committee on Reactor Safeguards (ACRS) and Supplement No. 1 to the SER. A full listing of the exhibits introduced on August 26, 1975, appears in Appendix B of this decision. [Appendix B is omitted from this publication but is available at the Commission's Public Document Room, Washington, D. C.]

8. Under 10 CFR §50.10(e)(3)(ii), safety related work may only be authorized under a limited work authorization if the Board finds, in addition to those determinations previously made in its Partial Initial Decisions, that there are no unresolved safety issues relating to the contemplated additional activities which would constitute good cause for withholding authorization. The Board's examination of matters pertinent to the requests for expanded work authorizations and our conclusions thereon are set forth below.

II. FINDINGS OF FACT ON RADIOLOGICAL HEALTH AND SAFETY—EXPANDED LIMITED WORK AUTHORIZATION APPLICATION

9. The four nuclear power plants that are the subject of the application at hand are described in the Applicant's PSAR (Westermeier Ex. 1, previously identified as Klopp Ex. 2, and the SER Staff Ex. 4). Additional relevant information is also contained in the general information portion of the application (Westermeier Ex. 2, previously identified as Klopp Ex. 3). The Staff,

in Supplement No. 1 to the SER (Staff Ex. 5) issued prior to the evidentiary hearing session of August 26, 1975, had indicated that, when three matters are resolved, it would support the issuance of construction permits. These matters, currently under review by the Staff, are the seismic system analysis, the performance evaluation of the emergency core cooling system, and compliance with the design dose objectives of Appendix I to 10 CFR Part 50 (SER Supplement No. 1, §1). In addition, Mr. John Angelo, Licensing Project Manager for the Staff, stated that the recently discovered fault at the Byron site, and the estimated forces or loads on the reactor pressure vessel supports (recently brought to the Staff's attention in another case) required further analysis (Tr. 770). Mr. Angelo indicated that the Staff would present testimony to the Board (on August 26, 1975) with respect to the faults, and that the remaining four items would be dealt with in a future Supplement No. 2 to the SER (Tr. 770).

10. Regarding the expanded LWA application, Applicant's witness Mr. R. P. Tuetken described the work that the Applicant wishes to undertake (Testimony of R. P. Tuetken, pp. 2-3 following Tr. 644). In addition, Tuetken Exhibits 1 through 6 generally illustrate the areas of the main structures in which work is contemplated (Tuetken, p. 3). Cross-hatched areas on the drawings will not be involved (Tr. 650). The description in the record of the additional activities Applicant desires to conduct is adequate for the Board's analysis.

11. Mr. Tuetken stated that each of the unresolved matters identified in Supplement No. 1 to the SER is related to specific analyses or components that will not be affected by the construction activities for which the Applicant now seeks authorization (Tuetken, p. 5). Mr. Angelo of the Staff testified that there are no unresolved safety items (including the items identified in paragraph 9, *supra*) that would cause the Staff to oppose the grant of the expanded LWA the Applicant requested (Tr. 771). The Board concurs that the ECCS performance evaluation does not impact the LWA consideration. The Appendix I consideration is dealt with as an environmental matter in Section III, *infra*. The remaining items from paragraph 9 are discussed in the immediately following paragraphs of this section.

12. The Board inquired into and requested reasons for the Staff's conclusion that the work proposed to be performed under the expanded LWA would in no way relate to the unresolved items concerning the possible underestimation of the forces on the reactor pressure vessel supports (Tr. 772). Mr. Angelo explained that the proposed work "does not come into intimate relationship with the support of this vessel" and that the Staff's preliminary information and review indicate there is sufficient conservatism so that the Applicant can adequately account for the loads in its final design while remaining within acceptable code limits (Tr. 772).

13. The Board also inquired into the seismic system analysis matter that is described on page 3-2 of Supplement No. 1 to the SER. Mr. Angelo testified that

although the Staff was still in the process of reviewing information provided by the Applicant, the Staff had determined that this matter does not affect the work contemplated under the requested LWA's, the suitability of the sites, or the NEPA cost/benefit analysis (Tr. 772-774).

14. During the excavation at the Byron site, the Applicant determined that there have been small amounts of displacement along several joints in the rock underlying the site. Such joints with displacement may be described as faults. (Testimony of G. Heim, p. 3, following Tr. 705). In view of this development, the Board extensively considered this matter to determine if there were reason to modify its previous findings.

15. The faults were examined by Dr. Robert Jackson, a structural geologist with the Staff, and described by him as small faults in the Galena Limestone bedrock (Ordovician age, 430 million years old) with vertical displacements of between one and six inches. Dr. Jackson also noted that the sinuosity of the faults without evidence of brecciation indicates that the horizontal fault movement is probably small (Testimony of Dr. Jackson, Staff Ex. 13, pp. 2-3). Through his examination of the site and residual soil overlying the fault and his consultations with Dr. Willman of the Illinois Geological Survey, and Dr. Dickey of the United States Geological Survey, Dr. Jackson concluded that the faults are not "capable" within the meaning of Appendix A to 10 CFR Part 100 (Tr. 814; Staff Ex. 13, pp. 3-4). In response to questions by the Board, Dr. Jackson said that the statement on page 4 of his prepared testimony to the effect that the site remains suitable for the location of the Byron facility is directed specifically at the impact of the recently discovered joints and faults (Tr. 824-825).

16. Upon discovering the faults at the Byron site, the Applicant's architect-engineer developed, with suggestions by the Staff, a program of fault specific geotechnical investigations (Heim, p. 7). The purpose of the investigation is to describe more fully the small displacement faults, including their regional and site specific characteristics and to confirm that the faults are "non-capable" as that term is defined in Appendix A to 10 CFR Part 100. Dr. George E. Heim, an experienced geologist and the Chairman of an American Nuclear Society committee that is developing standards for geological studies at nuclear power plant sites, described the stratigraphic and fault specific investigations which the Applicant is conducting (Heim, pp. 5-11). As a result of this study, Dr. Heim concluded that: there is no historical evidence to suggest that the reported seismic events in the area are associated with the faults at the Byron site (Heim, p. 11); the physical appearance and mineralogy of the residual soil at the site indicate that the faults are over one million years old (Heim, p. 13); and the orientation of the faults indicate that they fit the regional pattern of faulting in northern Illinois and that they were probably formed 225 million years ago (Heim, p. 13). Dr. Heim stated, "It is my judgment that the information we have obtained is fully adequate to support these conclusions and that the site is geologically suitable" (Heim, p. 15).

17. The Board heard further testimony concerning the faults from Dr. H. B. Willman and Dr. Thomas C. Buschback of the Illinois Geological Survey. The Illinois Geological Survey is a research arm of the State of Illinois that conducts geological investigations as a service to the people of the State (Tr. 732-733). As such, it is independent of the Applicant and neither Dr. Willman nor Dr. Buschback was compensated by the Applicant for their services (Tr. 734-760). The statements of these witnesses represented the position of the Illinois Geological Survey (Tr. 733). Each of these witnesses is a qualified geologist. Dr. Willman's special field of investigation has been rock strata of the type exposed at the Byron site (Tr. 703; Statement of H. B. Willman, pp. 1-2 following Tr. 707). Dr. Willman has authored numerous publications dealing with the geology of northern Illinois (Tr. 734).

18. Dr. Willman viewed the Byron site on July 1, August 1, 6 and 7, 1975, examined cores from the Byron site, and reviewed the results of mineral analyses performed on samples collected at the site (Willman, p. 2). Dr. Willman stated that the maximum vertical displacement observed along the faults is 6 inches, and that the strike slip or horizontal movement does not appear to be significant (Willman, p. 2). Dr. Willman noted that minor joints and faults similar to those found at the Byron site are found in northern Illinois wherever there are adequate exposures, and they probably occur everywhere. Because a regional joint system with minor faults would have resulted from the major warping and faulting at the end of the Paleozoic period, the minor faults at the Byron site may be 200 to 250 million years old (Willman, p. 5).

19. Based on his study of the residual soil overlying the faults and its relationship to other soils in the area, Dr. Willman concluded that the soils are of a minimum age of 200,000 years and more probably 600,000 to 1,000,000 years old (Willman, p. 7). The fact that there is no displacement in this residual overlying soil indicates that the fault is older than the residual soil (Willman, p. 6). Dr. Willman found that the joints and faults were almost completely filled with a compact grey clay, and that there is no evidence of movement at the faults since the clay was deposited (Willman, p. 8). Through his analysis of the clay found in the faults and a comparison with other clays in Illinois, Dr. Willman concluded that the grey clay was deposited in the faults in the late Paleozoic (more than 225 million years ago) or before the late Cretaceous (more than 100 million years ago) time (Willman, p. 9). Dr. Willman concluded that there is no evidence at the Byron site suggesting movements along the joints or faults more recently than 200 million years ago; that all lines of evidence are consistent with an age greater than one million years for the faulting; and that the faults should not be considered capable (Willman, p. 10).

20. On the basis of the evidence above, the Board finds that the faults at Byron Station are not capable as that term is defined in Appendix A to 10 CFR Part 100. Therefore, the faults need not be considered in establishing the safe shutdown earthquake and seismic values adopted by the Staff and the Applicant. (10 CFR Part 100, Appendix A §IV(a)(7)).

21. In response to further Board questions, Dr. Stepp, a Staff seismologist, explained that the Staff utilized an earthquake analysis for a broad region about the site in determining the likelihood of a seismic event at the site. This region was chosen upon the basis of its having a reasonably homogeneous geologic history and structure, and also because it represented a large enough area to yield a statistically useful earthquake sample (Tr. 826). The Staff determined that intensity VIII earthquakes were not proven to be sufficiently unlikely to be excluded from the design analysis (Tr. 826-827, SER 2.5.4). Accordingly, a safe shutdown earthquake of intensity VIII with an accompanying horizontal acceleration of 0.20g were determined by the Staff to be appropriate (SER §2.5.4). The Board finds that appropriately conservative earthquake acceleration values have been employed in the design analysis.

22. The Board had previously determined that there is reasonable assurance that the proposed sites for the Byron and Braidwood Stations are suitable locations for nuclear power plants of the size and type proposed. The Board finds that Section 2 and Supplement No. 1 of the SER and the evidence reviewed in paragraphs 14 through 21, *supra*, confirm the continued validity of this determination. Accordingly, the Board affirms its previous determination that the Byron site is suitable for the construction of facilities of the general size and type proposed.

23. The Staff has reviewed the Applicant's technical qualifications, and evaluated same in Section 13 of the SER. At this stage of the licensing proceeding, the Board is satisfied with the Staff's review, and finds that, based upon the material presented in Section 13 of the SER, the Applicant is technically qualified to undertake the scope of work proposed under the request for an expanded limited work authorization.

24. Since some of the work for which the Applicant requests authorization is within the purview of Appendix B to 10 CFR Part 50, the subject of quality assurance (QA) is addressed. In addition to the QA information presented by the Applicant in the amended Section 17.1 of the PSAR, Mr. Walter J. Shewski, the Applicant's Corporate Manager of Quality Assurance, testified regarding the Applicant's quality assurance program for the construction of the Byron and Braidwood Stations. This program addresses the criteria of Appendix B to 10 CFR Part 50, Section III of the ASME Boiler and Pressure Vessel Code, ANSI Standard N45.2, and various regulatory guides and guides for quality assurance programs (Testimony of W. Shewski, p. 2, following Tr. 668).

25. The Staff's review of the Applicant's QA program and that of its architect-engineer and nuclear steam supply vendor are presented in Section 17 of the SER. Based on its review, the Staff concluded that: the Applicant has established a quality assurance organization that meets the requirements of Appendix B to 10 CFR Part 50; personnel performing QA functions have sufficient authority and organizational freedom to perform their functions effectively; the Applicant's corporate management is committed to become

directly involved to effect any corrective action that may be needed to improve the implementation and effectiveness of the QA program; and the Applicant's quality assurance program complies with the requirements of Appendix B to 10 CFR Part 50 and is acceptable for the design, procurement, and construction of the Byron and Braidwood Stations (SER §17.2). The Staff has evaluated the quality assurance programs of the Applicant's architect-engineer, Sargent & Lundy, and of the Applicant's nuclear steam supply system vendor and found that both are acceptable (SER §17.3, 17.4). Mr. Shewski, the Applicant's Corporate Manager of Quality Assurance, testified that the Applicant's quality assurance program has been revised since Chapter 17 of the PSAR was submitted. These revisions do not affect its effectiveness (Shewski, p. 2). Cross examination by Staff counsel confirmed that these changes are minor and do not affect the acceptability of the Applicant's quality assurance program (Tr. 687).

26. The Board extensively questioned Mr. Shewski with respect to the organization, operation, and staffing of the Applicant's QA program (Tr. 669-686). The Board was particularly interested in whether the Applicant's program has improved with time, and in light of past experience (Tr. 674). In response, Mr. Shewski testified that as an example of improvements made, he reports directly to an Executive Vice-President, so that quality assurance is completely independent of any line organization. He further testified that the Executive Vice-President, the President, and the Chairman of the Board give him full support on quality assurance matters. The use of an independent testing agency to qualify welders, the training of quality assurance personnel in non-destructive examination, and various successful performance audits by NRC were described. Mr. Shewski also stated that the NRC Staff had made a recent inspection at the Applicant's corporate headquarters with respect to organization, quality assurance, engineering, and purchasing for the Byron site and had found no violations. Likewise, audits of the LaSalle County facility have shown no violations (Tr. 675-677). The Board inquired whether, and was assured by Mr. Shewski that, the recent evaluation by the American Society of Mechanical Engineers covered the quality assurance programs for both Byron and Braidwood as well as the Applicant's other nuclear power plants (Tr. 683-685).

27. Based upon the Staff analysis and conclusions set forth in the SER and based upon its own examination of the Applicant's Corporate Manager of Quality Assurance, the Board concludes that the Applicant's quality assurance program has been significantly improved and meets the requirements of 10 CFR Part 50, Appendix B.

28. In summary, from the foregoing the Board finds that, in all respects relevant to the granting of an expanded LWA, there are no unresolved safety issues.

III. ENVIRONMENTAL MATTERS

29. The Board has previously issued its environmental decisions and made all of the findings required by Appendix D to 10 CFR Part 50. Several matters are addressed below that relate to the continuing effect of those decisions.

A. APPENDIX I TO 10 CFR PART 50

30. After the Board issued its Partial Initial Decisions, the Commission issued its Opinion in RM 50-2, NRCI-75-4R page 277, April 30, 1975. This Opinion provides numerical guides for design objectives to limit radioactive effluents from light water cooled reactors to as low as practicable. The as low as practicable objective had previously been considered with respect to the Byron and Braidwood Stations and it was determined that they complied with 10 CFR §50.34(a) (LBP-74-87, RAI 74-12, 1006 (December 6, 1974) and LBP-75-1, RAI-75-1, 1197 (January 8, 1975), respectively).

31. Appendix I sets maximum limits for the allowable estimated annual dose to any individual from exposure to the radioactive effluents from any single reactor, and in addition requires that an applicant for a construction permit include in the design of its radioactive waste treatment systems all equipment that can, with a favorable cost/benefit analysis as determined by Appendix I requirements, reduce the total exposure to the population within 50 miles of the reactor. The Staff is now in the process of developing models from which compliance with Appendix I can be determined. The Board has heard testimony from both the Staff and the Applicant to determine whether it is likely that compliance with Appendix I would upset the previously reviewed cost/benefit analysis that was performed pursuant to the National Environmental Policy Act.

32. Dr. S. S. Kirslis, Environmental Project Manager for the Staff for the Byron and Braidwood Stations, stated that the Applicant has agreed to provide such additional equipment that is determined to be necessary to meet the requirements of Appendix I (Statement of S. S. Kirslis, p. 4, Staff Ex. 8). Dr. James C. Malaro, lead nuclear engineer in the Staff Effluent Treatment Branch, has calculated the estimated radioactive effluent releases from the Byron and Braidwood Stations based on the radwaste systems described in the application, and these estimated releases were presented to the Board (Staff Ex. 10, Table 1). Based on the estimated releases calculated by Dr. Malaro, Dr. Frank J. Congel, of the Staff has calculated, using an interim method of assessment described in detail to the Board (Appendix A to Staff Ex. 9), an upper bound estimate of the total dose to the population resulting from exposure to the radioactive effluents from both stations (Staff Ex. 9, pp. 6,7). Dr. Malaro indicated that the estimated releases from each plant, when

computed with the models now being developed by the Staff, are not likely to differ significantly from those presented in his statement (Tr. 787).

33. The Staff concluded that even based on its upper bound dose calculations, full compliance with the population dose requirements of Appendix I would cost less than \$240,000 per year per reactor and that this represents a small fraction of the annualized station cost of \$145 million per year (Staff Ex. 9, p. 4). Dr. Kirsli testified that these potential costs, even if incurred, would not significantly affect the results of the overall cost/benefit balance associated with the Byron and Braidwood Stations (Staff Ex. 8, p. 7).

34. Gerald P. Lahti, Supervisor of the Shielding and Radiological Safety Section of Sargent & Lundy, Applicant's architect-engineer, testified on behalf of the Applicant that he had made calculations about compliance with Appendix I, resulting in lower population doses than those of the Staff. Mr. Lahti testified that under some assumptions, it might be appropriate to alter some of the proposed radwaste systems for the facilities, but that the cost differential between the two systems would be small compared to the cost of the Station (Testimony of G. P. Lahti, p. 11 following Tr. 660).

35. There are differences between the dose estimates presented by the Staff and the Applicant and between the current estimates and those previously reviewed by the Board. While the record reflects the reasons for these differences (Tr. 663, 798, Lahti pp. 5, 9-11), the Board finds that the differences in dose estimates are not significant for the purpose of this inquiry, since even for the Staff's higher dose estimates the cost/benefit analysis is not significantly affected. Prior to the issuance of a construction permit, the Applicant will be required to demonstrate compliance with 10 CFR §50.34(a) as defined by the Commission's Opinion in RM 50-2, April 30, 1975, NRCI-75/4R page 277, as further modified in 40 *F. R.* 40816, September 4, 1975. The Board finds that under the Staff's upper bound estimation neither the maximum potential cost of achieving compliance with Appendix I nor the radiation doses that may result from plant operation would significantly alter the results of the Board's previous review of the cost/benefit analysis.

B. DISPOSAL OF TREES

36. The Applicant has requested that the Board change a condition in the LWA for the Braidwood Station to permit the disposal of trees on 35 acres of the Braidwood site by burning, in accord with Illinois law, rather than by chipping and burial at a solid waste disposal site. Mr. John R. Petro, a biologist in the Applicant's Environmental Affairs Department, indicated that the Applicant's attempts to find an organization that could make use of the trees has been unsuccessful. The Will County Forester has advised him that such attempts will continue to be fruitless (Statement of J. Petro, p. 1, following Tr. 691).

Mr. Petro estimated that the cost of chipping alone would be \$50,000 (*Ibid.*). Due to changes to the regulations of the Illinois Pollution Control Board (Petro Ex. 1), open burning of the trees is now permitted by the State. The hearing record relative to amending the open burning regulations indicates that it is unlikely that such burning would cause the Federal Air Quality Standards for particulates to be violated in an area such as the Braidwood site (Petro, pp. 2, 3). Mr. Petro has consulted with the Will County Forester and representatives of the Asplundh Tree Expert Co., and they have all concluded that burning the trees will not cause enough adverse effects to justify the cost and the solid waste caused by chipping (Petro, p. 3). The Board inquired of Mr. Petro what fuel savings would result from burning rather than chipping the trees (Tr. 693) and whether the tree ashes would have a beneficial or detrimental effect on the environment (Tr. 699). Mr. Petro did not have the information available at the hearing, but at the Board's request has submitted a supplementary affidavit containing this information. (Affidavit of John R. Petro, filed September 8, 1975). Based on the data in Mr. Petro's affidavit, it appears that burning of the trees would result in a total energy savings of more than 200,000 kilowatt hours, and that the tree ashes would be beneficial to the soil. Mr. Petro also stated that the trees would be burned in a manner designed to limit the adverse effect of smoke on the surrounding area (Tr. 696-697).

37. Dr. Kirslis of the Staff stated that, in response to the Applicant's request to burn the trees, he conferred with the Staff of the Argonne National Laboratory. He was advised that Mr. Daniels had discussed the issue with the Chicago office of the United States Environmental Protection Agency and that both he and the EPA people felt that burning of the trees pursuant to the Illinois Pollution Control regulations would not have serious consequences to the environment. The Staff's position is that the Applicant should be permitted to dispose of the trees by burning rather than chipping (Tr. 804). The Staff had not originally insisted that the Applicant dispose of the trees by chipping, but had included this method of disposal in the Staff's Environmental Statement, from which it was adopted in the earlier Partial Initial Decision, because the Applicant indicated that this was the method it then proposed to use (Tr. 806).

38. Although no evidence was presented concerning the relative effects on air pollution of chipping vs. burning, the Board notes that wood smoke or constituents of wood smoke have been used for centuries to preserve food products and concludes that the smoke from burning 600 cubic yards of tree trunks and branches is likely to have no more adverse effect on the atmosphere than the exhaust fumes from the combustion of 5,940 gallons of automotive fuel required to chip the same quantity of forest products. Either burning or chipping will eventually return the non-volatile mineral constituents of the wood to the soil; however, chipping will consume 725 million BTU's of energy not required in burning and will necessitate the addition of 9 tons of ammonium sulfate to the soil to compensate for the nitrogen deficiency incurred in the

decomposition of the wood chips (Petro affidavit). The Board finds that the cost/benefit balance is in favor of burning the 35 acres of trees at the Braidwood site. Therefore, burning of landscape waste in a manner compatible with state law will be permitted.

C. 401 CERTIFICATIONS

39. Subsequent to the Partial Initial Decisions on Environmental Matters, the State of Illinois has issued new certificates under Section 401 of the Federal Water Pollution Control Act (FWPCA) 33 U.S.C. 1251 *et seq.* for the Byron and Braidwood Stations. These certificates indicate that the facilities will comply with the applicable provisions of the FWPCA and State water quality standards (Staff Exs. 2 and 3). The Board finds that the requirements of Section 401 of the FWPCA have been met.

D. SITE REDRESS

40. During the earlier hearings, the Board considered the ability and willingness of the Applicant to redress the sites if construction permits are ultimately denied. The Board found that Applicant's willingness to undertake such measures to be chosen from a previously presented list of possible steps appropriate to the ultimate use then contemplated for the site, represents an adequate commitment, provided that the Staff determines which of the possible measures will ultimately be appropriate (e.g., Byron Partial Initial Decision, Finding 90, LBP-74-87, RAI 74-12, p. 1034).

41. Since the additional work that the Applicant desires to conduct implies that more costly redress may be required, Applicant's witness Tuetken testified that subgrade concrete structures would be left in place, excavations filled with crushed rock and soil, and above grade foundations razed so that further restoration would be identical to that previously considered. He presented cost estimates for redress, including the additional work; and Applicant's Assistant Treasurer testified that there would be no foreseeable problem in financing such redress (Tuetken, p. 5; Tr. 688-89).

42. The Board asked whether the sites could be restored to agricultural use if concrete structures were left in place and excavations filled with crushed rock. Mr. Tuetken explained that the concrete and rock could be covered with sufficient soil overburden to allow agricultural use. The Board finds that the Applicant can satisfactorily redress the sites if necessary. Applicant remains willing to undertake such of the redress measures it has described as may be appropriate bearing in mind the likely use of the site (Tr. 650-651). The Board finds this commitment to be adequate, subject to Staff review of the Applicant's choice of redress measures, if the construction permits are denied.

IV. NEED FOR POWER

43. The Applicant's load forecasting parameters indicate a need for reliable service from Byron in the summer of 1981, and, based on the Applicant's estimate that 60 months are required from the first installation of reinforced concrete to fuel loading, immediate commencement of further construction is required to meet this deadline (Tr. 649). Regarding the effects of the onset of winter on construction, it appears that the thin slabs of concrete at the bottom of the excavation over which more massive concrete pours would be made must be protected from freezing (Tr. 655). Cold weather would affect neither the excavation activities nor the larger concrete pours. With respect to Braidwood Station the need is less urgent; but the expanded LWA will provide greater flexibility in scheduling the ability to accommodate subsequent events in licensing and construction (Tuetken, p. 6). The Board has previously found in the environmental and site suitability hearings that the Applicant needs the power to be produced by the Byron and Braidwood Stations. The Board finds that the Applicant has demonstrated an adequate purpose for obtaining authorization for the additional construction activities.

V. CONCLUSIONS

44. The application and the proceedings thereon comply with the requirements of the Atomic Energy Act of 1954, as amended, the National Environmental Policy Act, and the rules and regulations of the Commission. This Second Partial Initial Decision is limited to those matters relating to the Applicant's request for an expanded LWA, and certain matters relating to the Board's earlier decision, which have arisen in the interim. The record will remain open for the submission of additional evidence on radiological health and safety matters after which the Board will make its decisions concerning the issuance or denial of construction permits. The conclusions appropriate at this stage follow.

45. The Board's prior findings with respect to environmental matters are confirmed except as specifically modified herein. These modifications do not affect the Board's prior conclusions that the Staff's NEPA review has been adequate, and that NEPA and Appendix D to 10 CFR Part 50 have been complied with. The Applicant shall be relieved of the requirement to chip the trees at the Braidwood site. Site redress shall be governed by paragraph 42 of this decision.

46. As set forth in findings contained in paragraphs 9 through 28 there continues to be adequate assurance that the sites are suitable for nuclear power

plants of the general size and type proposed from the standpoint of radiological health and safety considerations.

47. There are no unresolved safety issues relating to the additional activities for which Applicant has requested authorization that would constitute good cause for withholding such authorization.

VI. ORDER

This Second Partial Initial Decision is based upon the foregoing findings and conclusions of the Board and shall constitute a portion of the Initial Decision to be issued upon completion of the radiological health and safety phase of this proceeding. In accordance with Sections 2.754, 2.760, 2.762 and 2.764(a) of the Commission's Rules of Practice, 10 CFR Part 2, this Second Partial Initial Decision shall be effective immediately and shall constitute the final action of the Commission thirty (30) days after the date of issuance hereof, subject to any review pursuant to the Rules of Practice. Exceptions to this Partial Initial Decision may be filed by any party within seven (7) days after service of this Partial Initial Decision. A brief in support of the exceptions shall be filed within fifteen (15) days thereafter, twenty (20) days in the case of the Regulatory Staff. Within fifteen (15) days after the service of the brief of appellant (twenty (20) days in the case of the Regulatory Staff), any other party may file a brief in support of, or in opposition to, the exceptions.

THE ATOMIC SAFETY AND
LICENSING BOARD

Gustave A. Linenberger, Member

John R. Lyman, Member

Edward Luton, Chairman

Dated at Bethesda, Maryland
this 29th day of October, 1975

[Appendixes A and B are omitted from this publication but are available at the Commission's Public Document Room, Washington, D. C.]



UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ALAB-297

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Alan S. Rosenthal, Chairman
Michael C. Farrar, Member
Richard S. Salzman, Member

In the Matter of

Docket No. 50-346A

THE TOLEDO EDISON COMPANY, ET AL.

(Davis-Besse Nuclear Power Station,
Unit 1)

Messrs. Gerald Charnoff and Wm. Bradford Reynolds,
Washington, D. C., for the applicants, The Toledo Edison
Company, *et al.*

Upon request for direction to Licensing Board to certify the question of whether an operating license may be issued prior to the completion of on-going antitrust proceeding, Appeal Board concludes that there is no warrant for its consideration of the question before the Licensing Board has been afforded a reasonable opportunity to pass upon it.

Certification request denied without prejudice to possible later renewal.

RULES OF PRACTICE: CERTIFICATION

As a general rule, the Appeal Board will not avail itself of its certification authority under 10 CFR 2.718(i) unless and until a licensing board has been afforded at least a reasonable opportunity to decide itself the question sought to be certified. An exception to that rule will be made only in the most compelling circumstances (such as the presence of an emergency situation giving rise to a manifest need for an almost immediate final determination of the question).

MEMORANDUM AND ORDER

November 5, 1975

Yesterday, the applicants filed a motion with the Licensing Board seeking an affirmative determination that Unit 1 of the Davis-Besse facility may be licensed for operation prior to the completion of this on-going antitrust proceeding.¹ In the alternative, the Licensing Board was asked to certify promptly the question to us for decision.

Simultaneously with the filing of that motion, the applicants moved before us for an immediate direction to the Licensing Board to certify the question. The provisions of 10 CFR 2.718(i), as well as our decision in *Public Service Co. of New Hampshire* (Seabrook Station, Units 1 and 2), ALAB-271, NRCI-75/5 478 (May 21, 1975), were invoked. Section 2.718(i) expressly authorizes the Commission, and thus this Board as its delegate, to direct certification of a question raised in a proceeding still pending before a licensing board. In ALAB-271, we expressly held that a party to the proceeding is entitled to request us to exercise that authority. NRCI-75/5 at 482-83. See also our prior memorandum and order in this case, ALAB-290, NRCI-75/9 401 (September 19, 1975); *Seabrook, supra*, ALAB-295, NRCI-75/10 668 (October 28, 1975).²

Although there thus can be no doubt respecting our power to grant the relief sought of us by the applicants, we nonetheless believe it would be inappropriate to direct certification at this time. There may well be merit to the applicants' insistence that the question which they have raised is worthy of definitive resolution at an early date; indeed by its very nature the question obviously must be decided at an interlocutory stage of the antitrust proceeding or not at all. But it has not been satisfactorily explained to us why we must step in before the Licensing Board has passed upon the question (after having first obtained the views of the other litigants).

As observed in *Seabrook*, ALAB-271, *supra*, "if at all, the need to reach down for an issue is more likely to surface after, and not before, the Licensing Board has itself spoken on the issue." NRCI-75/5 at 482. That observation fully applies here. For one thing, upon its own examination of the question the

¹ Construction of this plant has been allowed to continue, notwithstanding the pendency of an antitrust review, pursuant to the "grandfather" clause in the antitrust provisions of the Atomic Energy Act. Section 105c(8), 42 U. S. C. 2135(c)(8). The question which the applicants wish to have resolved is whether operation is similarly "grandfathered" should the plant be ready before the antitrust proceeding has been completed (according to the applicants, a contingency not unlikely to materialize).

² In asking for a certification direction, applicants also referred to 10 CFR 2.785(d). That section is concerned, however, with the certification of questions by an appeal board to the Commission. It is, therefore, inapposite here.

Licensing Board may decide it in the applicants' favor; if this should come to pass, the applicants will no longer require our intervention (although, to be sure, some other party to the proceeding might then wish us to invoke our certification jurisdiction). And should the Licensing Board instead reject the applicants' position that completion of the antitrust review is not an absolute condition precedent to the issuance of an operating license for the Davis-Besse facility, we would have the benefit of that Board's reasoning in making our own determination (1) whether there is sufficient warrant for our stepping into the controversy; and (2) if so, what answer should be given by us to the question.

In short, as a general rule we will not avail ourselves of our Section 2.718(i) certification authority unless and until the Licensing Board has been afforded at least a reasonable opportunity to decide itself the question sought to be certified. An exception to that rule will be made only in the most compelling circumstances (such as the presence of an emergency situation giving rise to a manifest need for an almost immediate final determination of the question). Perceiving the existence of no such circumstances in the present case, we deny the certification request as premature. It may, of course, be later renewed in the event that the Licensing Board (1) rules against the applicants on the merits of the question raised by their motion now pending before that Board; and (2) then declines to refer that ruling to us under 10 CFR 2.730(f). In this connection, we assume that the Licensing Board will render its ruling as soon as practicable following its receipt of the responses of the other parties to the applicants' motion.

Motion to direct certification *denied* without prejudice to its renewal in accordance with the terms of this order.

It is so ORDERED.

FOR THE ATOMIC SAFETY AND
LICENSING BOARD

Margaret E. DuFlo
Secretary to the Appeal Board

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ALAB-298

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Richard S. Salzman, Chairman
Michael C. Farrar, Member
Dr. W. Reed Johnson, Member

In the Matter of

Docket Nos. 50-440

CLEVELAND ELECTRIC ILLUMINATING
COMPANY, et al.

50-441

(Perry Nuclear Power Plant,
Units 1 and 2)

Mr. Gerald Charnoff, Washington, D. C., for the applicants,
Cleveland Electric Illuminating Company, et al.

Mr. David E. Kartalia (Mr. Joseph Gallo on the brief) for
the Nuclear Regulatory Commission staff.

Upon review *sua sponte* of a partial initial decision (LBP-75-53) making findings requisite to the issuance of an expanded limited work authorization (LWA-2), Appeal Board ordered the cause remanded because, contrary to the Commission's regulations, the Licensing Board had authorized an LWA-2 without resolving safety issues relating to the activities to be conducted thereunder.

Matter remanded for further proceedings; issuance of LWA-2 barred until the Board can make the requisite safety findings; existing limited work authorization (LWA-1) undisturbed.

LICENSING BOARD: RESOLUTION OF ISSUES

Where 10 C.F.R. §50.10(e) (or any other statute or regulation) requires a licensing board to make specific findings before acting, it may not allow the staff to make them for it; rather, after giving the parties an opportunity to be heard,

the board itself must make those findings openly and on the record. *Consolidated Edison Company of New York* (Indian Point, Unit 3), CLI-74-28, RAI-74-77, 8-9 (1974); *Vermont Yankee Nuclear Power Corp.* (Vermont Yankee Station), ALAB-124, 6 AEC 358, 360, 361-62, fn. 4 (1973).

LWA: REQUIRED DETERMINATIONS

A licensing board order permitting the authorization of LWA-2 activities before the board has made all the requisite safety and other findings is inconsistent with Commission Regulations. 10 C.F.R. §50.10(e).

LICENSING DECISIONS: EXPEDITION AND THOROUGHNESS

The public interest requires prompt decision-making, but only to the extent consistent with the need for careful and thorough examination into critical safety and environmental issues.

OPINION

November 19, 1975

Under the Commission's rules, an electric utility company may seek approval to perform certain kinds of work on a proposed nuclear power plant before final action is taken on the company's application for a construction permit.¹ Such approval can be obtained only after the Licensing Board makes certain key findings; the staff then may issue a "limited work authorization." In this connection, if the proposed work includes installing the foundations for important structures, the Licensing Board has to determine for itself that there do not exist any "unresolved safety issues" relating to that work which would "constitute good cause for withholding authorization" to perform it.²

Although the precise import of the Licensing Board's partial initial decision³ now before us in this construction permit proceeding is not free from all doubt, it appears that the Board gave the staff permission to issue an expanded limited work authorization in the face of an unresolved safety problem which the Board left to the staff to settle. But whatever the intent of the Board's decision, the safety problem could not properly have been resolved on the then-existing record. This being so, the Board was precluded by the unambiguous terms of the Commission's regulations from allowing the staff to issue the requested limited work authorization. We said as much from the bench at the end of oral argument

¹ 10 C.F.R. §50.10(e), adopted April 24, 1974 (39 F.R. 14506).

² 10 C.F.R. §50.10(e)(3).

³ LBP-75-53, NRCI-75/9 478 (September 9, 1975).

on November 6th, when we directed the staff not to issue the limited work authorization pending the completion of further proceedings before the Licensing Board. In this opinion, we amplify the reasoning which led us to take that action.

I

A. The Governing Regulation. After the enactment of the Commission's regulations implementing the National Environmental Policy Act (NEPA), applicants were generally not allowed to perform any significant amount of work at the site of a proposed nuclear power plant prior to the receipt of a construction permit. In order to avoid situations in which unnecessary delays in the start of construction might thereby result, the Commission established a system which would permit some work to go forward without compromising environmental values or shortcutting necessary safety reviews. Under that system, if the applicant so chooses, work can be undertaken in stages—at its own risk—before final action is taken on its construction permit application, as key environmental and safety findings are made.

The system is embodied in a regulation which distinguishes between two types of limited work authorizations. The first, colloquially known as an "LWA-1", involves activities such as preparing the site, building service facilities and temporary construction-support facilities, excavating for all facility structures, and constructing certain relatively minor facility structures. 10 C.F.R. §50.10(e)(1). Before an LWA-1 can be granted, the staff must have issued the final environmental statement (FES) related to the construction of the facility (*ibid.*); moreover, the Licensing Board must have made all the environmental findings necessary to the issuance of a construction permit and must have determined that "... there is reasonable assurance that the proposed site is a suitable location for a nuclear power reactor of the general size and type proposed from the standpoint of radiological health and safety considerations" 10 C.F.R. §50.10(e)(2).

An applicant can proceed further by obtaining an "LWA-2", which allows "the installation of structural foundations, including any necessary subsurface preparation . . ." for the more critical facility structures (i.e., those subject to the Commission's quality assurance regulations). 10 C.F.R. §50.10(e)(3)(i). An LWA-2 cannot be issued until the Licensing Board not only has made the findings necessary for an LWA-1 but also has "determined that there are no unresolved safety issues relating to the [LWA-2] activities . . . that would constitute good cause for withholding authorization." 10 C.F.R. §50.10(e)(3)(ii). Whether this latter finding could be made on the record of this case is at the heart of this matter.

B. *The Proceedings Below.* In the case at bar, the applicants initially sought an LWA-1; after obtaining that, they sought an LWA-2. While the questions before us mainly concern the Licensing Board's handling of the LWA-2 request, it is instructive to examine that Board's decisions dealing with the LWA-1 as well.

In its first partial initial decision, issued on September 18, 1974, the Board below considered a number of contested issues as well as the other environmental and site suitability matters. LBP-74-69, RAI-74-9 538. Although its findings were generally favorable to the applicants, the Board refused at that time to make "an unqualified favorable determination with respect to site suitability . . ." *Id.* at 574. The reason for its refusal was that in three respects the record did not establish reasonable assurance that the applicants could obtain the requisite control of the site environs. *Id.* at 574-75. Accordingly, notwithstanding that it had made all the other necessary findings, the Board refused to permit the staff to issue the requested LWA-1.

A month later, on the basis of additional evidence adduced at an expedited hearing, the Board ruled that the deficiencies in the prior record had been cured and that the site was suitable. LBP-74-76, RAI-74-10 701 (October 20, 1974). That determination permitted the staff to issue the LWA-1.

A year later, the Board issued the decision now before us. The proceedings leading up to that decision had been precipitated by, *inter alia*, the applicants' request for an LWA-2.

After the Licensing Board closed the evidentiary hearings on that phase, but before it issued its decision, the applicants reported the discovery at the proposed site of two geologic anomalies as a result of excavations being performed under the LWA-1. Although the applicants expressed the view that the anomalies were of no significance,⁴ the staff advised the Board that it believed that the anomalous features "may affect both the foundation design and the design of the dewatering system" and that there was "not sufficient information available to determine the impact of those features."⁵

These communications prompted the Board to institute a conference call with all the parties in an effort to determine whether the new discoveries should affect the issuance of a decision on the LWA-2 request. The minutes of that call (prepared by applicants' counsel) reflect that the applicants "saw no reason why the Licensing Board could not proceed with issuance of its LWA 2 decision," leaving to a later hearing consideration of the anomalies. The staff agreed but went on to state that "the Staff . . . would not issue the LWA 2 authorization until it had completed its investigation of the anomalies."

⁴ Letter from the applicants' Vice President for Engineering to the Commission's Director of Nuclear Reactor Regulation, dated August 27, 1975, with copies to the Licensing Board members.

⁵ Letter from staff counsel to the Licensing Board members, dated August 28, 1975.

A week later, on September 9th, the Board issued its decision. After making findings which were essentially favorable to the applicants on the basic issues before it, it qualified these findings with the *caveat* that

... in view of the fact that certain anomalous features have been found in the bedrock underlying the site of the proposed PNPP facility . . . , the Board considers that the findings of this paragraph could possibly be rendered invalid. Hence, the Board will require a showing by the Applicants that the cited anomalies do not constitute a compromise to these findings.⁶

In a similar vein, the Board stated that both its new conclusions and the continued validity of the Board's previous site suitability determination are further conditioned by the requirement for a subsequent showing before the Board by the Applicants that the recently discovered bedrock anomalies at the Perry site . . . do not overturn said conclusions.⁷

The Board thereupon entered the following order:⁸

... the Director of Nuclear Reactor Regulation is authorized to permit the Applicants to undertake, as required any further site excavations for the limited purpose of determining the extent, if any, to which recently discovered bedrock anomalies might invalidate this Board's prior determination of the suitability of the proposed PNPP site. Assuming a satisfactory resolution of this matter before the Board and subsequent thereto, IT IS ORDERED that the Director of Nuclear Reactor Regulation should not terminate or suspend work activities previously authorized with respect to Perry Nuclear Power Plant Units 1 and 2. The Board also ORDERS that the Director of Nuclear Reactor Regulation is authorized to permit the conduct of the [requested LWA-2] activities . . . consistent with the terms of this Decision.

C. Appellate Review. Our first reading of the Board's decision led us to state that

the Board's order appears to violate [the] regulations by authorizing activities under limited work authorizations in advance of making the requisite environmental, safety and site suitability determinations.⁹

Recognizing, however, that the case had been a complicated one and that our reading might be incorrect, we directed the staff and applicants, and invited the other parties,

to advise us whether we have correctly interpreted the decision and order of September 9, and, if so, how they conform to the Commission regulations cited. If in the judgment of those parties we have misread that decision and

⁶ NRCI-75/9 at 491.

⁷ *Id.* at 495.

⁸ *Id.* at 496.

⁹ ALAB-294, NRCI-75/10 663, 666 (October 17, 1975).

order, then we wish to be advised of the interpretation they place upon it and how their interpretation harmonizes with the Commission's regulations governing limited work authorizations.¹⁰

After studying the divergent responses, we set the case down for oral argument on November 6th.¹¹

At the end of the argument, we announced from the bench our conclusions that the Licensing Board should not have authorized the issuance of the LWA-2 on the record before it and that the matter should be remanded to the Licensing Board for further proceedings. Although at that time we stated our underlying reasoning in brief fashion (App. Bd. Tr. 73-78), we announced that we would elaborate on that reasoning in a subsequent opinion. Later that same day, as we had indicated we would do, we issued a written order which provided the Licensing Board and the parties with explicit instructions concerning the conduct of the proceeding on remand.

II

A. The result we reached is compelled by the terms of the Commission's regulations governing the grant of limited work authorizations. That regulation expressly forbids the award of an LWA-2 until the Board itself can say there exists no "unresolved safety issue" related to the proposed work.¹² In that connection, while portions of the Licensing Board's September 9th decision are susceptible to differing interpretations, it is clear that at no point did the Board below appear to be stating either (1) that on the face of it the geologic anomalies presented no safety problem whatsoever or (2) that whatever problem they may have presented could be classified as "resolved." To the contrary, several of its statements imply that the Board, although not saying so directly, viewed the matter as an "unresolved" one. Specifically, we draw that inference from its declarations (see page 734, *supra*) that (1) in light of the geologic anomalies its findings "could possibly be rendered invalid;" (2) it remained for the applicants to show that the anomalies "do not constitute a compromise" to the Board's findings; and (3) the discovery of the anomalies might invalidate the "prior determination of the suitability of the proposed [Perry] site". Moreover, the Board viewed with apparent approval the staff's announcement that it

¹⁰ *Ibid.*

¹¹ See our order of October 30, 1975.

¹² We do not understand the applicants to be asserting that, if the geologic anomalies do constitute an unresolved safety issue, they nonetheless would not "constitute good cause," within the meaning of the regulation, for withholding the LWA-2. Consequently, we do not discuss the point here.

“would not issue the LWA 2 . . . until it had completed its investigation”¹³ And the Board appeared to indicate that the matter would have to be taken up at some subsequent hearing.¹⁴ In their totality, these statements establish that the Board had a continuing concern about the problem; they are wholly inconsistent with any notion that the matter was “resolved” in the Board’s mind.

In any event, even if we have misapprehended the thrust of the Board’s opinion, the meager record which the Board had before it simply does not permit characterization of the matter as “resolved”. The Board had been furnished with material from the applicants and the staff.¹⁵ While the applicants claimed, in effect, that the matter was of little significance, the staff held the belief “that the features may affect both the foundation design and the design of the dewatering system.” And in unmistakable terms it had told the Board that there was “not sufficient information available to determine the impact of those features.” There is no need to belabor the obvious—at that stage the matter could not be said to have been “resolved.”

To be sure, during the conference call (which the Board quite properly initiated to discuss how to treat the new materials before it) the staff indicated that the Board should proceed to issue its LWA-2 decision, apparently without regard to the geologic anomalies. But little significance should have been attached to that remark in light of the staff’s further assertion that it “would not issue the LWA 2 authorization until it had completed its investigation of the anomalies.”¹⁶ That was a clear signal that the matter remained “unresolved” as far as the staff was concerned. Unless the Board was prepared to hold that the staff’s doubts were entirely unjustified on their face—something the Board did not do—it should have disregarded the staff’s well-meant but unfortunately legally erroneous advice that the Board could approve the LWA-2.

In short, the Board erred in giving its blessing to the LWA-2 while leaving it to the staff to conduct the studies necessary to dispose of the unresolved issue. Although this conclusion follows from the terms of the applicable regulation, the result is not novel or surprising. For even where its regulations were less clear, the Commission has stressed that it would not be “an adequate solution . . . to have a Licensing Board which spots an issue merely refer the matter to the staff for resolution.” To the contrary, the Commission expects the board *itself* “to resolve the matter openly and on the record, after giving the parties . . . an opportunity to comment or otherwise be heard.”¹⁷ And we have

¹³ See p. 733, *supra*.

¹⁴ See p. 734, *supra*.

¹⁵ See p. 733, fns. 4 and 5, *supra*.

¹⁶ See p. 733, *supra*.

¹⁷ *Consolidated Edison Company of New York* (Indian Point Unit 3), CLI-74-28, RAI-74-7 7, 8-9 (1974).

said much the same thing in other contexts. When governing statutes or regulations require a licensing board to make particular findings before granting an applicant's requests, a board may not delegate its obligations to the staff. The responsibilities of the boards are independent of those of the staff under the Commission's system, and the boards' duties cannot be fulfilled by the staff, however conscientious its work may be.¹⁸

We recognize that, at times, there may be pressures on the licensing boards to render decisions quickly so that an applicant's work schedules are not disrupted. Of course, dispatch in the conduct of a board's business is desirable, so long as it does not compromise the sound performance of the board's duties. Indeed, we stressed in a recent opinion that there is a vital public interest in prompt decision-making, regardless of whether the ultimate decision is favorable or unfavorable to the applicant.¹⁹ But the pressures for a rapid decision, which can be formidable,²⁰ should never be allowed to override the need for the boards to examine thoroughly and carefully into the critical safety and environmental issues which come before them.²¹ If this point needed reemphasis, it received it within the past week when the Commission announced its further views on the use of mixed oxide fuel.²² At the very outset, the Commission stressed that it "firmly believes that it is in the national interest to expedite the decision-making process *to the extent consistent with sound and full examination of the issues.*" 40 *F.R.* at 53056-57 (emphasis added).

In this connection, we should point out that, at an earlier stage of this proceeding, the Board below quite properly insisted that there be a resolution of certain site suitability matters before it authorized the requested LWA-1. See

¹⁸ See *Vermont Yankee Nuclear Power Corp.* (Vermont Yankee Station), ALAB-124, 6 AEC 358, 360, 361-62, fn. 4 (1973). See also *Washington Public Power Supply System* (Hanford No. 2 Nuclear Power Plant), ALAB-113, 6 AEC 251,252 (1973).

¹⁹ *Allied-General Nuclear Services* (Barnwell Separations Facility), ALAB-296, NRCI-75/10 671, 684-685 (October 30, 1975).

²⁰ At oral argument, we were advised that the applicants had told the Licensing Board that, as far as the "critical path" was concerned, the LWA-2 was needed in the week before the Board's decision eventually was rendered (App. Bd. Tr. 40). The applicants recognize, however, that the boards should not use critical path considerations as a basis for overlooking legal impediments to the grant of an LWA (*id.* at 46-48).

²¹ In ALAB-124 (*supra*, fn. 18), we reviewed a Licensing Board's decision, authorizing the issuance of a full-term operating license, which was handed down one day before a temporary operating license was due to expire. There, discussing an unsatisfactory quality assurance program, we said that the Board "should have refused to authorize issuance of the license until the quality assurance matters were resolved on the record . . ." 6 AEC at 362. Then, in connection with another matter, we rejected what we characterized as "the applicant's unstated premise that the desirability of completing the hearing process outweighs the need to resolve potentially serious safety matters". 6 AEC at 365.

²² "Mixed Oxide Fuel: Scope, Procedures and Schedule for Generic Environmental Impact Statement and Criteria for Interim Licensing Actions," 40 *F.R.* 53056 (November 14, 1975).

p. 733, *supra*. It did so notwithstanding that the consequent brief delay in the start of construction threatened to result in the applicants missing a deadline set by a recently-enacted State law. That, in turn, would have caused an even greater delay, attributable to an otherwise-avoidable requirement to obtain State authorization to proceed. See LBP-74-76, *supra*, RAI-74-10 at 702. The Board below nonetheless rightly demanded that the site suitability matters be resolved, on the record, before the LWA-1 issued. By handling the supplementary proceedings on an expedited basis, the Board was able to decide the site suitability matters prior to the expiration of the State-imposed deadline. Its ability to achieve both thoroughness and expedition is worthy of commendation.

B. As we have seen, the record was inadequate to support the findings required for the issuance of an LWA-2. Ordinarily, we would simply have vacated so much of the Board's decision as purported to authorize the LWA-2 and remanded the matter for unspecified further proceedings.²³ The case became somewhat more complicated, however, when the staff presented us at oral argument with a motion to supplement the record to include a just-completed report of the staff study of the geologic anomalies. The report reflected the staff's reasons for concluding, in essence, that the anomalies could be entirely discounted.

In light of our having jurisdiction of the proceeding at the time, the staff acted properly in filing the report of its study with us. And we had the power to take action on the staff's motion and the accompanying report ourselves. As we said in an earlier opinion in this case, however, this proceeding has been a complicated one;²⁴ moreover, we did not have all the parties before us when the motion was filed. In the circumstances, we believed it more appropriate to refer the staff's motion to the Licensing Board. That Board is more familiar with the case and will more readily appreciate the significance and implications of the staff's report and any responses thereto.

In order to insure that the Licensing Board would be able to address the staff's motion expeditiously, we directed the other parties to file responses to it on an accelerated schedule. We did consider another possibility that had been suggested, i.e., that the Board below handle the matter without awaiting responses. This could be done, argued the applicants, because during the conference call the intervenors had expressed a willingness to leave the matter to the staff for resolution; in addition, the intervenors had not filed any papers in response to our questions, posed in ALAB-294, concerning the correctness of the Licensing Board's approach to the problem. We were unwilling, however, to read into these actions a waiver by the intervenors of any right to be heard on the validity or significance of the staff report after it was issued.²⁵

²³ Compare p. 735, *supra*.

²⁴ ALAB-294, *supra*, NRCI-75/10 at 666.

²⁵ See p. 736, *supra*, text accompanying fn. 17.

Insofar as further proceedings before the Licensing Board were concerned, we contemplated, of course, that the time period we set for filing responses to the staff's motion would be subject to adjustment by that Board. And we made it clear, both in our remarks from the bench and in our subsequent written order, that upon receipt of the responses (or notification that no responses would be filed), the Licensing Board would be free to take whatever action it found appropriate in the circumstances. On the one hand, it might prove necessary to hold a hearing. On the other hand, the nature of the responses might be such that the geologic anomalies matter would be ripe for summary disposition. In this respect, we made specific mention, both in our oral ruling²⁶ and in our written order, of the provisions of Section 2.749 of the Commission's Rules of Practice (10 C.F.R. §2.749). That rule, which is modeled upon the similar provision of the Federal Rules of Civil Procedure, permits a licensing board to decide issues in summary fashion if the pleadings, affidavits and other materials before the board demonstrate that there is no genuine issue as to any material fact. In the case at bar, the staff's study having been completed, there may now be no genuine issue of fact that would preclude the Board from determining summarily that the geologic anomalies matter may be moved out of the "unresolved" category. Whether that is in fact the situation is of course a matter for the Licensing Board to determine. Our opinion should not be read as intimating any views on this question.

C. One other matter warrants brief mention. In effect, the Licensing Board determined that the LWA-1 authorized a year ago could remain operative pending the outcome of the staff study and the Board's eventual review of it at a subsequent session of the hearing.²⁷ Considering all the circumstances, this course of action was within the sound discretion of the Board. We perceived no basis for interfering with its judgment.

The foregoing opinion furnishes the reasons which led us to issue our November 6th order. The terms of that written order continue in full force and effect; our review of all other aspects of the Licensing Board's several partial initial decisions which are before us will remain *deferred* pending our receipt of that Board's supplemental decision on the issue remanded to it.

It is so ORDERED.

FOR THE ATOMIC SAFETY AND
LICENSING APPEAL BOARD

Margaret E. DuFlo
Secretary to the Appeal Board

²⁶ App. Bd. Tr. 75, 76-77.

²⁷ See p. 734, *supra*.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ALAB-299

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Alan S. Rosenthal, Chairman
Richard S. Salzman, Member
John B. Farmakides, Member

In the Matter of

Docket No. 50-482A

KANSAS GAS AND ELECTRIC COMPANY
AND KANSAS CITY POWER AND
LIGHT COMPANY

(Wolf Creek Generating Station,
Unit No. 1)

Mr. Richard J. Wertheimer, Washington, D. C., argued the cause for the petitioner, Kansas Electric Cooperatives, Inc., appellant; with him on the brief were Messrs. Philip Kassebaum, Wichita, Kansas and Leonard B. Simon, Washington, D. C.

Mr. Gerald Charnoff, Washington, D. C., argued the cause for the applicant, Kansas Gas and Electric Company, appellee; with him on the brief was Mr. Wm. Bradford Reynolds, Washington, D. C.

Mr. Lee Scott Dewey argued the cause and filed a brief for the Nuclear Regulatory Commission staff.

Upon appeal from Licensing Board's denial of amended petition for leave to intervene and request for an antitrust hearing (LBP-75-52), Appeal Board rules that petitioner has described with sufficient precision both a situation inconsistent with antitrust laws (*i.e.*, Section 2 of the Sherman Act) and the relief requested, thereby correcting deficiencies in its earlier petition pointed out in ALAB-279.

Licensing Board's order reversed; cause remanded with instructions.

ATOMIC ENERGY ACT: SITUATION INCONSISTENT WITH ANTITRUST LAWS (RELEVANT MARKET)

There are two major product markets in the electric power industry: the wholesale power market and the retail power market. Although each of these markets may contain identifiable subdivisions, such refinement is not obligatory in an antitrust intervention petition.

RULES OF PRACTICE: INTERVENTION PETITION (ANTITRUST)

While an intervention petition in an antitrust proceeding must normally identify both a product and a geographic market, the ascertainment of the metes and bounds of both those markets can be left to the discovery and evidentiary phases of a proceeding.

RULES OF PRACTICE: INTERVENTION PETITION (ANTITRUST)

What must be decided in evaluating the adequacy of an intervention petition in an NRC antitrust proceeding is whether, in the totality of the circumstances of the particular case, a petition describes the alleged inconsistent situation with enough clarity and precision to enable the applicant and the licensing board to determine the nature of the claim and its basis.

RULES OF PRACTICE: INTERVENTION PETITION (ANTITRUST)

An intervention petition should not be rejected on the basis that the maximum relief requested is unwarranted or that its award is beyond the Commission's jurisdiction, since the grant of partial relief may nevertheless be appropriate.

DECISION

November 21, 1975

Before us for the second time is the question of the entitlement of Kansas Electric Cooperatives, Inc. (KEC) to intervene, and by doing so to trigger a hearing, in this antitrust proceeding involving the proposed Wolf Creek nuclear power facility. Wolf Creek is a joint venture of two electric utilities, Kansas Gas and Electric Company (KGE) and Kansas City Power and Light Company (KCPL), and there is a pending application by these companies for a permit to construct it.¹ On the prior occasion, the case came to us by way of an appeal by

¹That application is currently the subject of a separate and distinct NRC licensing proceeding, before a differently constituted licensing board, in which proceeding the safety and environmental issues pertaining to authorization of construction will be decided.

the applicant KGE from the Licensing Board's grant of the KEC petition for leave to intervene. LBP-75-13, NRCI-75/3 268 (1975).² Although rejecting several of the applicant's arguments advanced in support of the appeal, we nonetheless concluded that the intervention petition was fatally deficient in several respects. ALAB-279, NRCI-75/6 559 (1975). Accordingly, the Licensing Board's order was vacated and the cause remanded with instructions to dismiss the petition without prejudice to the submission of an amended petition which cured the defects which we had found. *Id.* at 577.

The Licensing Board complied with our directions. In due course, an amended petition was filed by KEC. The grant of that petition was supported by the NRC staff and opposed by the applicant. Upon consideration, the Licensing Board held that KEC's amended petition was insufficient and denied it in an order issued on September 9, 1975. LBP-75-52, NRCI-75/9 469. The present appeal by KEC followed. For reasons hereinafter developed, we do not agree with the Licensing Board's appraisal of the amended petition and, therefore, reverse.

I

A. The background of the controversy is set forth in ALAB-279 and need not be extensively rehearsed here.

.1. KEC is an association comprised of the 37 rural electric cooperatives doing business throughout the State of Kansas. One of its members is a generation and transmission cooperative with a limited amount of generating capacity; the others are engaged exclusively in the distribution of electric power to residential, agricultural, commercial and industrial consumers. What has prompted KEC's attempt to obtain an antitrust hearing in connection with the Wolf Creek facility is the asserted inadequacy of the license conditions which, in the discharge of his responsibilities under Section 105c. of the Atomic Energy Act of 1954, as amended, 42 U.S.C. §2135(c), the Attorney General of the United States has recommended be imposed upon KGE.³ Those conditions were summarized in ALAB-279:

First, the applicant must offer the cooperative the right to purchase an ownership interest with a share in the power generated by the Wolf Creek facility or, at the cooperative's option, to sell it a portion of that power.

² Although that appeal was taken in the name of both utilities, the controversy does not directly involve KCPL. We therefore treated KGE as the sole applicant/appellant. Likewise, all references in this opinion to the "applicant" are to KGE.

³ Different license conditions were recommended with respect to the co-applicant KCPL. See p. 746, *infra*. Those conditions are not directly involved here.

Second, in the event of the partial or total unavailability of the cooperative's share of the Wolf Creek power, the applicant must, at the cooperative's option, either (a) supply the cooperative with an equivalent amount of power; or (b) transmit across its lines, *i.e.*, "wheel", that amount of power obtained by the cooperative from some other source. Third, the cooperative may elect to have a portion of its Wolf Creek power "wheeled out" by the applicant; *i.e.*, transmitted to some third party. If the cooperative makes this election, the applicant must "wheel in" an equivalent amount of power at the cooperative's request. All of these conditions are contingent, however, upon the applicant being reimbursed for the costs entailed and upon the "transmission arrangements [being] reasonably accommodated from a functional and technical standpoint."

NRCI-75/6 at 562-63; footnotes omitted. They have been accepted by the applicant which, in conjunction with its coapplicant KCPL, has offered to sell KEC an eight percent ownership interest in Wolf Creek.

The proposed conditions are said to be insufficient for the reason that they do not impose an obligation upon the applicant to wheel to KEC "supplemental"—*i.e.*, intermediate, peaking and reserve—power which might be obtained by the cooperative at competitive prices from third party sources. As noted in ALAB-279, in broad outline KEC's thesis is that:

operations with Wolf Creek power alone are not economically viable; consequently, without assured access to a source of supplemental power, the cooperative cannot obtain the financing it needs to secure an interest in the nuclear facility. The applicant, however, is the dominant electric utility and controls all the essential transmission facilities in the area; it refuses to wheel supplemental power to the cooperative. According to the petition, the practical effect of that refusal is to prevent the cooperative from gaining access to the nuclear facility, and accordingly, from competing with the applicant.

NRCI-75/6 at 563.

2. The Licensing Board initially ruled (LBP-75-13, *supra*) that KEC's allegations in its intervention petition respecting the applicant's refusal to wheel supplemental power were sufficient to entitle it to an evidentiary hearing respecting whether the licensing of Wolf Creek would "create or maintain a situation inconsistent with the antitrust laws" within the meaning of Section 105c.(5) of the Atomic Energy Act, 42 U.S.C. §2135(c) (5). On its appeal from the resultant grant of intervention, the applicant urged, *inter alia*, that the Commission's antitrust jurisdiction hinges upon the existence of a "causal connection" between the alleged anticompetitive conduct and the activities sought to be licensed (*i.e.*, the operation of the nuclear power facility). In this instance, the applicant maintained, that causal connection is absent; *viz.*, its asserted refusal to wheel supplemental power to KEC is not directly traceable to

Wolf Creek operation. Consequently, we were told, the remedy, if any, for that refusal lies within the province of the federal courts and not this agency.

For reasons detailed in ALAB-279, this line of argument was rejected. See NRCI-75/6 at 566-74. We lent a more sympathetic ear, however, to the applicant's alternative contention that the KEC petition failed to meet the specificity standards of the Commission's intervention rule (10 CFR 2.714(a)), as those standards were construed in an antitrust context in *Louisiana Power and Light Company* (Waterford Steam Electric Generating Station, Unit 3), CLI-73-7, 6 AEC 48 (1973) (*Waterford I*). In this connection, we found two decisive flaws in the petition. The first was its imprecision regarding how the situation described therein conflicted with the antitrust laws:

Read most favorably to the cooperative, the petition's "wheeling" contention appears to be an attempt to assert a situation inconsistent with the Sherman Act not unlike that involved in [*Otter Tail Power Co. v. United States*, 410 U.S. 366 (1973)]; that is to say, the petition seems to be alleging a case of improper use of monopoly power. But there are obvious distinctions between that case and this. For example, here we have not one but two utilities. They are involved in a joint venture to build and operate Wolf Creek; both are named in the petition to intervene. Does the cooperative mean to assert that the two are engaging in some anticompetitive combination in restraint of trade forbidden by 15 U.S.C. §1? Or are they accused of impermissible monopolistic conduct under 15 U.S.C. §2? Both may be inconsistent with Sherman Act policies. We cannot, however, tell for certain which is being pressed.

Again, as we have noted, a refusal to wheel power may amount to a situation inconsistent with the antitrust laws. But does the petition mean to allege that the applicant has monopoly power in the relevant market and that its refusal to wheel is an act designed to protect that status for foreclosing potential competition? Or is it claimed that the applicant is attempting thereby to monopolize all electric power generation in the area? Concededly, both can be Sherman Act violations; however, their elements are not identical.

NRCI-75/6 at 575-76; footnotes omitted. The second related to the prayer for relief:

The Commission also directed in *Waterford I* that a petition to intervene be specific about the relief sought. Notwithstanding that fact, the cooperative's pleading tells us only that the license should be conditioned to have the applicant "provide petitioner with satisfactory terms and conditions relating to wheeling-in, reserves, and other aspects of the project which will allow petitioner an effective, meaningful opportunity to participate in the project." (KEC petition, par. 37). What terms would be "meaningful" in that context? "[T]erms and conditions substantially better than and additional to those

proposed by the Department [of Justice]" is the only clue we find in the petition (par. 35). That casts scant (if any) light on the details of the relief sought. This vagueness is evidently not attributable to the cooperative's failure to know what it wants. The applicant has brought to our attention the fact that the cooperative is, apparently, demanding an ownership interest in the applicant's transmission lines. See App. Tr. 115-16. If that be true (it was not denied at oral argument), that fact should plainly have been stated in the petition.

Id. at 576.

In our view, these deficiencies in the intervention petition deprived the applicant of a fair chance to defend; *i.e.*, of its right "to be told at the outset, with clarity and precision, what arguments are being advanced and what relief is being asked by the cooperative". *Ibid.*⁴ As previously noted, we therefore vacated the order granting intervention but directed the Licensing Board to provide KEC with a second opportunity to file an intervention petition which would satisfy the requirements of the Rules of Practice.

B. The first 22 paragraphs of KEC's amended intervention petition contain virtually the same averments of fact and recital of interest as were found in the original petition. Commencing with paragraph 23, however, some marked differences between the two petitions are discernable. Of particular relevance here:

(1) In contrast to the original petition, in paragraph 24 the amended petition specifically identifies the antitrust laws being invoked—the applicant is charged with having created and maintained its monopolistic position "in a manner inconsistent with . . . Sections 1 and 2 of the Sherman Act", 15 U.S.C. §§ 1,2. Several subsequent paragraphs of the amended petition also allege expressly either a violation of or a situation inconsistent with Section 1 or Section 2. See paras. 28, 30, 37, 38, 39, 41 and 42. Moreover, although we found the original petition not wholly clear on the point (see p. , *supra*), there is no longer room for doubt that KEC is asserting that the applicant now has monopoly power in a relevant market. See, in addition to par. 24, paras. 23, 28, 30, 37 and 41. In this regard, unlike the original petition, the amended petition is replete with references to what that market is: *e.g.*, (par. 23) the applicant "possess[es] monopoly power . . . with respect to the generation, transmission and *wholesale supply* of electric power in [its] *service area*" (emphasis supplied). See also paras. 30 ("monopolistic or dominant position as a wholesale power supplier"); 34 ("wholesale power supply market"); 37 (*do.*); 39(a) (*do.*); and 41 (*do.*).

(2) The original petition asserted in quite general terms that the wheeling provisions of the license conditions proposed by the Attorney General would preclude it from participation in the Wolf Creek facility, with the consequence that a situation inconsistent with the antitrust laws could be created or

⁴We also observed that the Licensing Board similarly possessed that right.

maintained. In paragraph 30 of the amended petition, however, KEC is more specific: it explicitly asserts that the refusal to wheel is violative of and inconsistent with Section 2 of the Sherman Act. Further, paragraphs 30 through 36 of the amended petition contain averments respecting why KEC will need additional wheeling to enable it to participate in Wolf Creek. In substance, as there developed, KEC's theory is that, as an economic matter, its allotted share of the Wolf Creek generation could only be employed as base load power (par. 31). In order to permit it to compete effectively, however, KEC will require supplemental intermediate, peaking and reserve power (par. 32). By declining to wheel power to KEC from other sources, the applicant will exclude KEC from the power exchange market—the applicant being the only entity in its service area with access to that market (paras. 33, 34). This would force KEC to acquire its supplemental power from the applicant on terms which might not be competitive (par. 35). All this being so, “[t]he limitations upon wheeling which would be imposed by KGE's proposed terms and conditions would make it impractical and economically unsound for KEC to participate in or obtain the necessary financing for” the Wolf Creek project (par. 36).

(3) On the matter of relief, paragraph 43 of the amended petition asks in so many words for the imposition against KGE of the same wheeling condition, which the Attorney General has proposed be applied to KPCL (and to which KPCL has agreed).⁵ As stressed in ALAB-279, the original petition had sought merely “satisfactory [wheeling] terms and conditions” which would allow KEC “an effective, meaningful opportunity to participate in the project”. See pp. 744-745, *supra*.

⁵ That condition (No. 5) provides as follows:

(a) Licensee shall facilitate the exchange of bulk power by transmission over its transmission facilities to, from, between or among any entities in Licensee's Service Area with which it is at any time interconnected, and between any such interconnected entity(ies) and any other entity(ies) engaging in bulk power supply outside Licensee's Service Area between whose facilities Licensee's transmission lines and the transmission lines of others would form a continuous electrical path, provided that (1) the necessary rights to utilize such other transmission lines have been obtained, (2) the reliability of Licensee's bulk power system is not thereby impaired, and (3) the arrangements reasonably can be accommodated from a functional and technical standpoint. Such transmission shall be on terms that fully compensate Licensee for its cost, including transmission losses associated therewith. Any entity(ies) requesting such transmission arrangements shall give reasonable advance notice to Licensee of its (their) schedule and requirements for bulk power to be scheduled by Licensee over Licensee's transmission facilities.

(b) Licensee shall include in its planning and construction of facilities to be owned by Licensee sufficient transmission capacity as may be contractually reserved for the type of transactions referred to in subparagraph (a) of this paragraph, provided that the entity(ies) in Licensee's Service Area give Licensee sufficient advance notice as may be necessary to accommodate its (their) requirements from a functional and technical standpoint and provided that such entity(ies) fully compensate Licensee for the contractual reservation by Licensee of capacity in its transmission facilities.

C. The Licensing Board nevertheless determined that the amended petition did not rectify the shortcomings of the original petition pinpointed in ALAB-279. Although seemingly not questioning the sufficiency of the prayer for relief in paragraph 43, the Board determined that the amended petition did not adequately set forth the elements of a cause of action under either Section 1 or Section 2 of the Sherman Act.

II

The primary task confronting us here thus is to decide whether the Licensing Board correctly determined that the amended petition fails adequately to describe a situation inconsistent with one or the other of the sections of the Sherman Act which are invoked therein.⁶ Our analysis compels the conclusion that that determination cannot be allowed to stand. We find within the four corners of the amended petition a sufficient description of a situation inconsistent with Section 2 of that Act—which, *inter alia*, proscribes the monopolization of, or the attempt to monopolize, “any part” of interstate commerce. Specifically, we have in mind the allegations of paragraphs 30–38 of that petition to the effect that, through its refusal to wheel supplemental power to KEC, the applicant is preventing the cooperative from participating in the Wolf Creek project and thereby perpetuating its monopoly position in the wholesale power market in its service area.

A. An essential element of monopolization is the possession of monopoly power in a relevant market.⁷ Monopoly power is usually defined as the power to control prices or exclude competition.⁸ In determining whether such power exists, a benchmark is the percentage of the “relevant market” possessed by the alleged monopolist.⁹ Identification of the relevant market normally involves consideration of both the product or service concerned and the geographic area in which that product or service may be reasonably obtained by customers.¹⁰

⁶If the *Waterford I* pleading standards are satisfied with respect to either the Section 1 or the Section 2 claim, that is enough for present purposes. *Northern States Power Co.* (Prairie Island Nuclear Generating Plant, Units 1 and 2), ALAB-107, 6 AEC 188, 194 (1973), *affirmed*, CLI-73-12, 6 AEC 241 (1973), *affirmed sub. nom.*, *BPI v. Atomic Energy Commission*, 502 F. 2d 424 (D.C. Cir. 1974).

⁷*United States v. Grinnell Corp.*, 384 U.S. 563, 570-71 (1966).

⁸*Id.* at 571; *American Tobacco Co. v. United States*, 328 U.S. 781, 811 (1946).

⁹*United States v. Grinnell Corp.*, *supra*, 384 U.S. at 571; *Otter Tail Power Co. v. United States*, 410 U.S. 366, 369-70 (1973).

¹⁰*United States v. Grinnell*, *supra*, 384 U.S. at 573, 575; *United States v. E. I. du Pont & Co.*, 351 U.S. 377 (1956); *Brown Shoe Co. v. United States* 370 U.S. 294, 336-37 (1962); *United States v. Philadelphia National Bank*, 374 U.S. 321, 357-61 (1963).

The Licensing Board found the amended petition deficient in its identification of the relevant market. The Board was unable to glean from the petition whether “the relevant product market [encompassed] the sale of firm power at retail, firm or as available bulk power at wholesale, transmission services, or the generation or the exchange of electric power.” Nor could it determine whether “the geographic market [covered] the entire State of Kansas . . . or the undefined areas where [the] 37 member rural cooperatives operate, or some undefined area in southeastern Kansas where KGE operates, or some undefined area in northwest Missouri and northeast Kansas where KCPL operates, or some combination of both areas, or the undefined area where the MoKan Power Pool or some or all of its 7 companies operate.” NRCI-75/9 at 473.

We do not share the Board’s uncertainty in this regard. To begin with, as noted earlier the amended petition contains repeated references to the wholesale power market and asserts that, by its refusal to wheel supplemental power, the applicant will maintain its monopoly position in that market. See paras. 30 and 37.¹¹ In this connection, there are broadly speaking two major product markets in the electric power industry: the wholesale power market and the retail power market.¹² Although it may well be that the wholesale power market—to which the monopoly allegations of the petition are confined—can be further subdivided, we are not persuaded that such refinement is obligatory at the pleading stage. For present purposes, it should suffice that the applicant and the Board below have been placed on clear notice that it is solely the wholesale market which is involved in this case; *i.e.*, that the applicant’s retail activities form no part of the KEC claim.

Similarly, the geographic market is sufficiently identified. In paragraph 23, it is alleged that the “applicants presently possess monopoly power . . . in *their respective service areas*” (emphasis supplied). See also par. 37. This conveys the clear message that KGE is being charged with the possession of monopoly power in its own service area. True enough, the amended petition does not precisely delineate the boundaries of that service area. Presumably, however, the applicant needs little education on the point and the Licensing Board can readily obtain whatever clarification it might need at a later date. Indeed, the ascertainment of the metes and bounds of both product and geographic markets can be left to the discovery and evidentiary phases of the proceeding.¹³

¹¹In paragraph 23, KEC does allege monopoly power in the generation and transmission of electric power as well. This consideration does not, however, bear upon whether the wholesale power market has been specifically identified as a relevant market which is assertedly being monopolized in contravention of Section 2.

¹²See Meeks, *Concentration in the Electric Power Industry: The Impact of Antitrust Policy*, 72 Colum. L. Rev. 64, 81, 94 (1972).

¹³See *United States v. Pabst Brewing Co.* 384 U. S. 546, 549 (1966); *Telex Corp. v. International Business Mach. Corp.* 510 F. 2d 894, 914-19 (10th Cir. 1975); *Sulmeyer v. Coca Cola Company*, 515 F. 2d 835, 849 (5th Cir. 1975).

B. There is a second element of monopolization. A monopoly—*i.e.*, the possession of monopoly power in a relevant market—is not illegal *per se*. Rather, for Section 2 to come into play an “intent to monopolize” must also be established.¹⁴ The requisite intent need not, however, be specific or predatory. A monopolist is assumed to have “intended” the probable and natural consequences of its acts.¹⁵ It is thus usually enough that the alleged monopolist has engaged in anticompetitive conduct either in the acquisition or maintenance of its monopoly power. This anticompetitive conduct need not be illegal in itself; all that must be shown is that the conduct has an exclusionary effect on competition in the particular circumstances.¹⁶

The Licensing Board’s contrary view notwithstanding, we are satisfied that the amended petition adequately alleges that conduct of the applicant—*i.e.*, its refusal to wheel supplemental power—will have an exclusionary effect on competition in the applicant’s service area and thus will operate to preserve the applicant’s asserted monopoly power in a relevant market. In this regard, we find that the petition provides sufficient detail in paragraphs 30 through 35 as to why this is so; *viz.*, respecting the basis for the claim that there is a nexus between the refusal to wheel and the inability of KEC to participate in the Wolf Creek project.

We are not moved in the direction of a different conclusion by the Licensing Board’s painstaking comparison between the amended petition here and the complaint which had been filed in *Otter Tail Power Co. v. United States*, 410 U. S. 366 (1973). Granted, there are marked distinctions between the two documents. It scarcely follows, however, that the survival of the amended petition should hinge upon how closely it may have been modeled upon the *Otter Tail* pleading. More particularly, the failure of the amended petition to track the sum total of the anticompetitive acts alleged in *Otter Tail* seems of no significance whatever. We do not understand the Supreme Court’s opinion to hold that a litigable Section 2 claim would not have been stated had the *Otter Tail* plaintiff averred that the exclusion of competition had been accomplished by a refusal to wheel and that alone. Likewise, we see no good reason to take *Otter Tail* as establishing a floor respecting the amount of detail which must be provided in the recital of the facts underlying an assertion of a situation inconsistent with Section 2. What must be decided in evaluating the adequacy of an intervention petition in one of our antitrust cases is whether, in the totality of the circumstances of the particular case, that petition describes the alleged

¹⁴ See *United States v. Grinnell Corp.*, *supra*, 384 U. S. at 570-71; *United States v. Aluminum Co. of America*, 148 F. 2d 416, 432 (2nd Cir. 1945).

¹⁵ *United States v. Griffith*, 334 U. S. 100, 108 (1948).

¹⁶ See *United States v. Aluminum Co. of America*, *supra*, n. 14; *United States v. Griffith*, *supra*, n. 15; and *United States v. United Shoe Corp.*, 110 F. Supp. 295 (D. Mass. 1953), *affirmed per curiam*, 347 U. S. 521 (1954).

inconsistent situation with enough clarity and precision to enable the applicant and the Licensing Board to determine the nature of the claim and upon what it is founded. See p. 745, *supra*. If that standard is met (as we believe it has been in this instance), it is of no moment that greater factual detail had been provided in a pleading filed in some other case.

III

As earlier noted, the Licensing Board did not, expressly at least, find fault with the prayer for relief contained in paragraph 43 of the amended petition. But the applicant insists that the relief sought—in effect general wheeling—is much broader than any relief to which KEC conceivably might be entitled. The applicant may prove to be right in this belief. We agree with the staff, however, that it is not possible at this juncture to determine this matter; whether general wheeling, more limited wheeling or no additional wheeling at all should be directed will become clear only upon establishment of the relevant facts.¹⁷

In sum, we hold that the amended petition should have been granted. We add only the perhaps unnecessary caution that neither this opinion nor that portion of ALAB-279 adverse to the applicant should be taken as implying any belief respecting the appropriate eventual outcome of the proceeding. All that has been decided is that KEC is entitled to a hearing on the as yet unsubstantiated allegations of its amended petition. Whether KEC will be able to sustain those allegations remains to be seen. Only then will a judgment be possible respecting whether a situation inconsistent with the Sherman Act does in fact exist and, if so, what relief should be ordered for the purpose of rectifying that situation.

¹⁷Even be there merit to the applicant's claim that there is a jurisdictional impediment to the award of the full measure of relief being sought in paragraph 43, it does not follow that the amended petition is subject to outright rejection. It is well-settled, for example, that a suit against the United States under the Tucker Act (28 U.S.C. §1346(a)) can be entertained by a district court even if the complaint asks for more than the maximum amount (\$10,000) which those courts (as distinguished from the Court of Claims) are authorized to award under that Act. This is because the plaintiff who wishes to have a district court hear his Tucker Act claim is free to waive his entitlement to a monetary recovery in excess of \$10,000. See, e.g., *United States v. Johnson*, 153 F. 2d 846, 848 (9th Cir. 1946); *Armstrong & Armstrong, Inc. v. United States*, 356 F. Supp. 514, 521 (E. D. Wash. 1973), *affirmed*, 514 F. 2d 402 (9th Cir. 1975); *Wolak v. United States*, 366 F. Supp. 1106, 1110 (D. Conn. 1973). That principle appears equally applicable here. It thus may be said that, by invoking the antitrust jurisdiction of this Commission, KEC implicitly has agreed to accept any restrictions which Section 105c. of the Atomic Energy Act may impose upon the scope of the relief which can be granted to it.

The September 9, 1975 order of the Licensing Board is *reversed* and the cause is *remanded with instructions* to grant the amended petition for leave to intervene and the request for an antitrust hearing.

It is so ORDERED.

FOR THE ATOMIC SAFETY AND
LICENSING APPEAL BOARD

Margaret E. DuFlo
Secretary to the Appeal Board

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ALAB-300

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Alan S. Rosenthal, Chairman
Michael C. Farrar, Member
Richard S. Salzman, Member

In the Matter of

THE TOLEDO EDISON
COMPANY, ET AL.
(Davis-Besse Nuclear Power
Station)

Docket No. 50-346A

THE CLEVELAND ELECTRIC
ILLUMINATING COMPANY, ET AL.
(Perry Nuclear Power Plant,
Units 1 and 2)

Docket No. 50-440A
50-441A

Mr. David C. Hjelmfelt, Washington, D. C., argued the cause for the petitioner, City of Cleveland, Ohio; with him on the brief were Messrs. Reuben Goldberg and Michael D. Oldak, Washington, D. C., and James B. Davis and Robert D. Hart, Cleveland, Ohio.

Mr. Wm. Bradford Reynolds, Washington, D. C., argued the cause for the applicants, Toledo Edison Company *et al.*; with him on the brief was Mr. Gerald Charnoff, Washington, D. C.

Mrs. Janet R. Urban, Washington, D. C., argued the cause for the United States Department of Justice; with her on the brief were Assistant Attorney General Kauper, Messrs. Joseph J. Saunders, Steven M. Charno, Melvin G. Berger and Anthony G. Aiuvalasit, Jr., Washington, D. C.

Mr. Benjamin H. Vogler argued the cause for the Nuclear Regulatory Commission staff; with him on the brief was Mr. Roy P. Lessy, Jr.

In an opinion explaining the order issued in ALAB-290, and upon motion for reconsideration of ALAB-290, the Appeal Board reaffirms its conclusions that: (1) discovery orders of a licensing board or of a “special master” are interlocutory and not final for purposes of appeal; (2) certification of the question of the role of a “special master” appointed to determine certain discovery questions should be granted; (3) the parties’ voluntary resort to such a master was not precluded by the Atomic Energy Act or NRC regulations; (4) the parties’ agreement to be bound by the master’s determinations included their waiver of the right ever to appeal his rulings to either the Licensing Board or the Appeal Board; and (5) review *sua sponte* of the master’s determinations is not warranted.

ALAB-290 adhered to; motion for reconsideration denied.

RULES OF PRACTICE: APPELLATE PROCEDURE

As in the federal courts, the test of “finality” for appeal purposes before the Nuclear Regulatory Commission is essentially a practical one. As a general matter, a licensing board’s action is final for appellate purposes where it either disposes of at least a major segment of the case or terminates a party’s right to participate; rulings which do neither are interlocutory.

RULES OF PRACTICE: APPELLATE PROCEDURE

Under the Commission’s rules (except in limited circumstances) interlocutory determinations may not be brought before an appeal board for review as a matter of right until a licensing board has rendered a reviewable decision.

RULES OF PRACTICE: APPELLATE REVIEW

Before an appeal board will direct certification of a legal issue in a pending case, it must be convinced at the very least that its prompt decision is needed to prevent detriment to the public interest or to avoid unnecessary delay or expense.

LICENSING BOARD: DELEGATED AUTHORITY OR JURISDICTION

The authority delegated to licensing boards by the Commission, which under Section 034 of Chapter 0106 of the AEC manual may not be redelegated, includes the power to rule on discovery matters.

RULES OF PRACTICE: CONSTRUCTION

It cuts against basic principles of statutory construction to read a general provision to forbid what a more specific provision permits.

LICENSING BOARD: DELEGATED AUTHORITY OR JURISDICTION

The power granted licensing boards to approve stipulations establishing procedures to be followed in a proceeding encompasses authority to approve a voluntary agreement for handling pre-trial discovery matters in that proceeding.

RULES OF PRACTICE: STIPULATIONS

Where parties to a Commission antitrust proceeding voluntarily, and for reasons satisfactory to themselves, agree to have an arbiter of their own choosing make certain discovery rulings, public policy in achieving the full measure of administrative process neither precludes them from so agreeing nor requires the Commission to disapprove that arrangement.

RULES OF PRACTICE: APPELLATE REVIEW

Discovery orders, including those involving the scope of an attorney's work product and the extent of the attorney-client privilege, are interlocutory and are not appealable. Such orders are rarely likely to give cause for the exercise of the Appeal Board's authority to direct certification.

RULES OF PRACTICE: DISCOVERY

Parties who have availed themselves of the benefits of discovery rulings are precluded from challenging conditions attached to those benefits regardless of the ground of attack.

OPINION AND ORDER

November 26, 1975

I

Perhaps an antitrust litigant's most demanding task is quenching an opponent's thirst for discovery without, in the course of doing so, also disgorging legitimately privileged or confidential information. In this case, applicants Cleveland Electric Illuminating Company *et al.* answered their opponents' discovery requests by producing documents containing in excess of 2,300,000 pages for their inspection and copying.¹ Cleveland Electric ("the Company") declined to turn over another 735 documents, however, asserting these to be privileged from discovery under the "attorney-client" and "work

¹ App. Tr. 24.

product” rules.² Those privilege claims were disputed; the controversy now before us has its genesis in the procedure adopted by the parties to resolve the disagreement.

The undertaking to rule on the more than seven hundred privilege claims asserted by Cleveland Electric alone was not a small one.³ To avoid diverting the Licensing Board’s attention from the merits of the proceeding, to insulate it from being influenced by documents later found privileged, and in the hope of expediting the proceeding,⁴ the Licensing Board Chairman suggested during a conference call on December 6, 1974 that the parties refer the privilege claims to a “special master” for decision.⁵ The parties voluntarily accepted the suggestion.⁶

The Commission’s Rules of Practice do not provide expressly for the use of masters to decide contested discovery matters. The idea of doing so, however, was not novel; the procedure had been adopted at least once before in a Commission antitrust case, apparently with success.⁷ In this case the parties were informed that another member of the Commission’s Licensing Board Panel could be made available to serve as master. Unlike private counsel, a Panel member would not have to be paid by the parties and, moreover, could be expected to be familiar with licensing board procedures and the statute under which the proceeding was being conducted.⁸ The parties’ oral agreement was memorialized by the Licensing Board in its order of December 10th. Because that order—and particularly its second paragraph—is central to the case before us, we set it out in full:

² App. Tr. 109.

³ The Justice Department and applicant Duquesne Light Company also claimed similar privileges against the need to disclose about a dozen documents apiece. Those claims were handled in the same manner as Cleveland Electric’s. The rulings made thereon are not here in dispute.

⁴ At oral argument before us the parties indicated that one or more of these considerations underlay the Chairman’s suggestion to use a master. See, e.g., App. Tr. 21, 29, 51-52, 69, 81-82, 86-87.

⁵ There is no dispute that the suggestion emanated from the Chairman. See App. Tr. 29, 69, 87.

⁶ The parties acknowledged to us unequivocally at oral argument that the agreement was entered into voluntarily, without any coercion by the Licensing Board or its chairman. See App. Tr. 28-29 (The City); App. Tr. 76 (NRC Staff); App. Tr. 87 (The Company).

⁷ App. Tr. 79-81. See *Duke Power Company* (Oconee-McGuire Units), Docket Nos. 50-269A, -270A, -387A, -369A, and -370A, Prehearing Order No. 8, October 25, 1973. At issue was a claim of attorney-client privilege.

⁸ App. Tr. 81-82, 86-87.

Pursuant to agreement among the parties, Marshall E. Miller, Esq.,⁹ is hereby appointed Master, to examine, *in camera*, all documents claimed to be within the attorney-client or attorney-work product privilege, and to determine whether or not such claim of privilege is sustained. As to those he determines are privileged, they shall be returned to the counsel of the party supplying said document; as to those he determines are not privileged, they shall be returned to the counsel of the party who had made the request for said document; and a report will be made to the Board as to the reasons and disposition therefore.

The above is accomplished with the express agreement of the parties to be bound by the determinations of the Master. This was discussed and agreed upon during a telephone conference call on December 6, 1974 with the Chairman of this Board. (Emphasis supplied).

Copies of that order were furnished to all the parties. It was not challenged; no suggestion was raised that it incorrectly represented the terms agreed upon to determine the privilege claims, that it was ambiguous or incomplete, or that its provision for "the parties to be bound by the determinations of the Master" meant other than what it said.

The documents for which privilege or confidentiality was claimed, together with briefs and other supporting and opposing papers, were then submitted to the special master in accordance with the agreement. On June 19, 1975 the master issued his initial determinations; these covered the claims asserted by the Company. He ruled that of the 735 documents submitted to him by that applicant, 162 were not privileged from disclosure on discovery.

In a June 24, 1975, conference call, the City informed the Licensing Board that, in its judgment, a substantial number of the master's rulings were erroneous and that the City wanted them reviewed. The Company objected in light of the parties' agreement and stated, in accordance with that agreement, that it would promptly turn over those documents the master had determined to be unprivileged. The Licensing Board held the parties to their agreement to be bound by the master's decision, noting, however, that they could ask the master to reconsider his rulings.¹⁰ The parties did so, but on reconsideration the master essentially adhered to his original determinations.¹¹ (The master subsequently

⁹ Because of the press of other business, Mr. Miller later had to step down as master. He was replaced without objection on May 2, 1975 by another member of the Licensing Board Panel.

¹⁰ Minutes of June 24, 1975 conference call dated June 26, 1975, *passim*.

¹¹ The master found four additional Company documents to be privileged and withdrew a finding that one other document of that applicant was privileged. See Transcript of Rehearing before Special Master, pp. 81-86 (June 30, 1975).

ruled on the privilege claims of the Justice Department and applicant Duquesne Light Company on July 3, 1975. His rulings on those claims have not been challenged.)

The City and the Department then moved before the Licensing Board to have the master's rulings "certified" for our review.¹² The City's motion papers acknowledged that it had "agreed that there was to be no review by the Licensing Board of the Special Master's decision," but contended that it had not agreed to forego appellate review of the decision.¹³ The Licensing Board denied the City's motion. In doing so, it pointed once again to the "express agreement of the parties to be bound by the determinations of the Master," observed that "[i]t is difficult to envision language expressing the concept of an agreement not to challenge the decisions of the Special Master in language more explicit than that . . .,"¹⁴ and went on to hold that:

We read the December 6 agreement as an unequivocal waiver by all parties of possible appeals in order to obtain the specific benefit of prompt and final review of the privileged documents. Since these parties repeatedly have impressed upon the Board their desire for expeditious resolution of the issues in these proceedings, the December 6 agreement is consistent with this objective.¹⁵

The City noted an appeal and filed exceptions to the Licensing Board's refusal to certify the master's discovery rulings. In its supporting brief the City asked that, should an appeal be impermissible because the Board's ruling was interlocutory,¹⁶ we treat its papers "as a motion . . . to direct certification."¹⁷ The NRC staff and the Department of Justice supported the City's request for certification.¹⁸

We heard argument on the City's motion on September 16, 1975. On September 19th, to avoid delaying the start of evidentiary hearings before the Licensing Board, we issued a decision upholding that Board's action and declining to review the master's determinations, giving our reasons for doing so in summary form. ALAB-290, NRCI-75/9, 401. That prompt (if abbreviated)

¹²See 10 C.F.R. §2.718(i).

¹³"City of Cleveland's Motion for Certification of Special Master's Decision, *etc.*," dated July 8, 1975, p. 10.

¹⁴Ruling of July 21, 1975, NRCI-75/7, 125, 128. The Board expressed no opinion on the correctness of the master's rulings, however, deeming that question not before it. *Id.* at 129-30.

¹⁵*Id.* at 129.

¹⁶See 10 C.F.R. §2.730(f). This possibility was raised in our letter of August 4, 1975.

¹⁷Brief of Appellant, p. 11, August 12, 1975.

¹⁸On August 27, 1975, the Board below also denied the Justice Department's motion for certification on basically the same grounds it had denied the City's. NRCI-75/8, 365. We have not been asked to review that order.

decision also contained our commitment to render a fuller explanation in due course. Before we could do so, however, the City asked us to reconsider ALAB-290. Upon reconsideration, we adhere to our decision. The opinion which follows addresses both the rationale of ALAB-290 and our reasons for declining to depart from the result there reached.

II

1. THE RIGHT OF APPEAL

Cleveland contends that it is entitled to appeal the merits of the special master's discovery rulings to us now as a matter of right. We rejected that contention in ALAB-290 but the City reasserts the argument in its rehearing petition. The City is unable to see how the master's rulings can be "final" in the sense that it is bound by them and yet "interlocutory" for purposes of appeal.

This is a short horse soon curried. Following the example of federal judicial practice, the Commission essentially restricts a party's right to appeal (as distinguished from seeking our discretionary review by referral or certification) to final decisions.¹⁹ This reflects the policy judgment that piecemeal appeals create more problems than they solve.²⁰ The test of "finality" for appeal purposes before this agency (as in the courts²¹) is essentially a practical one. As a general matter, a licensing board's action is final for appellate purposes where it either disposes of at least a major segment of the case or terminates a party's right to participate; rulings which do neither are interlocutory.²² Under the Commission's rules (except in limited circumstances not present here), interlocutory determinations may not be brought before us for review as a matter of right until the Board below has rendered a reviewable decision.²³

In this case, the master's rulings upholding some of the Company's privilege claims manifestly neither end the proceeding nor sever a participant. As we have previously ruled, an order which does no more than deny discovery is wholly interlocutory.²⁴ Thus, no appeal of right would lie to us at this stage even were

¹⁹ Compare 10 C.F.R. §§ 2.730(f), 2.762 and 2.718(i) with 28 U.S.C. §§ 1291 and 1292.

²⁰ See *Eisen v. Carlisle & Jacquelin*, 417 U.S. 156, 169-71 (1974); *Boston Edison Company* (Pilgrim Nuclear Generating Station, Unit 2), ALAB-269, NRCI-75/4R, 411 (1975).

²¹ See *Cohen v. Beneficial Ind. Loan Corporation*, 377 U.S. 541, 546 (1949).

²² See *Pilgrim*, *supra*, NRCI-75/4R at 413.

²³ *Ibid.*

²⁴ *Commonwealth Edison Company* (Zion Station, Units 1 and 2), ALAB-116, 6 AEC 258 (1973). Compare *Cobbledick v. United States*, 309 U.S. 323 (1940) (Frankfurter, J.); *Committee for Nuclear Responsibility v. Seaborg*, 463 F.2d 796, 799 (D.C. Cir. 1972); *Cohen v. Curtis Publishing Company*, 333 F.2d 974, 978 (8th Cir. 1964), *certiorari denied*, 380 U.S. 989 (1965); 9 *Moore's Federal Practice*, par. 110.13[2] (2nd ed. 1973).

those privilege determinations made by the Licensing Board itself. Those determinations have no greater "finality" for appeal purposes because the parties agreed to their being made by a "special master" in lieu of that Board. The avenue of appeal is therefore not open to obtain our review of the master's rulings.

2. REVIEW BY CERTIFICATION OF THE MASTER'S ROLE

Although parties have no right to immediate appellate review of interlocutory board rulings, we have discretion in pending cases to direct the certification of legal issues to us for determination.²⁵ Certification is the exception, however, not the rule. Before we will use this route to bring up questions out of the ordinary course, we must be convinced at the very least that our prompt decision is needed to prevent detriment to the public interest or to avoid unnecessary delay or expense.²⁶ In our judgment, in light of the AEC Manual provision (still in effect) proscribing the redelegation of authority conferred on the licensing board,²⁷ the question of the propriety of allowing the master to decide contested discovery claims satisfied that standard. The issue was previously undecided, the procedure was one followed in the past and likely to be used again and, if the reference to the master were impermissible, the proceeding below might have to be tried over in large part if we did not decide the question in advance of the evidentiary hearings. These reasons persuaded us to direct certification of the issue of the validity of the master's role.²⁸

3. THE MASTER AND THE MANUAL

The federal courts have long allowed the employment of masters as an acceptable means of resolving certain narrow issues where their use is such as "to aid judges in the performance of specific judicial duties, as they may arise in the progress of a cause", and not to displace them.²⁹ While the judicial use of masters is not unbridled,³⁰ their employment to supervise pretrial and discovery proceedings—including the resolution of privilege claims—has been per-

²⁵ 10 C.F.R. § 2.718(i); *Public Service Company of New Hampshire* (Seabrook Station, Units 1 and 2), ALAB-271, NRCI-75/5, 478, 482-3 (1975); *Toledo Edison Company* (Davis-Besse Nuclear Power Station, Unit 1), ALAB-297, NRCI-75/11 727 (November 5, 1975).

²⁶ *Seabrook, supra*, NRCI-75/5 at 483.

²⁷ See pp. 759 *ff.*, *infra*.

²⁸ See ALAB-290, *supra*, NRCI-75/9, 401.

²⁹ *La Buy v. Howes Leather Co.*, 352 U.S. 249, 256 (1957), quoting *Ex parte Peterson*, 253 U.S. 300, 312 (1920).

³⁰ See Kaufman, *Masters in the Federal Courts*, 58 Colum. L. Rev. 452 (1968); Note, *Masters and Magistrates in the Federal Courts*, 88 Harv. L. Rev., 779-96 (1975).

mitted.³¹ Although not bound to follow federal court practices in its own adjudicatory proceedings, the Commission has frequently looked to them for guidance and has done so expressly in the area of discovery.³² It is, therefore, against this broader judicial background that we must interpret the relevant Commission regulations and apply them to the agreement at hand.

The first issue we face is one raised ourselves. Section 034 of Chapter 0106 of the AEC Manual (which is still effective) directs that “[t]he delegated authority of the Atomic Safety and Licensing Boards may not be further redelegated.” That authority includes the power to rule on discovery matters.³³ We therefore asked the parties to address whether Section 034 invalidated the agreement to refer the privilege claims to a master for binding resolution.

The staff and the Company urge that the reference to the master does not contravene that Manual provision. They argue that the general language of Section 034 should not be read to limit Section 023 of the same Manual chapter. That section expressly authorizes each licensing board to “exercise the powers of a presiding officer” granted by the Commission’s Rules of Practice which, in turn, provide in pertinent part (10 C.F.R. §2.753) that

The parties may also stipulate as to the procedure to be followed in the proceeding. Such stipulations may, on motion of all parties, be recognized by the presiding officer to govern the conduct of the proceeding.

Both the Company and the staff contend that the parties’ oral agreement of December 6, 1974 to refer the discovery claims to a master amounted to no more than a stipulation “to govern the conduct of the proceeding” which the Licensing Board, as “presiding officer,” properly recognized in its order of December 10, 1974.³⁴

The City disagrees. Although conceding “that the parties might have resolved the privilege issues among themselves by any [manner] they chose,” the City contends that once the Licensing Board’s own jurisdiction was invoked, “neither

³¹ E.g., *Fisher v. Harris, Upham & Co.*, 61 F.R.D. 447 (S.D.N.Y. 1973); *Collins & Aikman Corp. v. J. P. Stevens & Co.*, 51 F.R.D. 219, 221 (D.S.C. 1971); *First Iowa Hydro Elec. Cooperative v. Iowa-Illinois Gas & Electric Co.*, 245 F.2d 613 (8th Cir.), *certiorari denied*, 355 U.S. 871 (1957); *Schwimmer v. United States*, 232 F.2d 855 (8th Cir.), *certiorari denied*, 352 U.S. 833 (1956); *Tivoli Realty, Inc. v. Paramount Pictures, Inc.*, 10 F.R.D. 201, 203 (D.Del. 1950); *Pathe Laboratories, Inc. v. Du Pont Film Mfg. Corp.*, 3 F.R.D. 11, 14 (S.D.N.Y. 1943); *Stentor Electric Mfg. Co. v. Klaxon Co.*, 28 F. Supp. 655 (D.Del. 1939).

³² See *Commonwealth Edison Company* (Zion Station, Units 1 and 2), ALAB-196, 7 AEC 457, 460 (1974); *Northern States Power Company* (Monticello Nuclear Generating Plant, Unit 1), ALAB-10, 4 AEC 390, 392 (1970).

³³ 10 C.F.R. §§ 2.718(f), 2.718(l), 2.740 and 2.741.

³⁴ In an order entered on August 27, 1975, denying the Justice Department’s motion of July 8th to certify the master’s rulings to us, the Board below indicated that this was its position also. NRCL-75/8 at 368-69.

the Board nor the parties could delegate that authority to another [*i.e.*, a master] although they could have settled the matter themselves thus rendering the decision by the Board moot.”³⁵ In the City’s judgment, the agreement to allow the master to make binding determinations runs fatally afoul of Manual Section 034.

We think the position of the staff and the Company is the sounder one. It simply cuts against basic principles of statutory construction to read a general provision like Manual Section 034 to forbid what a more specific section of the same regulations, Section 023, permits.³⁶ In our judgment, the power granted the licensing boards to approve stipulations establishing procedures to be followed “in the proceeding” encompasses authority to approve a voluntary agreement for handling pretrial discovery matters in that proceeding. We perceive no rational basis for outlawing procedures which the parties concededly could have adopted on their own solely because the Board was asked to approve them. To the extent that court practice is a guide in this area, we note that, as the Department of Justice acknowledges, Rule 29 of the Federal Rules of Civil Procedure permits essentially the same practice as 10 C.F.R. §2.753.³⁷ And we take it as settled that, as a general rule, parties in court may limit the issues they will tender for decision.³⁸

The City makes the additional objection that Section 2.753 says it may be invoked “on motion of all the parties” and is therefore inapplicable to the agreement before us which was initiated at the Board Chairman’s suggestion.³⁹ That objection is insubstantial. The Commission has reiterated that its Rules of Practice are not to be applied “in an overly formalistic manner.”⁴⁰ In the situation before us, all parties had actual notice of the proposal to use a “master” and all voluntarily agreed to the reference. To hold that agreement invalid because the Chairman thought of it first would invest the Commission’s

³⁵ Petition for Reconsideration, p. 4.

³⁶ *Ginsberg & Sons v. Popkin*, 285 U.S. 204, 208 (1932): “General language of a statutory provision, although broad enough to include it, will not be held to apply to a matter specifically dealt with in another part of the same enactment.”

³⁷ Rule 29 provides in pertinent part: “Unless the court orders otherwise, the parties may by written stipulation . . . (2) modify the procedures provided by these rules for other methods of discovery, except that stipulations extending the time provided in Rules 33, 34 and 36 for responses to discovery may be made only with approval of the court.” See App. Tr. 44-45.

³⁸ *Utah v. United States*, 394 U.S. 89, 93 (1969).

³⁹ Petition for Reconsideration, p. 3.

⁴⁰ *Consumers Power Company* (Midland Plant, Units 1 and 2), CLI-74-3, 7 AEC 7, 12 (1974); *Consolidated Edison Company of New York, Inc.* (Indian Point, Units 1-3), CLI-75-8, NRCI-75/8, 173, 177 (1975). And see *American Farm Lines v. Black Ball Freight Service*, 397 U.S. 532 (1970).

Rules with a ritualistic significance long rejected in modern adjudicatory procedures.⁴¹

The City also argues that our analogy to Rule 29 of the Federal Rules is inapposite. The City points out, correctly, that Rule 53 of the Federal Rules expressly allows references to special masters. From this it reasons that "under the Federal Rules there is no need to harmonize a general rule permitting procedural stipulations with a specific prohibition against the redelegation of authority as there is in this case."⁴²

We think the City's argument is not well taken for the reasons given by the First Circuit in *DeCosta v. Columbia Broadcasting System, Inc.*, 520 F.2d 499 (1975), a case virtually on all fours on this point with the matter before us. In *DeCosta*, as in this case, the parties agreed to refer certain issues in a pending case to another judicial officer for determination. (In *DeCosta* the referee was a United States Magistrate.) In due course the referee reported his ruling. In that case, as in this one, it was not until "after [the] report was filed" that the losing side "objected to the reference for the first time and argued that the parties were without authority to consent to reference" and that the referee's decision was therefore beyond his jurisdiction and "*ultra vires*."⁴³ The trial court in *DeCosta*, as the Licensing Board below, rejected the argument, holding that the consensual reference granted the referee power to determine those issues voluntarily submitted to him.⁴⁴ There, as here, the losing side sought further review, renewing on appeal its contention that the trier of fact was powerless to delegate its decision-making authority to a master notwithstanding the parties' consent (albeit the argument in *DeCosta* was framed in limitations assertedly found in the Constitution rather than in the AEC Manual). The court of appeals in *DeCosta* flatly rejected that argument for reasons equally applicable to the matter before us:

However persuasive such an argument may be where governmental sanction is threatened, indicating a strong public interest in the outcome of litigation and creating a countervailing necessity for extending the full measure of judicial process to the defendant, or where parties to civil litigation properly before the federal judiciary insist on judicial resolution, quite different policy and precedent should apply where the parties to a civil dispute themselves select another forum. Under such circumstances, it is inappropriate to evaluate the problem as one of the right of the judiciary to

⁴¹ See *McDowell v. Celebrezze*, 310 F.2d 43, 44 (5th Cir. 1962) and cases there cited. See also Rule 1, Federal Rules of Civil Procedure: "These rules . . . shall be construed to secure the just, speedy and inexpensive determination of every action."

⁴² Petition for Reconsideration, p. 4.

⁴³ 520 F.2d at 502.

⁴⁴ Compare 383 F.Supp. 326, 331-335 (D.R.I. 1974), with the Licensing Board's Order of August 27, 1975 declining to certify the master's rulings to us at the Justice Department's behest. NRCI-75/8, 365, 367-69.

relinquish its authority. *The issue is not the power of the judge to refer, but the power of the parties to agree to another arbiter, absent overriding constitutional considerations.*⁴⁵

The court, observing that consensual references to masters long predated the Federal Rules,⁴⁶ went on to hold that nothing in those Rules, in applicable statutes, or in the Constitution itself, precluded the parties from electing to refer issues to a “master” if they voluntarily chose to do so.⁴⁷ The court analogized a consensual referral to parties’ well-recognized rights to elect arbitration over judicial resolution of issues, noting that an arbitration award is a judicially enforceable order and that “[b]oth modes of conflict resolution serve the same goals of relieving scarce judicial resources and of accommodating the parties.”⁴⁸

We think the court of appeals’ reasoning in *DeCosta* is dispositive as well of the City’s argument here. We find no public policy in the AEC Manual, or in the Atomic Energy Act for that matter, which creates a “countervailing necessity” for insisting on the full measure of administrative process where, for reasons satisfactory to themselves, parties to a Commission antitrust proceeding voluntarily agree to have an arbiter of their own choosing decide whether some documents are privileged or not. Whether we might reach a different result if the referral were not voluntary,⁴⁹ or there were significant health and safety or environmental questions involved,⁵⁰ or the entire cause were referred,⁵¹ are matters we need not (and do not) reach. It is sufficient to decide this case that the circumstances before us present no overriding considerations which precluded the consensual reference of the discovery issues.

Although the court in *DeCosta* did not rest the validity of the reference in that case on the Federal Rules of Civil Procedure, it reviewed the report under the standards established by those rules. It did so essentially because it construed the *DeCosta* reference—“for hearing and determination”—as “not clear enough by its own terms to support the conclusion that the parties consented to a grant of power to the [referee] greater than outlined in Rule 53 *Fed. R. Civ.*”

⁴⁵ 520 F.2d at 503-04 (footnotes omitted; emphasis added).

⁴⁶ See *Hecker v. Fowler*, 69 U.S. (2 Wall.) 123, 127-29 (1865); *Newcomb v. Wood*, 97 U.S. 581 (1878); *Kimberly v. Arms*, 129 U.S. 512, 524 (1889).

⁴⁷ *Accord, Fisher v. Harris, Upham & Co.*, 61 F.R.D. 447, 449 (S.D.N.Y. 1973).

⁴⁸ 520 F.2d at 505-06. *And see Note, Masters and Magistrates, supra*, 88 Harv. L. Rev. at 796: “Of course, if all parties freely consent to the reference of a case or a component issue, the problems of added expense and the need to retain respect for judgments and confidence in the outcome of litigation lose their significance. Thus, reference by consent seems unobjectionable.”

⁴⁹ See *LaBuy v. Howes Leather Co.*, *supra*, 352 U.S. 249.

⁵⁰ See 10 C.F.R. §2.749(d) and 37 F.R. 15127 (July 28, 1972).

⁵¹ See *Cademartori v. Marine Midland Trust Co.*, 18 F.R.D. 277 (S.D.N.Y. 1955).

Pro.” 520 F.2d at 508. We therefore inquire next into what (if any) review was contemplated by the parties in entering into the agreement in this case.

4. THE AGREEMENT CONSTRUED

The order at issue states that the disputed privilege claims were referred “with the express agreement of the parties to be bound by the determinations of the Master.”⁵² Each of the parties has confirmed its understanding that the agreement was intended to waive its rights to ask the Licensing Board to review the master’s rulings. Thus, for example, in asking the Licensing Board to certify the master’s rulings to us, the City expressly acknowledged in its motion papers that⁵³

When the questions of discovery and privilege first arose, the City agreed with the other parties that the integrity of the [Licensing] Board should be maintained by shielding it from the contents of documents that might later be held to be privileged.

The City believed that since an appeal of the Special Master’s report to the [Licensing] Board would require their review of the documents and thereby compromise the Board’s position, they agreed that there was to be no review by the Board of the Special Master’s decision. (footnote omitted.)

The City reiterated this view of the agreement when seeking similar relief directly from us.⁵⁴ And in oral argument before this Board last September 16th, each of the other parties echoed that understanding, *i.e.*, that when the reference was agreed to, the parties contemplated no review of the master’s rulings by the Board below.⁵⁵ The question here, then, is not whether the parties agreed to be bound by the master’s rulings in the Licensing Board proceedings—that is admitted—but whether they agreed to be bound by his determinations before us as well. To answer that question, we look initially to the text of the agreement itself.

a. To determine the purport of any agreement it is appropriate to begin by first ascertaining the meaning its words naturally appear to convey. To agree “to be bound” by a future determination surely suggests that the parties had consented to abide the result, favorable or not, reached by their chosen arbiter. While we would discount a literal reading of the agreement if its result were unreasonable or absurd, this understanding is hardly irrational or unknown to the law. To give but one example that comes readily to mind, deadlocks in

⁵²The order embodying the full agreement appears at p. 4, *supra*.

⁵³The City’s Motion for Certification, p. 10 (July 8, 1975).

⁵⁴The City’s Brief on Appeal, p. 17 (August 12, 1975).

⁵⁵See App. Tr. 40-41 (Department of Justice); App. Tr. 70 (NRC Staff); App. Tr. 97 (The Company).

collective bargaining negotiations are often voluntarily referred to binding arbitration. Those arbitrations regularly put to rest disputes of greater complexity and wider consequence than whether documents sought to be discovered in litigation are within or without the “attorney client” or “work-product” privilege without permitting recourse to appellate review of the merits of the arbitrator’s determinations. This result is honored by the courts even in cases where, had the dispute come before the judicial tribunals initially, they would have made some different resolution.⁵⁶

b. Our conclusion that the parties had waived appellate as well as Licensing Board review of the master’s rulings is fortified by the manner in which the agreement was to operate. It provides that the disputed documents are to be given to the master for examination *in camera*, and

[a]s to those he determines are privileged, they shall be returned to the counsel of the party supplying said document, *as to those he determines are not privileged, they shall be returned to the counsel of the party who had made the request for said document, . . .* (Emphasis added.)

The requirement that the master immediately turn over to the party demanding them documents ruled unprivileged cuts strongly against the argument that the agreement contemplated appellate review. As we just pointed out, the parties themselves eliminated review by the Licensing Board, and the Commission’s Rules of Practice—to which counsel before us are no strangers—expressly foreclose interlocutory appeals.⁵⁷ In Commission practice, as in the federal courts, rulings denying discovery are interlocutory; they are reviewable as of right only when taken up at the end of the case on appeal from the Licensing Board’s decision.⁵⁸ Consequently, as an undisputed purpose of the reference agreement was to set up a reasonably swift way to find out which documents would be available for use at trial without getting the Licensing Board directly involved, that purpose would be impossible of achievement unless the agreement meant that the right to appellate review was also waived. For if not, in order to preserve its appellate rights a party would somehow have to arrange—contrary to the express provision in the agreement—to have the master withhold the very

⁵⁶ *E.g.*, *In re Grace Line, Inc.*, 38 Misc.2d 909, 239 N.Y.S.2d 293 (Sup. Ct. N.Y. Co. 1963), *affirmed*, 20 App. Div.2d 759, 246 N.Y.S.2d 994 (1st Dept.), *appeal denied*, 14 N.Y.2d 484, 199 N.E.2d 174, *certiorari denied*, 379 U.S. 843 (1964). The Supreme Court has reiterated a “consistent emphasis upon the congressional policy to promote the peaceful settlement of labor disputes through arbitration,” *Boys Markets v. Retail Clerks Union*, 398 U.S. 235, 241 (1970).

⁵⁷ 10 C.F.R. § 2.730(f): “No interlocutory appeal may be taken to the Commission from a ruling of the presiding officer.” (Under other provisions of the Rules, this Board acts for the Commission in these matters. 10 C.F.R. § 2.785).

⁵⁸ See fn. 24, *supra*.

documents he determined to be unprivileged until after the trial was over, a decision rendered, and appellate review available, for earlier disclosure of the documents would moot any privilege claim. But manifestly this procedure would frustrate the reason for having a master decide privilege claims in the first place; it would render the reference to him so much waste ink. We are therefore forced to the conclusion that, in contemplated operation as well as in plain meaning, the agreement “to be bound” by the master’s determinations necessarily encompassed a waiver of appellate review.

c. The City presses the further argument that, notwithstanding anything we may infer from the four corners of the agreement, the parties never intended to waive the right to appeal from the master’s determinations. No contemporaneous evidence supports that contention, however, and the agreement itself reserves no right of appeal. The only backing for the City’s position (aside from its *ipse dixit*) are some statements of counsel made six months after the referral and subsequent to the master’s rulings, and even those statements are equivocal. Indeed, the Department of Justice represented in its brief on appeal that “[i]f the delegation of authority to the Special Master is valid then our agreement prevents us from objecting to his specific rulings.”⁵⁹ In these circumstances, the afterthoughts of disappointed counsel merit little weight. Neither do *post hoc* assertions of the City’s subjective intent advance its cause. Such arguments “cannot add language not contained in the stipulation itself.”⁶⁰ As the late Judge Learned Hand admonished when faced with similar arguments:

If, however, it were proved by twenty bishops that either party, when he used the words, intended something else than the usual meaning which the law imposes upon them, he would still be held, unless there were some mutual mistake, or something else of the sort.⁶¹

d. Before we leave this point there is one more matter which bears mentioning. Cleveland’s complaint is based on documents withheld from it on the basis of the master’s rulings upholding the Company’s claims of privilege. The City makes little mention, however, of the more than one hundred and fifty other documents it demanded and was given—without appeal—solely because as to them the master rejected the Company’s privilege claims. The City is thus in the position of retaining benefits of the referral agreement with one hand while attacking it with the other. That posture is not only uncomfortable but

⁵⁹Memorandum of the Department of Justice, p. 7 (September 12, 1975). See also App. Tr. 40-41.

⁶⁰*Rockport Yacht & Supply Company v. M/V Contessa*, 209 F. Supp. 396, 399 (S.D. Tex. 1962).

⁶¹*Hotchkiss v. National City Bank of New York*, 200 F. 287, 293, (S.D.N.Y. 1911), *affirmed*, 201 F. 664 (2nd Cir. 1912), *affirmed*, 231 U.S. 50 (1913).

impermissible. It is "the general rule that 'one who accepts the benefits of a judgment, decree or judicial order is estopped to deny the validity thereof.'"⁶² This principle was initially articulated by the Supreme Court in the context of a contract dispute:

He entered of his own accord into the second contract and has taken advantages which resulted from his action under it, having received the compensation which was to be paid under its terms. Having done all this, he is estopped from denying the validity of the contract.⁶³

And it has been applied not only to contracts⁶⁴ but to statutes,⁶⁵ other governmental actions,⁶⁶ judgments,⁶⁷ and other sources of benefit.⁶⁸ Parties who have availed themselves of benefits have been precluded from challenging conditions attached to those benefits regardless of the ground of attack. Such a person is estopped from arguing that a condition is unconstitutional,⁶⁹ that it was imposed without authority,⁷⁰ that it is contrary to law,⁷¹ that the agreement containing the conditions is invalid,⁷² and that no agreement existed.⁷³ Therefore, irrespective of the correctness of the master's individual

⁶²*American Guaranty Corporation v. United States*, 401 F.2d 1004, 1011 (Ct. Cls. 1968).

⁶³*United States ex rel. International Contracting Co. v. Lamont*, 155 U.S. 303, 309 (1894).

⁶⁴*Branch v. Jesup*, 106 U.S. 468, 475-76 (1883); *Lyle Cashion Co. v. McKendrick*, 204 F.2d 609, 612 (5th Cir. 1953); *Allied Steel and Conveyors, Inc. v. Ford Motor Company*, 277 F.2d 907, 912 (6th Cir. 1960); *Hartford Accident & Indemnity Co. v. United States*, 127 F.Supp. 565, 567 (Ct. Cls. 1955).

⁶⁵*Wall v. Parrot Silver & Copper Co.*, 244 U.S. 407, 411-412 (1917); *Pierce Oil Corp. v. Phoenix Refining Co.*, 259 U.S. 125, 128 (1922); *Booth Fisheries v. Industrial Comm.*, 271 U.S. 208, 211 (1926); *Fahey v. Mallonee*, 332 U.S. 245, 255 (1947); *Young v. Anderson*, 160 F.2d 225, 226 (D.C. Cir.), *certiorari denied*, 331 U.S. 824 (1947).

⁶⁶*St. Louis Co. v. Prendergast Constr. Co.*, 260 U.S. 469, 472 (1923); *Callanan Road Improvement Co. v. United States*, 345 U.S. 507, 513 (1953); *FPC v. Colorado Interstate Gas Co.*, 348 U.S. 492, 502 (1955).

⁶⁷*Livesay Industries v. Livesay Window Co.*, 202 F.2d 378, 382 (5th Cir.), *certiorari denied*, 346 U.S. 855 (1953); *American National Bank & T. Co. of Chicago v. Taussig*, 255 F.2d 765, 769 (7th Cir.), *certiorari denied*, 358 U.S. 883 (1958); *American Guaranty Corporation v. United States*, *supra*, 401 F.2d at 1011.

⁶⁸*Schloss Bros. & Co. v. Charles Stern Co.*, 53 F.2d 574, 575 (5th Cir. 1931).

⁶⁹*Booth Fisheries v. Industrial Comm.*, *supra*, 271 U.S. at 211; *Fahey v. Mallonee*, *supra*, 332 U.S. at 255; *Young v. Anderson*, *supra*, 160 F.2d at 226.

⁷⁰*Branch v. Jesup*, *supra*, 106 U.S. at 475-76; *Hartford Accident & Indemnity Co. v. United States*, *supra*, 127 F.Supp. at 567.

⁷¹*Callanan Road Improvement Co. v. United States*, *supra*, 345 U.S. at 513; *F.P.C. v. Colorado Interstate Gas Co.*, *supra*, 348 U.S. at 502; *Schloss Bros. & Co. v. Charles Stern Co.*, *supra*, 53 F.2d at 575.

⁷²*United States ex rel. International Contracting Co. v. Lamont*, *supra*, 155 U.S. at 309.

⁷³*Allied Steel and Conveyors, Inc. v. Ford Motor Company*, *supra*, 277 F.2d at 912.

privilege rulings, the City is estopped to challenge them. It cannot now be allowed to attack the express condition under which the privilege claims were referred—"to be bound by the determinations of the Master"—while retaining at the same time the documents it received from the Company as a result of his rulings.⁷⁴ There is thus nothing inequitable in holding the City to its voluntary agreement to be bound by those rulings.^{74a}

5. REVIEW BY CERTIFICATION OF THE MASTER'S RULINGS

In the preceding points we have developed that, in the circumstances presented, resort to a master was not precluded by regulation or statute and that the agreement to be bound by his determinations included a waiver of the right ever to appeal his rulings. The referral agreement was, of course, strictly an arrangement among the parties; it neither bound nor purported to bind anyone else. Therefore, even assuming *arguendo* that any such intra-party compact could oust this agency's tribunals of jurisdiction to review the master's rulings, the particular agreement at bar did not do so. Both the Licensing Board and this Board's discretion to review those discovery rulings *sua sponte* remain untouched.⁷⁵ As to the Licensing Board, all parties agreed that they referred the privilege claims to the master for the very purpose of eliminating the need for that Board to see the contested papers. Accordingly, the Board below cannot be faulted for declining to review the privileged status of documents the parties stipulated should be kept from it.⁷⁶

There remains, then, only the question whether we should exercise our discretion to direct certification of the master's individual privilege rulings in order to review them ourselves. We decline to undertake that task. The rule in the federal courts is that discovery orders involving the scope of an attorney's work product—even in the so-called "big case"—are not appealable,⁷⁷ and the contention that the denial of a claim of privilege (much less its grant) enjoys a

⁷⁴ Nor could the City avoid the application of this rule by returning the documents to the Company. The Company's claim—rejected by the master—was that they were of a confidential nature. Once their confidentiality was breached it could not be restored.

^{74a} In light of the foregoing discussion, we do not reach the question whether (jurisdictional matters to one side) parties may ever raise issues on appeal which they intentionally and voluntarily agreed not to present to the trial board.

⁷⁵ See *Consolidated Edison Co. of New York* (Indian Point, Unit 3), CLI-74-28, RAI-74-7, 8-9 (1974); *Vermont Nuclear Power Corp.* (Vermont Yankee Station), ALAB-124, 6 AEC 358, 361-62 (1973).

⁷⁶ See *First National Bank v. Cities Service Co.*, 391 U.S. 253, 291-92 (1968).

⁷⁷ *American Express Warehousing, Ltd. v. Transamerica Ins. Co.*, 380 F.2d 277 (2nd Cir. 1967). See also *International Business Machines Corp. v. United States*, 480 F.2d 293, 298 (2nd Cir. 1973) (*in banc*), *certiorari denied*, 416 U.S. 980 (1974).

special status deserving of interlocutory review has been expressly rejected by the Supreme Court.⁷⁸ We think it wisest to continue our own adherence to that same practice.⁷⁹ It is one thing to relax the rule against interlocutory appeals by exercising our certification powers to settle a legal point of general applicability. This in effect is what we did in this case by taking up the validity of the master's role. But it is quite a different matter to grant interlocutory review simply to reexamine *sui generis* rulings on individual privilege claims. Aside from the obvious fact that to do so would stall the proceeding below until we acted, the simple truth is that we are no better equipped to rule on such matters than the Licensing Board. Indeed, perhaps less so, for that Board has at least been educated on the relevant issues by participation in the proceeding before it; we would have to begin afresh.

Our hesitation to allow interlocutory review of these discovery claims rests in no small part on the fact that doing so would invite our inundation with demands for similar treatment in other cases. This Board is simply not prepared to handle such a flood. To be sure, absent an agreement not to do so, a party has the right to appeal denials of discovery demands by filing exceptions at the end of the case. But our disinclination to allow interlocutory review of such matters is not a practice which merely puts off judgment day. In the interim, the dissatisfied party may prevail, or the information sought become available elsewhere, or the subject of the discovery mooted, or the cause settled, or, as the old story goes, "the horse may learn to fly." In short, effective and efficient administration of the appellate process—indeed the entire licensing process—is served best by exercising our certification powers sparingly. Discovery orders are rarely likely to give cause for that exercise.

We see no reason to depart from that practice in this case. To be sure, the rulings complained of were made by a "master" rather than a licensing board. But that "master" was in fact a member of the Commission's Licensing Board Panel. He was qualified in the conduct of administrative proceedings and is currently presiding over other Commission cases where he is called upon to make similar rulings. That he ruled as "master" in this case and will do so as "chairman" in others is to our minds a distinction without a difference.

Nor are we persuaded by the City's claims that it was denied "a fair hearing" before the master. Without going into chapter and verse, it is sufficient to note that the City was allowed—and took—the opportunity to file several rounds of briefs before the master, to present oral argument before him, and to ask that he reconsider his rulings. In short, it was given ample opportunity to support and argue its position before its claims were finally determined. What the City is unhappy about is that the master rejected its views on the privileged status of

⁷⁸ *Will v. United States*, 389 U.S. 90 (1967); *Accord, City of Los Angeles v. Williams*, 438 F.2d 522 (9th Cir. 1971).

⁷⁹ *Zion, supra*, ALAB-116, 6 AEC at 259-60.

the majority of the documents it demanded. The master may well have erred in his rulings; he did not, however, deny the City its day in court. A question about the latter might merit interlocutory review on certification; in our judgment one about the former does not.

On petition for reconsideration, ALAB-290 *adhered to*.
It is so ORDERED.

FOR THE ATOMIC SAFETY AND
LICENSING APPEAL BOARD

Margaret E. DuFlo
Secretary to the Appeal Board

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
ATOMIC SAFETY AND LICENSING BOARD

LBP-75-65

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

In the Matter of

Docket No. 50-332-NEPA
50-332-OL

ALLIED-GENERAL NUCLEAR
SERVICES, ET AL.

November 5, 1975

(Barnwell Nuclear Fuel Plant
Separations Facility)

Upon intervenors' motion to suspend staff's presentation of evidence pending its completion of allegedly required NEPA reviews and reissuance of FES, and their accompanying request for certification, Licensing Board concludes that the legal arguments made by intervenors in support of their motion and requested certification are disposed of by ALAB-296 (*Barnwell*).

Motion and request for certification denied.

LICENSING BOARD: CONSIDERATION OF GENERIC ISSUES

The decision whether a particular matter must be dealt with on a generic basis or decided separately on a case-by-case basis lies with the Commission and not with a licensing board. If an existing generic proceeding does not dictate that a particular licensing proceeding be halted, the asserted need for generic proceedings clearly cannot lead to a halt to a particular proceeding, absent a clear directive from the Commission.

MEMORANDUM AND ORDER

On October 14, 1975, Intervenors Environmentalists, Inc., South Carolina Environmental Action, Inc., and Piedmont Organic Movement (Intervenors) hand-delivered to the Board a "Motion to Suspend Staff's Presentation Pending Completion of Required NEPA Reviews and Reissue of FES" and a "Request for Certification" should this Board deny the motion. In that motion, Intervenors argue that several actions must be accomplished before the NRC

Regulatory Staff (Staff) may be permitted to introduce any further evidence, including the FES, in this proceeding.

The actions which Intervenors claim must be accomplished are:

(1) Preparation and adoption of site criteria for nuclear fuel reprocessing plants accompanied by appropriate NEPA review;

(2) Preparation and appropriate NEPA review of an environmental impact statement justifying the adoption of Appendix F to 10 CFR Part 50;

(3) Preparation and appropriate NEPA review of an environmental impact statement of the storage and shipment of high-level radioactive wastes;

(4) Preparation and appropriate NEPA review of an environmental impact statement assessing the cumulative impact of all integral facilities essential to the successful and lawful operation of the separations facility;

(5) Preparation and appropriate NEPA review of an environmental impact statement assessing the impacts of all aspects of the proposed Barnwell facility as cumulative with those impacts occurring in the past and those anticipated to occur in the future by reason of the operation of the Savannah River Plant;

(6) Preparation and appropriate NEPA review of an environmental impact statement assessing the overall impacts of the proposal to recycle uranium oxide fuels; and

(7) Revision and reissuance of the currently existing final environmental statement for the separations facility in order to correct certain alleged discrepancies between the Staff's testimony and the FES as presently written.

In support of their motion, Intervenors argue that NEPA requires a suspension of the Staff's presentation in order to prevent further irreversible and irretrievable commitments of resources prior to a full NEPA review and that 10 CFR Part 50, Appendix D, Paragraphs 9 and 10, require that a legally sufficient FES be introduced into evidence by the Staff prior to the Staff taking any position in the ongoing proceedings. Intervenors also contend that the Staff's participation must be halted pending the Commission's resolution of certain generic matters referred to above, arguing that the dictates of NEPA require that the Commission must proceed *sua sponte* with such generic matters. Intervenors argue that they would prevail on the merits of these assertions in the Federal Courts. Intervenors' position is that construction of the separations facility should have been halted in response to the *Calvert Cliffs* decision¹ in order to permit a full NEPA consideration of alternatives before construction reached such a point that the NEPA review became merely a justification for what had already happened. Further, Intervenors assert that the Atomic Energy Act requires the relief sought because, first, there can be no reasonable assurance of safety prior to the development of specific means and facilities for the storage of high-level wastes which would be accumulated at the separations facility and,

¹ *Calvert Cliffs Coordinating Committee v. AEC*, 449 F.2d 1109 (D. C. Cir. 1971).

second, the siting of the facility in a major earthquake zone appears to be unreasonable *per se*.

Intervenors contend that both they and the public are being irreparably injured by the continuance of the proceeding in that NEPA's basic purpose is thwarted by the continuing commitment of significant resources to the project prior to a full NEPA review. Further, Intervenors contend that the applicant cannot complain of any injury which it may sustain as a result of staying the Staff's presentation in this case because one may not complain of actions which are required by law. Intervenors contend that a stay of the Staff's presentation is in the public interest.

The Staff and Allied-General Nuclear Services, et al., (Applicants) have filed responses in opposition to the Intervenors' motion. The Staff aptly characterizes the motion as attacking their presentation on two separate grounds: first, that alleged deficiencies in the FES can only be corrected by reissuance and recirculation of that document and that the Staff is precluded from presenting evidence until such reissuance and recirculation is accomplished; and second, that certain generic issues must be resolved before the proceeding may go forward. The Staff notes that the continuation of the proceeding is not banned by any statute or regulation; that the Commission's regulations do not prohibit the introduction into evidence of the FES, nor do they ban the Staff from taking positions until the FES is introduced; and that the ultimate decision on whether generic proceedings should be undertaken with respect to the matters raised by Intervenors lies with the Commission and not with this Board.

The Applicants' response indicates general support of the Staff and points out that, subsequent to the Staff's response, the Appeal Board issued ALAB-296² which denied Intervenors' previously requested stay of these proceedings. Applicants take the position that ALAB-296 substantially disposes of the pending motion.

The Board agrees that the motion must be denied for the reasons given by the Applicants and Staff. The Appeal Board's decision is applicable to the fourth, fifth, and seventh actions which Intervenors contend must be taken by the Staff. Intervenors argued the seventh action, that the FES must be recirculated because of inconsistencies between it and Staff testimony, before the Appeal Board. That Board in ALAB-296 noted that "[t]he Commission's regulations, however, recognize that evidence presented at a hearing may cause a licensing board to arrive at conclusions different from those in the FES. In that event, the FES is simply deemed amended *pro tanto*."³ The Appeal Board held that there was no requirement that the Staff be bound by the terms of the FES and that it was indeed the Staff's duty to bring to the attention of a Board

² *Allied-General Nuclear Services, et al.* (Barnwell Nuclear Fuel Plant Separations Facility) ALAB-296, NRCI-75/10, 671.

³ *Id.* at 680.

significant new information coming to its attention after the issuance of the FES.

Intervenors' fourth and fifth actions, that the FES must be recirculated to take into account the effects of facilities integral to the separations facility and the cumulative effects of Barnwell and the Savannah River Plant, are also disposed of by ALAB-296. There, the Appeal Board stated that ". . . we perceive nothing either in NEPA or in the Commission's rules which would automatically preclude the hearing of all environmental issues while the impact statement is being redone as to some."⁴ The Appeal Board noted that the Intervenors might perhaps demonstrate that some issues should not be heard while the FES is recast in part. Should the record demonstrate that the FES does indeed need to be redrafted and recirculated in whole or in part, this Board will take appropriate action. However, the assertions made in Intervenors' pleadings provide no basis for enjoining the Staff from introducing evidence in this proceeding, and indeed would prevent the Staff from updating the FES in the hearing process as contemplated by Commission regulations. Nor is there support for Intervenors' position in Paragraphs 9 and 10 of Appendix D to 10 CFR Part 50.

That leaves Intervenors' argument that certain generic reviews must take place before the Staff may present further evidence (actions 1, 2, 3, and 6). The Board agrees with the Applicants and Staff that the decision whether a particular matter must be dealt with on a generic basis or decided separately on a case-by-case basis lies with the Commission and not with the Board. Further, the Appeal Board's disposition in ALAB-296 of Intervenors' contention that this proceeding must be halted pending the outcome of the Generic Environmental Statement on Mixed Oxide Fuels (GESMO) proceeding is applicable to this aspect of the pending motion. The Appeal Board clearly held that, while the pendency of GESMO had impact for this proceeding, it by no means required that this proceeding be halted pending its outcome. In this instance, Intervenors cannot point to any existing proceeding, but merely assert that such proceedings are necessary. If an existing generic proceeding does not dictate that these proceedings be halted, clearly the asserted need for generic proceedings cannot result in a ban on further participation by the Staff. Such a result would require a clear directive from the Commission. As the Staff correctly points out, the Commission's rules provide a means whereby Intervenors may present their arguments to the Commission.⁵

⁴*Id.* at 681.

⁵ See 10 C. F. R. §§2.801 and 2.802.

Intervenors' legal arguments in support of their motion are addressed to the propriety of issuing a stay of these proceedings. As such, they are disposed of by ALAB-296. For the same reason, Intervenors' Request for Certification must be denied.

It is so ORDERED.

FOR THE ATOMIC SAFETY AND
LICENSING BOARD

Robert M. Lazo, Chairman

Dated at Columbia, South Carolina,
this 5th day of November 1975

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

LBP-75-66

ATOMIC SAFETY AND LICENSING BOARD

Frederic J. Coufal, Chairman
Glenn O. Bright, Member
Dr. E. Leonard Cheatum, Member

In the Matter of
**HOUSTON LIGHTING & POWER
COMPANY**
**(Allens Creek Nuclear Generating
Station, Units 1 and 2)**

**Docket Nos. 50-466
50-467**
November 11, 1975

Upon request by construction-permit applicant for early decision on certain environmental and site suitability matters, in situation where plans for construction have been indefinitely deferred, Licensing Board issues partial initial decision, making findings of fact on matters which it regards as not likely to change prior to construction.

APPEARANCES

J. Gregory Copeland, Esq., and Charles Thrash, Esq., Baker & Botts, 3001 Shell Plaza, Houston, Texas; and Jack R. Newman, Esq. and J. A. Bouknight, Jr., Esq., Lowenstein, Newman, Reis & Axelrad, 1025 Connecticut Avenue, N. W., Washington, D. C. for the Applicant, Houston Lighting & Power Company

Robert L. Pendergraft, Esq., Attorney-General's Office, State of Texas, Supreme Court Building, Austin, Texas for the Attorney General, State of Texas

Albert V. Carr, Jr., Esq. and Lawrence Chandler, Esq., Office of the Executive Legal Director, U.S. Nuclear Regulatory Commission, Washington, D. C. for the NRC Regulatory Staff

PARTIAL INITIAL DECISION AS TO SOME ENVIRONMENTAL AND SITE SUITABILITY MATTERS

I. INTRODUCTION AND BACKGROUND

1. On December 28, 1973, the U. S. Atomic Energy Commission¹ published a Notice of Hearing on Application for Construction Permits (38 *F.R.* 35521) with respect to the application filed by Houston Lighting and Power Company (hereafter Applicant) to construct two boiling-water reactors, the Allens Creek Nuclear Generating Station, Units 1 and 2 (hereafter ACNGS) at Applicant's site near Wallis, Texas, approximately 45 miles west of Houston. The Notice set forth the requirements of the Atomic Energy Act of 1954, as amended, and the National Environmental Policy Act of 1969 for the issuance of construction permits. The Notice also stated that any person who might be affected by the proceeding could file a petition to intervene, and notified interested persons to file requests for limited appearances.

2. On August 28, 1974, a prehearing conference was held in Houston in accordance with 10 CFR 2.751a. At that time, the Attorney General of the State of Texas appeared and stated that it was the intention of the State to participate as an interested State, under 10 CFR 2.715(c). (Tr. pp. 5-6) On September 5, 1974, the State of Texas filed its petition to so participate.

3. On December 5, 1974, the State filed a "Petition for the State of Texas to Intervene as a Matter of Right" listing issues regarding the suitability of the site and the uranium fuel cycle. Neither the Staff nor the Applicant objected to Texas becoming a party but each objected to certain contentions.

4. On January 14, 1975, a stipulation between the parties was filed which narrowed the issues in the State's petition to include only those regarding the geological suitability of the site (Contentions 1-4) and the effects of the uranium fuel cycle (Contentions 5-7). The parties agreed that Contentions 1-4 were acceptable but Applicant and Staff objected to Contentions 5-7. By order dated January 27, 1975, Texas was admitted as a party to this proceeding, and Contentions 1-4 were accepted while Contentions 5-7 were rejected.

5. Texas filed a motion withdrawing Contentions 1-4 on March 11, 1975, explaining that its withdrawal was because additional information supplied by

¹ In accordance with the Energy Reorganization Act of 1974, 88 Stat. 1233, the Atomic Energy Commission has been abolished and its regulatory responsibilities have been assumed by the Nuclear Regulatory Commission. All references in this decision to the "Commission" shall refer, unless indicated otherwise, to the Nuclear Regulatory Commission.

the Staff and the Applicant and an opinion of the U. S. Geological Survey supported the view that the proposed site is geologically suitable.²

6. An evidentiary hearing was held on March 11 and 12, 1975,³ in Wallis, Texas. Notwithstanding the withdrawal of Texas' contentions on site suitability, matters that had been raised by the State were fully explored. The Attorney General participated and cross-examined witnesses. Although no controversy exists between the Staff and Applicant on these or any other matters, this proceeding cannot be considered uncontested (10 CFR §2.4(n)).

7. A number of limited appearances were made at the evidentiary hearing, some in support of and others in opposition to the facility. (Tr. pp. 32-60) Various questions were raised concerning the environment and site suitability. (Tr. pp. 32-60) Mr. Maurice Berkman was concerned that the construction of an 8000-acre reservoir would increase flooding in the site vicinity during periods of high water on the Brazos River. (Tr. 32) Mr. Wayne E. Rentfro raised some general inquiries, but was particularly concerned about the location of a transmission line in the proximity of his house. (Tr. 48) The Board directed the Applicant and Staff to provide a further assessment of these matters. In accordance with this direction, both the Applicant and Staff submitted affidavits which have been made part of the record.⁴

8. The record in this case consists of a 334-page transcript of the evidentiary hearing containing, *inter alia*, the testimony of eighteen witnesses presented by the Staff and twelve witnesses presented by the Applicant, and the following exhibits which were received in evidence:

Staff's Exhibit No. 1—Final Environmental Statement for ACNGS

Staff's Exhibit No. 2—Summary Table S-4—Environmental Impacts of Transportation of Fuel and Wastes to and from One Light-Water-Cooled Nuclear Power Reactor

Staff's Exhibit No. 3—Affidavit of John A. Gill relative to transmission lines dated July 14, 1975, with attachment

Staff's Exhibit No. 4—Affidavit of Edward F. Hawkins relative to flooding dated July 2, 1975, with attachments

Staff's Exhibit No. 5—Affidavit of Jacob Kastner relative to Appendix I dated July 14, 1975, with attachments

Staff's Exhibit No. 6—Affidavit of William M. Hewitt relative to Appendix I dated July 14, 1975, with attachments

² During the hearing the State represented that it had retained a consultant to make a review of the Applicant's and Staff's analyses, and as a result had independently concluded that the site was geologically suitable. (Tr. pp. 73-74)

³ The Staff's review of the suitability of site geology questioned by the State took about 4 months.

⁴ The need for additional evidence on these matters together with a delay in Staff interpretation of "as low as practicable" values recently promulgated by the Commission (40 CFR 19439) precluded the record being closed until recently.

Staff's Exhibit No. 7—Affidavit of John A. Gill relative to Appendix I dated July 14, 1975, with attachment

Staff's Exhibit No. 8—Supplemental affidavit of William M. Hewitt relative to Appendix I dated August 1, 1975, with attachments

Staff's Exhibit No. 9—Supplemental affidavit of Jacob Kastner relative to Appendix I dated July 30, 1975

Staff's Exhibit No. 10—Affidavit of John A. Gill relative to archeology dated August 7, 1975, with attachments

Staff's Exhibit No. 11—Affidavit of John A. Gill relative to Trinity Drive dated August 25, 1975

Applicant's Exhibit No. 1—Application

Applicant's Exhibit No. 2—Environmental Report

Applicant's Exhibit No. 3—Chapter 2 of PSAR

Applicant's Exhibit No. 4—401 Certificate

Applicant's Exhibit No. 5—Master Development Plan for the Allens Creek State Park and Lake

Applicant's Exhibit No. 6—Dames & Moore Agricultural Impact Study

Applicant's Exhibit No. 7—Dames & Moore Evaluation of Recreational Benefits and Preemption of Agricultural Production

Applicant's Exhibit No. 8—Letter from Texas Department of Public Health re: Applicant's Emergency Plan

Applicant's Exhibit No. 9—Letter from Mr. G. W. Oprea to Mr. E. G. Case re: plans for additional units at Allens Creek site

Applicant's Exhibit No. 10—Affidavit of James W. Mitchell relative to flooding dated May 5, 1975, with attachments

Applicant's Exhibit No. 11—Supplemental affidavit of James W. Mitchell relative to flooding dated June 11, 1975, with attachments

Applicant's Exhibit No. 12—Affidavit of D. E. Simmons relative to transmission lines dated May 5, 1975, with attachments

9. Following the hearing, and after proposed findings had been filed by the parties, Applicant notified the Board, first by telephone and later by motion served September 26, 1975, that construction plans for ACNGS were indefinitely deferred. In the motion Applicant requested the Board to make certain findings regarding environmental and site suitability matters not likely to change. Under the guidance of Potomac Electric Power Company (Douglas Point Nuclear Generating Station, Units 1 and 2), ALAB-277, NRCI-75-6, 539, we make the findings below in order to provide early answers to some questions and to conserve the effort that has been expended in the belief that no litigant will be prejudiced in the circumstance that the only Intervenor has withdrawn its contentions. Applicant has given no target date for construction to begin but has referred to the delay as "indefinite." These findings will be valid for the foreseeable future as that term may be applied in the setting of a rapidly changing technology. (See Douglas Point, *supra*, concurring decision)

II. ENVIRONMENTAL MATTERS

COMPLIANCE WITH THE NATIONAL ENVIRONMENTAL POLICY ACT OF 1969

10. As required by 10 CFR Part 50, Appendix D, Section A,⁵ the Applicant submitted an Environmental Report (ER) dated August 24, 1973. The ER, as amended, was received into evidence as Applicant's Exhibit 2. (Tr. 83) Based on the environmental information so submitted, and on its own independent analysis and review, the Staff issued a Draft Environmental Statement (DES) in July, 1974. The public was invited to comment on the DES (39 F.R. 24946) and copies were provided to appropriate Federal, State and local agencies for their comment. In November, 1974, the Final Environmental Statement (FES) was published which includes the full text of all comments received with respect to the DES (Appendix A) and the Staff's responses. (Chapter 11) The FES was made available to various agencies and to the public. (39 F.R. 40603) It was received into evidence as Staff's Exhibit 1 (Tr. 151).

11. Certain Staff testimony received at the hearing amended the FES. The FES, as so amended, fully describes the plant site, the major systems of the proposed plant, the environmental effects of site preparation and transmission line construction, the environmental effects of both plant operation and postulated design basis accidents, and the Applicant's environmental monitoring program.

IMPACTS ON LAND USE

12. The primary impact of the ACNGS on land would be the removal of 10,000 acres from agricultural production. (Staff Ex. 1, p. 5-1) ACNGS would consist of two essentially identical boiling-water reactor nuclear steam supply systems, turbine-generator units, turbine condensers, and auxiliary equipment. (Staff Ex. 1, p. 3-1) Cooling water for plant operation would be drawn from and discharged to a cooling reservoir which would have an effective cooling surface of approximately 7600 acres and would occupy approximately 8250 acres of land. (Staff Ex. 1, pp. iii, 4-3) Two state parks would be established along the shores of the ACNGS reservoir. (*Id.*) Because much of this land is in crop production, careful consideration has been given to withdrawal of that land and to the value of the reservoir and park as a recreational resource. (See Findings 65-78 below)

⁵ Since the Notice of Hearing was published, 10 CFR Part 50, Appendix D, has been superseded by 10 CFR Part 51. (See 39 F.R. 26279)

13. The proposed site for the ACNGS is approximately 11,000 acres, of which about 4600 acres (42%) is cropland, 2400 acres (22%) is pasture, and 4000 acres (36%) is forest and heavily forested range. (Staff Ex. 1, p. 4-1; Testimony of Dr. Darrell A. Nash, "Agricultural Land Use as Related to Construction of Allens Creek Cooling Lake,"⁶ following Tr. 159, p. 2) Construction-related activities on the site would disturb about 9000 acres of pasture and cropland, including approximately 350 acres for the station itself, 50 acres for an access road and railroad spur, 60 acres for relocation of pipelines, and the 8250 acres of land inundated by the reservoir. (Staff Ex. 1, pp. iii, 4-1; Table 4.1; Figure 4.1) Transmission line corridors would require about 2200 acres of land for rights-of-way.

IMPACTS OF CONSTRUCTION

14. Excavation for the plant area would require the removal of about 520,000 cubic yards of earth. (Staff Ex. 1, p. 4-1) The reservoir would be formed by construction of an earth dam 35 feet high, 26,000 feet long. (Staff Ex. 1, p. 4-3) Earth for the dam would be taken from the area to be inundated adjacent to the dam. (*Id.*) The reservoir would contain a compacted-earth diversion dike which would be about 26 feet high and 20,000 feet long. (*Id.*, Figure 4.1) The major part of the earth for its construction would be taken from the excavation for the plant structures. (Staff Ex. 1, p. 4-3) Construction of the transmission lines would affect approximately 2200 acres, most of which is currently used for agriculture. (*Id.*) Three existing pipelines pass through the reservoir and would have to be relocated. (Staff Ex. 1, p. 4-4; Figure 4.1) Neither construction of an access road nor a railroad spur to the plant site would be expected to have a significant environmental impact. (Staff Ex. 1, p. 4-4) The major part of the site area would be cleared during the initial phase of site preparation. Merchantable logs and pulpwood would be removed, and the remaining vegetation would be burned in accordance with Texas Air Control Board regulations. (Staff Ex. 1, p. 4-1) Dust, smoke, and noise due to construction activities would occur at least 1000 feet away from all residents or roads, and the overall impact of these fairly localized effects would be minimal. (*Id.*)

15. An archeological survey performed by the Texas Archeological Survey⁷ (Survey) identified the existence of several significant prehistoric archeological

⁶ Hereafter referred to as "Nash, Agriculture."

⁷ The FES refers to the "Texas Archeological Salvage Project." This organization is now known as the Texas Archeological Survey. The Applicant contracted with the Survey to carry out archeological work at the ACNGS site. (Staff Ex. 10, p. 3)

sites within the site area and along the transmission line corridor near the Addicks reservoir. (Staff Ex. 1, p. 4-1) The Applicant has stated that the significant sites near the Addicks reservoir would be avoided during transmission line construction, but construction activities might destroy or damage, or remove from the possibility of future investigation, some archeological areas within the site boundaries. (*Id.*) A report prepared by the Survey, and concurred in by the archeological staff of the Texas Historical Commission (THC), recommended that a program of subsurface testing of certain selected sites be conducted prior to intensive excavation. (*Id.*)

16. The Survey investigated these sites in cooperation with the THC and realized the archeological significance of Site 41AU36. It presented the THC with artifacts and photographic documentation in December of 1974, and, as a result that site was named to the National Register of Historic Places (National Register) on March 21, 1975. (Affidavit of Staff Ex. 10, p. 7)

17. The site is an aboriginal cemetery with a surface area of approximately 1200 square meters containing remains representing three periods of prehistoric activity. The two lower burial areas are Late Archaic and may be as much as 2000 years old. The highest level is of the Upper Late Prehistoric Period, and pottery present with the skeletons indicate its age may be from 500 to 1000 years. Recovery of skeletal materials and artifacts from selected archeological sites has been conducted periodically from September 9, 1974, until the spring of 1975.

18. Properties included in the National Register are afforded protection under the National Historic Preservation Act of 1966. (16 U.S.C. §470 et. seq.) Section 106 of the Act requires that federally licensed undertakings affecting properties included in the National Register be submitted to the Advisory Council on Historic Preservation (Advisory Council) for its comment prior to issuance of the license. (16 U.S.C. §470f) The Advisory Council has prescribed "Procedures for Protection of Historic and Cultural Properties" for federal agencies to follow to ensure compliance with Section 106 and to protect properties on the National Register. These procedures have been codified at 36 CFR Part 800. If the contemplated licensing action will have an adverse effect on a property on the National Register, the Advisory Council's procedures prescribe various steps to determine the course of action which will best avoid or mitigate the adverse impacts. (10 CFR 800.4, 800.5) If it is determined that the proper course of action is to mitigate the effect of construction on the property, the federal agency, the Advisory Council, and the State Historic Preservation Officer execute a Memorandum of Agreement which acknowledges the methods by which mitigation will be accomplished. (10 CFR 800.5(f)). Such a Memorandum has been executed with regard to Site 41AU36 and the Advisory Council has stated that the Memorandum signifies compliance with its procedures. (Staff Ex. 10, Attachment B)

19. The Texas State Historic Preservation Officer (TSHPO) has indicated that, subject to five conditions, the Applicant has performed or will have performed to the satisfaction of the TSHPO, the investigation of each of the archeological sites mentioned in the FES. (Staff Ex. 10, pp. 2, 8-9; Attachment C(2)) The Applicant has agreed to meet those five conditions. (Staff Ex. 10, pp. 2, 8-9; Attachment C(3)) The Staff has reviewed the reports of the investigation of the sites, consulted with the TSHPO about both the investigations and the reports and has concluded that the investigations conducted by the Applicant of the archeological sites referred to in the FES have been satisfactorily carried out. (Staff Ex. 10, p. 8-9)

20. The Board finds that, in regard to Site 41AU36, the requirements of Section 106 of the National Historic Preservation Act and the procedures of the Advisory Council on Historic Preservation have been complied with. Moreover, the Advisory Council, which is charged by statute with reviewing and commenting upon activities which might affect properties on the National Register (16 U.S.C. 470f), has executed a Memorandum of Agreement for steps to be taken to mitigate the impacts of construction of the ACNGS on Site 41AU36. The Board finds that the impacts of construction of the ACNGS which would adversely affect Site 41AU36 have been satisfactorily mitigated. Applicant has satisfactorily conducted the review of the archeological sites referred to in the FES, Condition 7b of the FES has been satisfied and there would be no need to impose it on construction permits for the ACNGS.

21. As a result of construction, approximately 400 acres would be covered by structures, including station buildings, the switch yard and other permanent plant features. (Staff Ex. 1, p. 4-4) The reservoir would cover 8300 acres of terrestrial habitat and would cause the loss of about 300 deer and various other species. (*Id.*) The effects of construction activities on local flora and fauna are difficult to quantify, but would be minimal in terms of region-wide populations. (*Id.*)

22. After completion of transmission line construction, most of the 2200 affected acres would revert to agricultural usage but about 8 acres would be permanently occupied by transmission tower bases. (Staff Ex. 1, p. 4-3) The area includes some Attwater's prairie chicken habitat and transmission line construction through such areas would cause some temporary displacement, but there would be a negligible habitat loss. (Staff Ex. 1, p. 4-5) The major impact would be disruption during the nesting season but that could be eliminated by transmission line construction during another part of the year. (*Id.*)

23. Water for plant construction would be provided by two wells near the facility site. Each of these would be capable of pumping 500 gallons per minute, and would be drilled into the Evangeline Aquifer. Seepage from the reservoir would extend about 1,000 feet from the reservoir and might degrade nearby wells. The Applicant would seal any wells to be covered by the lake in order to

hold seepage to a minimum and would establish a program to monitor the water quality of nearby wells. (App. Ex. 2, pp. 5.1-23 to 5.1-23B; Staff Ex. 1, p. 5-2; Tr. 260).⁸

24. Significant construction impacts to Allens Creek, prior to filling of the cooling reservoir, would include increased siltation, relocation of about one mile of the creek, and introduction of various effluents due to construction runoff. (Staff Ex. 1, p. 4-5) These impacts would significantly reduce aquatic populations in the lower half of Allens Creek before filling of the reservoir. (Staff Ex. 1, pp. 4-5) When the reservoir fills, approximately 8.5 miles of Allens Creek would be inundated and lost as a running water habitat. (*Id.*) However, the loss would be more than offset by the development of aquatic habitat in the reservoir; most fish species presently inhabiting Allens Creek would survive the transition to a lake environment. (*Id.*)

25. The major effects of construction on the Brazos River would be an increase in suspended solids discharged to the River from Allens Creek prior to reservoir filling; construction of makeup intake structures and spillways would also increase turbidity in the River. (Staff Ex. 1, p. 4-9) Although there would be some temporary loss of aquatic populations in the Brazos in the immediate area of the plant site, effects would probably be local in nature and would not persist after completion of construction. (*Id.*) Any reduction in habitat would be compensated by the development of aquatic habitat in the reservoir. (*Id.*)

26. The Brazos River flood plain near the proposed ACNGS is flat, averages about 7 miles in width and is crossed by many tributaries. The Brazos is extremely meandering. There are few dams to control the river but there are man-made structures such as levees and bridges which affect its flow. The elevation of flood waters and the frequency of floods at any given elevation are affected by physical alteration of the flood plain. The proposed ACNGS would be such an alteration. (App. Ex. 10 attachment, pp. 4 and 5)

27. The natural topographic boundaries of the flood plain are bluffs averaging 35 to 40 feet in height. (App. Ex. 10 attachment, p. ii) Since structures within the plain have little perceptible affect on floods that top the natural boundaries, only floods that are contained within the boundaries need be considered. Floods that reach a level sufficient to escape the Brazos flood plain occur with a frequency exceeding 100 years. Relevant here, therefore, are 100 years and lesser floods. (App. Ex. 10 attachment, p. 5)

28. When a mathematical model of the flood plain is subjected to theoretical discharges (water volumes) the elevation to which the water may be expected to rise at any point in the flood plain may be calculated. If the model of the flood

⁸ A property owner near the lake raised the question of the effect of lake seepage on his water wells (Tr. 75) and was advised by the Applicant that, while the well monitoring program would detect seepage of pollutants into his well, it is highly unlikely that seepage would affect local water wells (Tr. 260).

plain is varied by the addition of ACNGS there may be calculated the difference between flood elevations with and without the facility. (App. Ex. 10 attachment, p. 5-11)

29. Construction of the mathematical model to accomplish the calculations mentioned involves application of data including high water elevations during past floods, topographical maps provided by the U. S. Geological Survey, Corps of Engineers cross sections of the channel and surveys done for the Applicant. Involved also is the use of a computer program developed by the Corps of Engineers and identified as HEC-2, Water Surface Profile. (App. Ex. 10 attachment, p. 6)

30. Considering all floods and elevations studied the calculations indicate that the addition of ACNGS to the flood plain would increase water depth at most 0.37 feet. The average increase in water depths would be 0.09 feet. (App. Ex. 10 attachment, p. 13) Frequency of flooding would also be increased by the construction of the facility. There is a 10% chance that a representative cross section of the area will suffer a 10-year flood in any given year if ACNGS is not built; if it is built, the probability rises to 11%. (App. Ex. 10 attachment, p. 14)

31. The Staff has reviewed, analyzed and confirmed the Applicant's evidence in this regard and has concluded that although there are differences in the results reached, they are not significant. The greatest increase in the depth of flood water due to the presence of ACNGS as calculated by the Staff would be 0.35 feet and the average increase in depth would be from 0.1 to 0.2 feet. (Staff Ex. 4, Attachment A, p. 36)

32. Both the Applicant and Staff calculate that the cross section having the greatest probable flood depth increase is 133.9 (App. Ex. 10, Table 1; Staff's Ex. 4, Attachment A, p. 3). This would occur at a discharge of 100,000 cfs. The cross section cuts through Valley Lake Subdivision. The construction of ACNGS would add 0.37 feet of water to an already flooded subdivision. (App. Ex. 10, Table 1) The effect of the construction of the plant in the cross section nearest to Simonton is calculated to be nil; that is, the depth of the flood water would be as great with or without ACNGS (App. Ex. 10, Table 1).

33. The warning of the Staff as to the accuracy of estimates of flood magnitudes is noted. Flood plain models are difficult to construct because of variables due to man-made changes such as structures and agricultural cultivation and to natural changes such as meanders of a stream. Contour maps are not considered to have an accuracy commensurate with the fineness of the calculations which have been made here. (Staff Ex. 4, attachment p. 5) For these reasons, it must be recognized that estimates of flood levels are only estimates. Impressive, on the other hand, is the similarity of the results of the calculations of each of the parties. The estimates are apparently as good as can be made, and a finding that the construction of ACNGS would not have a significant effect on flood levels and frequency in the Brazos River plain is warranted and is made.

34. The Applicant and Staff have each proposed a number of measures to limit adverse effects of construction of ACNGS. (Staff Ex. 1, pp. 4-13, 4-14) (*Id.*) The Staff recommends that the measures proposed by each be included as conditions to construction permits for ACNGS. (Staff Ex. 1, p. 4) The Board concurs.

35. The Board finds that the adverse impacts of construction on the site of the ACNGS have been adequately described and evaluated. The Board further finds that the conditions above mentioned would help in limiting adverse environmental effects to the minimum practicable level.

IMPACTS OF OPERATION

36. The primary impacts of the ACNGS on the terrestrial ecosystem, as discussed above, would be from construction; operation would not have a significant impact. (Staff Ex. 1, p. 5-1) The proposed ACNGS reservoir would provide increased habitat for various species including large numbers of waterfowl which could use it as a resting area. (Staff Ex. 1, p. 5-19)

37. The Applicant would pump approximately 90,000 acre-feet per year from the Brazos in accordance with a contract with the Brazos River Authority, and would return about 70,000 acre-feet per year to the River. (Staff Ex. 1, pp. 5-1, 5-2) Other inflows to the reservoir would include about 28,500 acre-feet per year as direct rainfall and about 24,000 acre-feet per year as runoff; the total yearly inflow from all sources would be about 142,500 acre-feet per year. (Staff Ex. 1, p. 5-2, Fig. 3.3) The primary loss of water at the ACNGS would be from evaporation: approximately 71,000 acre-feet per year. (Staff Ex. 1, p. 5-2) The present evapotranspiration rate from the area to be covered by the lake is about 22,000 acre-feet per year. The operation of ACNGS would therefore result in an average consumptive use of water of about 49,000 acre-feet per year. (Staff Ex. 1, p. 5-2; Tr. 172-173)

38. Seepage losses from the reservoir to the groundwater are estimated at 7400 acre-feet the first year, 2500 acre-feet the second year, and 1000 acre-feet per year thereafter. The effect of seepage on nearby wells is set out at paragraph 25 *supra*.

39. The ACNGS would discharge water into the reservoir with a temperature 19.5°F above that of intake. (Staff Ex. 1, pp. 5-21) The Staff analyzed the effects of these discharges on the cooling lake using hydrological and meteorological data from January 1952 to December 1971. (Staff Ex. 1, pp. 5-8 through 5-11; Tables 5.6, 5.7, 5.8; Fig. 5.2) The highest water temperatures would be experienced during the month of July. (Staff Ex. 1, pp. 5-8) During July of the average year with a discharge temperature of 106.2°F, the entire reservoir would have temperatures above 86.7°F, and 50% of it would be above 87.7°F, 20% will be above 93.6°F, and 10% will be above 98°F. (Staff Ex. 1,

pp. 5-21) During July of the worst year with a discharge temperature of 109.8°F, the entire reservoir would have temperatures above 90.4°F, 50% of the reservoir would be above 92.3°F, 20% would be above 98.0°F, and 10% would be above 102.4°F. (*Id.*)

40. It does not appear that temperature is a factor limiting productivity or distribution of fish species native to this part of Texas. Natural summertime surface temperatures in streams and rivers commonly exceed 90°F, often exceed 95°F, and in some cases exceed 100°F; natural summer high temperatures in Texas reservoirs commonly exceed 90°F. (*Id.*) Fish species which would inhabit the ACNGS cooling lake have been collected in Texas at temperatures which range from 90.5°F to 103.1°F, and a review of relevant data shows that these species would be able to tolerate the average and extreme high temperatures predicted. (*Id.*) The parties agree that the reservoir would be a good sports fishery (Testimony of F. G. Schlicht, pp. 1-7 following Tr. 110; Applicant's Ex. 2, pp. 5.1-17 to 5.1-18E; Staff Ex. 1, pp. 4-6 to 4-9, 5-21 to 5-25)

41. A comparison of fish productivity in five Texas reservoirs receiving heated effluent, and ten Texas reservoirs receiving no heated effluent, indicates that fish production in heated reservoirs is as good as fish production in non-heated reservoirs. (Staff Ex. 1, p. 5-24) Other factors, such as surface area and depth, were not the same for all these reservoirs, but expert opinion is that high temperatures are not a limiting factor for aquatic productivity in Texas reservoirs. (*Id.*) Two Texas reservoirs, Lake Alcoa and Lake Colorado City, which are used for cooling electric power plants, have remained highly productive since their impoundment sixteen to twenty years ago. (*Id.*) Game fish populations have persisted and have not exhibited the typical decline characteristic of game fish species in newly impounded waters. (*Id.*, p. 4-8)

42. It does not appear that the high temperatures in the reservoir would have an adverse effect on either benthic invertebrates or zooplankton. (Staff Ex. 1, pp. 5-24, 5-25) However, temperature does affect the species composition of phytoplankton, and the predicted summer water temperatures combined with the available nutrients could produce such high densities of diatoms and green and blue-green algae that water contact activities could be restricted. (Staff Ex. 1, p. 5-25)

43. The water which would be discharged from the reservoir into the Brazos River would be the same temperature as the circulating water at the intake. (Staff Ex. 1, p. 5-9; Fig. 5.2) For all practical purposes, the River water temperature would be equivalent to the equilibrium temperature of the reservoir. (Staff Ex. 1, p. 5-9) In most cases, the differences between the discharge from the reservoir and the equilibrium temperature of the River would be less than 5°F. (*Id.*) For the month of January 1970, which is the worst-case month, based on the Staff's 20-year study period, the difference between the river temperature and the temperature of the discharge from the reservoir would be a maximum of 5.68°F. (*Id.*) Though the temperature difference would be

greatest in January, the maximum discharge would occur in March. (*Id.*) In any event, the discharge would be quickly diluted by the Brazos River. (Staff Ex. 1, pp. 5-9, 5-10) The Board concludes that the temperature increases to the Brazos River due to operation of the ACNGS would not significantly affect the aquatic populations in the Brazos River. (Staff Ex. 1, p. 5-31)

44. Chlorine would be added as a biocide to each unit approximately twice each day. Each application would be for 15 minutes, and chlorination of the two units would be staggered so that when one unit is being chlorinated, discharge of the second unit is available for dilution. (Staff Ex. 1, p. 5-25) In certain concentrations, chlorine is highly toxic to fresh water organisms. (Staff Ex. 1, p. 5-25; Fig. 5.6) However, if the concentration of total residual chlorine at the point of discharge to the reservoir is limited to 0.1 parts per million, there would be no adverse impact on the aquatic biota of the reservoir. If total residual chlorine levels discharged to the Brazos River are kept below 0.01 ppm, the aquatic biota of the River would not be adversely affected. (Staff Ex. 1, pp. 5-25, 5-31; Testimony of Dr. Stephen G. Hildebrand and "Chlorine Chemistry in the Allens Creek Nuclear Generating Station Cooling Lake,"⁹ following Tr. 161, p. 5; Tr. 164) These restrictions would be included as a condition to any construction permits. (Tr. 141-142)

45. Discharges of other chemicals from operation of the ACNGS to the reservoir and the River would not adversely affect the aquatic biota of either. (Staff Ex. 1, pp. 5-25; 5-31; Tr. 175)

46. The maximum concentration of TDS in the reservoir is estimated to range from 1300 to 2000 ppm. The TDS tolerance of those species which would inhabit it are far in excess of the expected concentration of TDS. (Staff Ex. 1, p. 5-26) The discharge from the reservoir to the River would contain higher concentrations of TDS than river water, but would not significantly affect aquatic biota in the River. (Staff Ex. 1, pp. 5-31, 5-32)

47. Entrainment in the cooling system could reduce the planktonic productivity of the reservoir to an extent which cannot be estimated now. (Staff Ex. 1, p. 5-30) The approach velocity to the circulatory water intake structure and traveling screens at the minimum reservoir level would be 0.59 feet per second; at the normal level it would be 0.39 feet per second. (Staff Ex. 1, p. 5-30) The effective velocities through the traveling screens would be approximately double the approach velocities at all reservoir levels. (*Id.*) Though some fish would be impinged on the traveling screens, the approach velocities would allow most fish to escape. Fish impingement would be monitored and if significant numbers are impinged, corrective measures can be implemented. (Staff Ex. 1, pp. 5-31, 9-14)

48. Approach velocities to the intake structures on the River would be limited to a maximum of 0.5 fps. (Staff Ex. 1, p. 5-32) The Applicant would not

⁹ Hereafter referred to as "Hildebrand and Zittel."

plan to install mesh screens and fish would be vulnerable to entrainment. (Staff Ex. 1, pp. 5-32, 5-33) However, fish species present in the Brazos are all spring spawners and larval fish will be most abundant during late spring and summer months when no makeup water would be withdrawn from the Brazos River. (Staff Ex. 1, p. 5-33) Because the approach velocity to the makeup intake structure would be limited to a maximum of 0.5 fps, the numbers of fish actually entrained would be minimized. (*Id.*) The makeup water from the intake structure would be monitored to document the extent of fish entrainment and if large numbers of fish should be entrained, corrective measures can be implemented. (*Id.*)

49. Operation of the ACNGS would not have a significant impact on the aquatic biota of either the reservoir or the Brazos River. The Applicant has received a certificate from the Texas Water Quality Board which certified compliance with all applicable water quality standards and limitations. (Applicant's Ex. 4)

ENVIRONMENTAL EFFECTS OF TRANSPORTATION OF RADIOACTIVE MATERIAL AND THE URANIUM FUEL CYCLE

50. The Staff has evaluated the effects of the uranium fuel cycle as it pertains to the ACNGS, and the transportation of fuel to and from the reactor in accordance with standard tables adopted in Commission regulations and has determined that such environmental effects are negligible. (Staff Ex. 1, pp. 5-17, 5-19; Table 5.15; Staff Ex. 2; Tr. 170, 177-178) The Board concurs in this assessment.

SOCIAL AND ECONOMIC EFFECTS OF CONSTRUCTION AND OPERATION OF THE ACNGS

51. During the seven year construction period, there would be extensive additional use of local highways, roads, and the adjacent Colorado and Santa Fe rail line. (Staff Ex. 1, p. 4-12) The most significant aesthetic impacts during construction would be caused by earth moving activities during construction of the reservoir and ultimate heat sinks, and the concrete batch plant which would be located adjacent to state highway 36. (*Id.*) In order to mitigate these and other impacts of construction, the Applicant has made a number of commitments which are outlined in Section 4.5 of the Final Environmental Statement. (Staff Ex. 1, pp. 4-13, 4-14) We dealt with these above. In addition, approximately 16 families would be displaced by the construction of the ACNGS, a number of which are still occupying dwellings on the site which are now owned by the Applicant. (Staff Ex. 1, p. 4-13)

52. It is expected that during the peak construction year approximately 585 workers, both those employed at the ACNGS and related service workers, would locate in nearby communities. (Staff Ex. 1, p. 4-10) This would result in a peak population increase of about 2050 persons in the site vicinity. (*Id.*) The permanent operating force would approximate 121 individuals, and would be on-site during the last three years of construction. (Staff Ex. 1, p. 4-10; Table 5.22) It appears that the greatest demand for additional housing would be relatively short term, a period of 3 to 5 years, and would be primarily satisfied through use of additional mobile homes in the area. (Staff Ex. 1, p. 4-10, 4-11) The added population due to construction would add approximately 300 students to the local school system. (Staff Ex. 1, pp. 4-11, 4-12) The record shows that the local school districts could deal with this increase.¹⁰ (*Id.*) The local medical facilities are not extensive; however, they are presently operating below capacity and can be readily expanded. (Staff Ex. 1, p. 4-12) In any event the site is within 50 miles of numerous medical facilities located in Houston. (Applicant's Ex. 2, pp. 4.1-6E, 4.1-6F)

53. Construction and operation would cause substantial tax revenues to accrue to local governmental entities. After construction was completed, an estimated \$15,290,000 would be paid in annual taxes to such entities, with approximately \$13,000,000 being paid to the local school district and \$2,000,000 to Austin County. (Staff Ex. 1, p. 5-34; Table 5.21) Ad valorem taxes would be paid during construction, and it is estimated that the amounts of these taxes would exceed \$1,000,000 a year within two years. (Staff Ex. 1, Table 4.2; Applicant's Ex. 2, pp. 8.1-5B, 8.1-6) Members of the plant construction force who purchase homes in the local area, and the permanent plant operating force of 121 people and their families would become taxpayers on the local level. It is estimated that the permanent plant operating force would pay approximately \$24,000 in property taxes each year. (Staff Ex. 1, p. 5-35) In aggregate, these taxes revenues would have a substantial favorable effect locally.

54. Construction of the ACNGS would involve, at the peak of construction activity, over 2000 workers. The total payroll for construction of the plant is presently estimated at \$294,754,000. (Applicant's Ex. 2, Table 8.1-8) These direct construction payrolls during the peak year would increase the Austin County disposable income by 22%, to \$49,000,000. (Staff Ex. 1, p. 4-10) In addition, it is estimated that regional employment would increase by 1.65 jobs for every permanent job provided directly by the ACNGS because of the secondary economic activity generated by payroll dollars. (Applicant's Ex. 2, p. 8.1-5E)

¹⁰ That the local school districts could cope with this increase was confirmed by Mr. Donald Hestand, Superintendent of the Wallis Orchard School District, who made a limited appearance. (Tr. 34-36)

55. Substantial benefits would be expected to accrue from the proposed Allens Creek Lake and State Park. (Testimony of Dr. Darrel A. Nash, "Evaluation of the Proposed Allens Creek Cooling Lake as a Recreational Resource,"¹¹ following Tr. 159; Development of the recreational facility should attract at least 400,000 visitors per year. (Applicant's Ex. 7, p. 9)

56. Staff's expert witness, Dr. Nash, and Applicant's expert witness, Dr. Perl, each testified that certain of the long-term social impacts of the Park, ACNGS, such as increased commercial activity could be quantified, albeit with a high degree of speculation. (Tr. 284-285) They both felt that if these impacts were quantified, the results would not be practically useful because analysis would involve complex value judgments as to whether the impacts were desirable or undesirable. (Tr. 282, 285)

57. The record shows that the Applicant has consulted with regional and local government entities regarding planning for the development of the area. (Tr. 289) The governmental entities are aware of the impending development, and are including it in their plans for the future. (Tr. 289) It is expected that land use in the site vicinity will remain largely rural until about 1990. (Applicant's Ex. 15, p. 11) Though "leapfrog" suburban development is approaching the site area from Houston to the east, it is not expected to upset the rural agricultural character of the site. (*Id.*) Development of the Allens Creek Lake and State Park will generate low density residential and commercial facilities around Wallis. (*Id.*)

58. The Board finds that the Applicant, to the extent possible, has described, and the Staff has evaluated, the likely social and economic impacts from construction and operation of the ACNGS. The Applicant would take mitigating measures during construction which would, to the extent feasible, reduce the impacts of construction to the local site area. The Board has considered the impacts to the local community which would result from development and use of the Allens Creek Lake and State Park, and amends the FES (Staff Ex. 1) to include the foregoing discussion. The Board concludes that these impacts are as likely to be considered favorable as unfavorable and do not affect the conclusions reached in the cost-benefit analysis contained in the FES. Finally, the Board notes that construction and operation of the ACNGS would cause substantial secondary benefits, such as local taxes, increased payrolls, and increased employment to accrue to the local community and to local governmental entities.

ENVIRONMENTAL MONITORING

59. The Staff has reviewed Applicant's preoperational and operational programs for the monitoring of chemical, thermal and radioactive effluents, and

¹¹ Hereafter referred to as "Nash, Recreation."

for aquatic, terrestrial and radiological surveys, (Staff Ex. 1, Chapter 6, pp. 6-1 to 6-6) has made certain suggestions regarding the Applicant's monitoring program, and has recommended them and completion of preoperational environmental studies as a condition on the construction permits. The Board concurs that this is an appropriate condition to be imposed.

EFFECTS OF ACCIDENTS

60. The probability of occurrence of accidents and the spectrum of their consequences to be considered from an environmental effects standpoint have been analyzed using best estimates of probabilities and realistic fission product release and transport assumptions. The radiological effects of accidents on the environment have been assessed using the standard accident assumptions and guidance issued as a proposed amendment to Appendix D to 10 CFR Part 50 on December 1, 1971 (36 F.R. 22851). (Staff Ex. 1, Chapter 7) The results of this analysis demonstrate that the environmental risks due to postulated radiological accidents are exceedingly small.

ALTERNATIVES

61. The ACNGS would employ three double circuit 345 Kv transmission lines. Line 1 would extend southeast to an existing substation at the W. A. Parish plant. Line 2 would run east to the Obrien substation. Line 3 would connect the Obrien substation to the Addicks substation. The total length of these lines is approximately 81 miles (Staff Ex. 1, p. 3.8). About 97.5% of the land constituting the proposed rights-of-way is agricultural and 2.5% heavily wooded (Staff Ex. 1, p. 5.1.2).

62. Based on its own evaluation of the factors involved and a review of Applicant's ER and the Simmons' Affidavit, the Staff has concluded that Routes 1A (as depicted on the aerial photo appended to the Simmons' Affidavit as Line 2 east of State Highway 36 plus dashed line 3), 2C (Staff Ex. 1, p. 9-14) and 3A (Applicant's Ex. 2, pp. 10.9.4, 10.9-5) are the ones which would have the least detrimental impact on the present and future land use and development in the area yet present no insurmountable construction problems. The Staff considers these routes to be preferable. The Board concurs and finds further that even if demographic or other unexpected changes occur which might render these specific routes undesirable sufficient flexibility of choice exists that, for the foreseeable future, other environmentally acceptable corridors can be laid out.

63. Based on a review of alternative plant designs which include six alternative cooling systems (once-through cooling, dry cooling towers, wet-dry cooling waters, mechanical draft-wet towers, natural draft-wet towers, and spray

canals), the Board concludes that mechanical draft-wet cooling towers, natural draft-wet cooling towers, and spray canals are realistic alternatives to the proposed reservoir. (Staff Ex. 1, pp. 9-10 to 9-13)

64. From an economic standpoint the difference in costs of the systems are not significant in terms of the cost of the entire station. (Staff Ex. 1, p. 9-13) A comparison based on environmental considerations shows that the different cooling systems have relative advantages and disadvantages in various respects. (*Id.*) The reservoir would require more land and would have a greater consumptive use of water; however, neither of these considerations is of overriding importance at this site. (*Id.*) The two cooling tower systems would produce visible plumes; the mechanical draft tower would be noisier than the other systems; and the natural draft tower would be highly visible from surrounding locations, and would be the dominant feature of the landscape. The spray canals would be less obtrusive than the towers, but would be aesthetically less pleasing than the reservoir, and would not provide the recreational benefits which the reservoir, as Allens Creek Lake and State Park, would provide. In consideration of these factors, as well as the land use aspects which are detailed below, the Board concurs with Staff and Applicant that the proposed reservoir would be the preferred alternative. (Staff Ex. 1, pp. 9-8 through 9-14; Nash, Recreation)

LAND USE

65. A primary impact of the ACNGS would be the commitment of land presently used for agricultural production for use as a reservoir. The Board specifically requested the parties to address this issue. The concern of the Board related to the land required by the proposed reservoir as opposed to alternative cooling systems and the relationship of that additional amount of land to agricultural needs. (Tr. 11-12) In addition, the Board requested the parties to provide evidence of need for recreational facilities in the area of the site. (Tr. 16)

66. The reservoir for the ACNGS would require 8250 acres. (Nash, Agriculture, p. 1, Table 1) Construction of the ACNGS with a cooling system other than the proposed reservoir would require at least 1800 acres of land; therefore, the additional acreage required to construct the ACNGS with the cooling lake would be 6450 acres. (*Id.*)

67. The question is whether the 6450 acres attributable to the reservoir may during the life of the proposed facility more properly be devoted to meeting demands for agricultural production. *Texas Utilities Generating Company, et al.* (Comanche Peak Steam Electric Station, Units 1 and 2) ALAB-255, NRCI-75/1, 3, 5-6 (January 23, 1975); also see *Commonwealth Edison Co.* (LaSalle County Nuclear Station, Units 1 and 2) ALAB-153, RAI-73-10 821 (October 19, 1973) and ALAB-193, RAI-74-4 423 (April 15, 1974). Any assessment of whether this

land should remain available for agricultural production through the lifetime of the facility depends on comparative productivity on a local and on a national basis. *Texas Utilities Generating Company, et al.* (Comanche Peak Electric Station, Units 1 and 2) ALAB-260, NRCI-75/2 51, 54-55 (February 26, 1975).

68. Approximately 4600 acres (42%) of the site are presently being used for cropland; 2400 acres (22%) are presently used as pasture land, and 4000 acres (36%) are forested and heavily forested range. (Staff Ex 1, p. 11-7, Table 11.1; Nash, Agriculture, p. 2) Though the agricultural productivity of the cropland on the site appears to be above average for the local area, it is only average for the State of Texas as a whole, and it is important to note that the cropland on the site is subject to frequent flooding which decreases its productivity to about 80 percent of the levels of potential production indicated. (Nash, Agriculture, p. 2, Table 6; Tr. 184-186, 207-212) Furthermore, it is not economically feasible to protect this land from flooding. (Tr. 211-212)

69. On a national basis, the productivity of certain crops on the site compares poorly with productivity of certain crops on land which is considered "prime" agricultural land.¹² (Tr. 182-186, 206-209) For example, the production of corn on the site is only about one-half to one-fourth that to be expected from "prime" corn-producing land, such as that in the Iowa-Illinois corn belt. (Tr. 185A, 206) Though production of other crops, such as grain sorghums, on the site produces yields closer to the national average, the fact the bottomland is frequently flooded would prevent this land from being considered "prime." (Tr. 207-209)

70. The Staff calculated the agricultural value of this land as the farm value of crops and livestock produced, less the costs of labor, seed, fertilizer, and other production expenses. (Nash, Recreation, p. 3) This value is 9.1 percent of the gross value for the five-county area surrounding the site. Discounting this flow of net earnings over 30 years results in a present worth of \$240,000 using a discount rate of 10 percent.

71. None of the crops grown on the site¹³ requires a characteristic of either soil or climate which is unique to this location; cultivation of each of these crops and livestock production is carried out in many areas of the nation. (Nash, Agriculture, p. 3) This land is, at best, of only average productivity and value for the State of Texas and cannot be considered "prime" farmland if land in the Iowa-Illinois cornbelt is "prime." (See footnote 12, *supra*)

¹²The definition of prime agricultural land is not firm. Testimony at the hearings indicated that the concept of prime agricultural land is still under review by the Department of Agriculture's Soil Conservation Service. Therefore, for purposes of categorization of land capability, the classification of land into Soil Conservation Classes I-VIII is still used. (Tr. 207)

¹³Crops grown on the site are cotton, corn, and grain sorghums. (Nash, Agriculture, p. 2)

72. The need for general use and non-unique farmland such as here can be determined on the basis of national statistics. (Staff Ex. 1, p. 11-6) The Soil Conservation Service (SCS) of the U. S. Department of Agriculture conducted a land inventory in 1967 to determine the total amount of land in the county available for agricultural purposes. That inventory showed available land categorized by SCS Land Capability Classes which are based on the potential productivity of the land if used for agricultural purposes. (Nash, Agriculture, pp. 3-4) Class I farmland is that farmland which has few limitations which restrict its use; Class II farmland has some limitations that reduce the choice of plants and require moderate conservation practices; and Class III farmland has severe limitations that reduce the choice of plants or require special conservation practices, or both. (Nash, Agriculture, p. 4, fn. 1; Tr. 181-182) The record shows that the land on the site, depending on its location, is either Class II or Class III. (Tr. 181-182) The bottomland at the site, where the reservoir would be built, is Class II land (Tr. 181) if we ignore the fact that it is frequently flooded, which fact could significantly reduce its classification. (Tr. 181, 183-185, 208-209) For purposes of conservatism, we assume this land is Class II farmland.

73. In the United States, available land in Classes I, II, and III is 630 million acres, of which in 1970 a total of 440 million acres was under cultivation. (Nash, Agriculture, p. 4) With a high degree of management and cultivation an additional 220 million acres of land could be brought into cultivation and therefore the total land available for cultivation on a national basis is approximately 850 million acres. (*Id.*) The 6450 acres of land required by the reservoir is 0.001 percent of the currently available Class I, II, and III farmland and 0.0015 percent of the 440 million acres now under cultivation. In Texas, available land in Classes I, II, and III is 69 million acres, of which in 1973 a total of 26 million acres was under cultivation. (*Id.*, p. 5) With a high degree of management and reclamation, an additional 26 million acres could be brought into cultivation, and therefore, the total land available for cultivation in Texas is approximately 95 million acres. (*Id.*) The 6450 acres of land required by the reservoir is 0.009 percent of the currently available 69 million acres of Class I, II, and III land and 0.025 percent of the 26 million acres now under cultivation. (*Id.*) In the five-county area in the immediate vicinity of the site, the total land available for farms is 3 million acres, of which in 1973 less than 650 thousand acres, or 22 percent, was cultivated. (*Id.*) The 6450 acres of land required by the reservoir is 0.22 percent of the land in farms in these five counties.

74. We conclude that the 6450 acres of land required by the reservoir is a minute and insignificant percentage of similar land available for cultivation on national and state levels and a small percentage on a local level. Further, as pointed out above, a substantial amount of land is available in Classes I, II, and III, which is not presently under cultivation, to replace this 6450 acres; moreover, enormous quantities of land which are not now available for cultivation do exist and can be made available for cultivation if the necessity arises.

75. There are various studies which project the amounts of future land which will be required for agricultural purposes. The most comprehensive study on future national needs for agricultural land is the 1972 OBERS Projection.¹⁴ The projections contained in this report were derived from assumptions relating to population growth, levels of per capita income, and foreign trade. OBERS projects that by the year 2000 the nation will be producing more agricultural products per capita than at present on less land than is now being used; OBERS forecasts a decline from current levels for land requirements for agriculture through the year 2020. (Supplemental Direct Testimony of Dr. Philip B. Hildebrand,¹⁵ p. 2; Nash, Agriculture, p. 6) In 1970 440 million acres were used for cropland in the U. S. and OBERS forecasts that in 2020 the U. S. will need only 279 million acres; in 1973, 26 million acres in Texas were used for cropland and OBERS forecasts that in 2020 Texas will need only 23 million acres. (Nash, Agriculture, p. 6) These projections are well within the currently-available land acreage in Classes I, II, and III.

76. More conservative projections of land needed country-wide for agricultural purposes were made by Carr and Culver.¹⁶ This study bases its projected needs for cropland on both domestic and foreign demands for agricultural production and makes five alternative projections which are based on differing rates of population growth, economic growth, and technological constraints. (Nash, Agriculture, p. 6) In its most conservative projection, it was assumed that population and economic growth were "high", and that production technology would be restricted, primarily due to environmental protection controls, so that methods for increasing agricultural production such as chemical fertilizers and pesticides were not given full credit for their ability to increase production. (Nash, Agriculture, pp. 6-7; Tr. 218) Even under this restrictive assumption, however, per-acre output is projected to increase substantially for some crops. (Nash, Agriculture, p. 7) The Carr and Culver study conservative projection forecasts a total national cropland need of 471 million acres in the year 2000. (*Id.*, p. 6) This is well within the currently-available agricultural land acreage in Classes I, II, and III.

77. Because the Carr and Culver study extends only to the year 2000, the Staff projected the trends in the Carr and Culver study to 2020, and found that if the trends forecast for 1970 to 2000 continued until 2020 the national

¹⁴U. S. Department of Commerce, Bureau of Economic Analysis and the U.S. Department of Agriculture, Economic Research Service, *1972 OBERS Projections of Economic Activity in the United States*, Washington, D. C., April 1974.

¹⁵Hereafter referred to as "Hildebrand, Supplemental."

¹⁶Carr, B. and Culver, D. W., "Agriculture Production and the Environment," in *Population, Resources, and the Environment*, Ronald G. Redker (ed.), The Commission on Population Growth and the American Future, (Washington: Govt. Printing Offices) 1972.

requirements in 2020 would be approximately 510 million acres, which is well within the currently-available land acreage. (*Id.* p. 8) The Board finds this a reasonable approach; if the Staff's projected rate of increase were to double during the years 2000 to 2020 the cropland required would be 594 million acres which is also well within the 630 million acres presently available. (*Id.*, fn. 3)

78. The record shows there will be sufficient cropland available to meet projected agricultural needs through the year 2020. Various studies project differing land requirements necessary for agricultural production during the life of the ACNGS but the authorities agree that availability of land will not be a limiting factor on agricultural production in the United States in the foreseeable future. (Hildebrand Supplemental, p. 3)

III. SITE SUITABILITY

79. In accordance with 10 CFR §50.10(e)(2), the Board has reviewed the site proposed for the ACNGS to determine whether, based upon the available information and review to date, there is reasonable assurance that the proposed site is a suitable location for a nuclear power reactor of the general size and type proposed from the standpoint of radiological health and safety considerations under the Atomic Energy Act and rules and regulations promulgated by the Commission pursuant thereto. The Board's review has been guided by the reactor site criteria given in the Commission's regulations concerning site suitability as related to radiological health and safety (10 CFR Part 100). The factors considered are the population density, the use characteristics of the site environs, including whether there are nearby industrial, military or transport facilities that could influence acceptability of the site, and the physical characteristics of the site. Each of these factors has been considered in detail by qualified experts in the technical disciplines involved. On the basis of these efforts, which are reflected in the following, we have concluded that the site for the proposed facility is suitable within the meaning of 10 CFR §50.10.

GEOGRAPHY AND DEMOGRAPHY

80. The site is located immediately west of the Brazos River in southern Austin County, Texas, approximately 45 miles west of the City of Houston. (Report of the NRC Staff on the Suitability of the Allens Creek Site,¹⁷ p. 1) The facility considered consists of two boiling water reactors of a design similar to that reviewed and approved for other nuclear power plants. Each unit is

¹⁷ Hereinafter referred to as "Staff Report." (Tr. following p. 303)

designed for a rated thermal output of 3579 MW and a net electrical output of about 1214 MW. The site evaluation has been conducted for a stretch thermal power of 3758 MW.

81. The Applicant has selected a low population zone (LPZ) radius of 3.5 miles with a 1970 population of 375 persons. The largest city within 10 miles of the plant is Sealy, located about 7 miles NNW, which had a 1970 population of 2,685 persons. The Applicant, in view of projected population growth in Richmond-Rosenberg area, has reviewed his identification of the nearest population center and has proposed that the cities of Richmond and Rosenberg, which are nearly contiguous to each other, and approximately 20 miles east-southeast of the site, be considered the nearest population center. According to the 1970 census, these cities had a population of 17,875 persons. However, projections indicate that the combined population of these cities will equal or exceed about 25,000 residents by the year 2020. Consequently, we agree that the city of Rosenberg, the nearer of the two cities, should be considered the population center, as defined in 10 CFR Part 100. The distance to the population center is considerably greater than the distance in 10 CFR Part 100, which is at least one and one third times the LPZ distance (Staff Report, p. 2).

82. The 1970 population density within 10 miles of the site averaged 25 people per square mile, and is projected to increase to 41 and 90 people per square mile by the years 1980 and 2000, respectively. Within 30 miles of the site, the 1970 population density was 33 people per square mile. By 1980 and 2000, the population density is projected to increase to 68 and 185 people per square mile, respectively. Since the nearest large city, Houston, is sufficiently distant, no special considerations contemplated by 10 CFR §100.11(a)(3) need to be given to distance from that population center (Staff Report, pp. 2-3).

83. The station itself would be located at the approximate center of a 2,670 acre exclusion area which would be coincident with the restricted area. Access would be limited to the Applicant's employees and would be controlled by a fence and by floating buoys for the 1,460 acres of the reservoir encompassed by the exclusion area. There are no roads, railroads, or waterways (except for the reservoir), which traverse the exclusion area. (Applicant's Ex. 3, pp. 2.1-2, 2.1-3) The Applicant owns all the surface rights within the exclusion area; however, there are a few outstanding fractional mineral interests which would allow the owner of such interests to enter and drill within the exclusion area. (Testimony of Gammill, *et al.*, pp. 3-5 [fol. Tr. 303]) The Applicant has the authority, however, to acquire by eminent domain or otherwise, all such interests and has committed to do so. The Board finds that the Applicant's commitment to acquire these mineral interests through either purchase or eminent domain proceedings provides reasonable assurance that the Applicant could control all activities within the exclusion area.

84. The Staff has determined that there is reasonable assurance that adequate engineered safety features can be provided to meet the Commission's dose guideline values (10 CFR Part 100) for persons within the specified minimum exclusion distance, the low population zone and the population center distance. (Testimony of Gammill, *et al.*, p. 5 [fol. Tr. 303]) In addition, the Applicant has evaluated the effects of a large influx of transients (persons using the recreational facilities) and has determined that the number of people expected for peak day use of the park and lake would not significantly affect the Applicant's ability to take appropriate protective measures on behalf of the population (both transient and resident) in the event of an emergency. The Texas Department of Health, the state's "lead agency" in implementing disaster evacuation plans, has indicated that, without further assistance, up to 8000 persons could be evacuated from the Allens Creek lake and park (more than twice the expected peak number) and that, with the assistance of other public safety officials, substantially larger populations could be evacuated on a timely basis. (Applicant's Ex. 8) It should be noted that although the Allens Creek park is within the LPZ, it is not within the exclusion area. (Applicant's Ex. 2, Fig. 2.1-2)

NEARBY INDUSTRIAL, TRANSPORTATION AND MILITARY FACILITIES

85. There are no nearby industrial, transportation, or military facilities for which the Allens Creek plant could not be designed against, as necessary, to protect the health and safety of the public. There are no transportation facilities traversing the exclusion area. The nearest transportation facilities are state highway 36 and the Gulf, Colorado and Santa Fe Railroad, both running parallel to one another and located about 4,700 feet west of the proposed plant. The Staff has evaluated the effects of major accidents occurring either on the highway or the railroad and has concluded that these potential hazard sources need not be considered in the design of the proposed facility. (Testimony of Gammill, *et al.*, pp. 5-7 [fol. Tr. 303]) In addition, there are six pipelines within the site vicinity, three of which will be relocated by the Applicant. (Applicant's Ex. 2, pp. 2.1-3, 2.1-4) When relocated, these pipelines will pose no safety hazard to the plant. (Testimony of Gammill, *et al.*, p. 7 [fol. Tr. 303])

86. There are no airports or holding or landing patterns within 10 miles of the plant. The nearest commercial airfield is located at Eagle Lake, approximately 14 miles SW of the site. The closest active military facility is located about 50 miles ESE of the site. The site is about 5 miles west of a low altitude, high speed military training route. The Board finds that the proposed facility need not be designed nor operated with special provisions to protect the facility against the effects of an aircraft crash. (*Id.*, p. 6)

87. The nearest industrial facilities are located in Wallis, four miles SE of the site. There is also a large crude-oil storage facility located six miles NNW near Sealy. Based on the distances of these facilities from the proposed plant and the types and quantities of materials stored there, we conclude that the effect of an industrial accident or an inadvertent chemical release need not be considered in the design of the proposed plant. (*Id.*)

88. On the basis of the above considerations, the Board concludes that there are no nearby activities that would preclude site acceptability.

HYDROLOGY

89. The proposed site is located on a bluff west of the Brazos River and its flood plain. The plant would be set approximately 500 feet back from the bluff, and plant grade would be 142 feet above mean sea level (MSL). A cooling reservoir, to be constructed by the Applicant, would be formed between the Brazos River and the bluff which forms a natural barrier on the north, west and south. The reservoir would have a normal operating level of 118 feet MSL and would inundate about 8,250 acres at that level. The reservoir would impound the runoff from Allens Creek and other small streams which presently drain the bluff, but primary makeup would be provided via a pumping station on the Brazos River near the center of the reservoir dam. A 300-foot spillway would be constructed through the dam to pass excess runoff from the reservoir. The uncontrolled spillway would have a crest elevation of 118 feet MSL, and the top of the dam would vary from 137 feet MSL on the north to 135 feet MSL on the south. (*Id.*, p. 8)

90. The reservoir would provide cooling water for normal operation and shutdown requirements. In addition, two 175-acre excavations in the bottom of the reservoir near the plant would each provide 1,400 acre-feet of useful water for use as the principal safety-related water supply in the event of dam failure and loss of the reservoir. (*Id.*, pp. 8-9)

91. The potential for flooding of the site from several sources has been investigated by the Applicant and independently by the Staff. The potential sources include the Brazos River, Allens Creek, inadequate land drainage, and the reservoir itself. The Applicant has concluded that Brazos River flooding, using Probable Maximum Flood (PMF) and Probable Maximum Hurricane (PMH) criteria for evaluation, would result in a stillwater elevation 1.7 feet below plant grade; maximum wave runup would, however, reach 0.7 feet above grade. The dam would be overtopped during a Brazos River PMF, but would not be overtopped due to a Probable Maximum Participation (PMP) event on the drainage area contributing to the reservoir. The Staff has reviewed this subject and has concluded that flood conditions at the site can be acceptably taken into

account in the design of the facility in a manner that assures the integrity of all safety-related structures, systems and components. (*Id.*, p.9) The Board concurs.

92. In summary, the Board finds that there are no unique hydrologic features of the proposed site that would require any provision for flood protection that is not within the current state of the art.

93. Groundwater is present in the unconsolidated sediments that dip gently toward the coast, and in the relatively recent river alluvium deposited by the Brazos River. Groundwater in the site vicinity is drawn primarily from the Evangeline Aquifer and, to a lesser extent, from the Brazos River alluvium. The Evangeline Aquifer extends under the City of Houston and is a major source of groundwater for the city. It is also used extensively for irrigation (primarily rice). (*Id.*, pp. 10-11)

94. The aquifer is composed of discontinuous beds of sand, clay, silt, and lenses of gravel. In the site area, the base of the aquifer is at a depth of about 1,400 feet; the top of the aquifer is at a depth of less than 100 feet, and is capped by about 30 feet of Beaumont Clay. The clay is at or near the surface in the proposed reservoir area. Present piezometric levels in the vicinity of the site are near the base of the Beaumont Clay. The Applicant's well survey indicates that as many as about 350 wells are located within five miles of the site boundary. (*Id.*, p. 11)

95. Due to large withdrawals of groundwater in the Houston and surrounding agricultural areas, piezometric groundwater levels are declining. The Applicant has estimated that piezometric levels in the site vicinity have dropped about 8 to 16 feet during the past 16 years. By comparison, piezometric levels in the Houston area have declined more than 300 feet in the last 30 years. Although this decline does not indicate a shortage of groundwater supply, the decline has resulted in increased pumping costs, salt water encroachment and land-surface subsidence. The subsidence is attributed to a reduction in soil pore pressure which allows the consolidation of clays and the densification of sands. Large declines in groundwater levels have also been experienced in the Katy area, about halfway between Houston and the site. These have been caused by rice irrigation around Katy and the expansion of the City of Houston municipal wells into that area. (*Id.*)

96. The Applicant performed studies to estimate the total decline in piezometric levels in the site vicinity over the life of the plant taking into consideration estimated future municipal, industrial and agricultural demands. The estimates of municipal and industrial demands relied heavily on projections done for and by the City of Houston. Potential agricultural demands were estimated using three methods: (1) projecting historical trends; (2) postulating that all areas having types of the soil often used for rice cultivation would be under rice cultivation by the year 2020; and (3) assuming all non-federal, non-urban and one-half of the 1967 surveyed forested land would be under rice

cultivation by the year 2020. The latter method was referred to as an "upper bound" for water demand in the rural site vicinity. These total demands, in conjunction with future plans to supply surface water to Houston, and the recommended ultimate groundwater production in the Houston region were used to estimate the total decline in piezometric levels in the site vicinity. The results of these estimates of future agricultural lands that could be utilized for rice irrigation indicated that factors other than ultimate agricultural development of land, such as the limits on pump lifts that are economically feasible and the quality of groundwater in the lower portion of the aquifer, will probably control future drawdown. (*Id.*, p. 12; Applicant's Ex. 3 §2.5, Appendix F)

97. Based on the projected demands to the year 2020 discussed above, the Applicant calculated a total decline of about 140 feet at the site. The Applicant estimated that a total decline of 400 to 500 feet would be the agricultural economic limits for pump lifts. Considering water quality and well engineering regardless of well economics, the Applicant estimated a total decline of about 700 to 800 feet. The Applicant concluded, considering all the above factors and the uncertainties involved in projecting municipal, industrial and agricultural demands to the year 2020, that a total decline of 200 feet in the site vicinity was realistically conservative. (Staff Report, pp. 12-13)

98. The Staff and its consultants (Harza Engineering Company) reviewed each phase of the Applicant's study, independently checked each projection to determine its conservatism, and reviewed calculational procedures and assumptions to assure their correctness and conservatism. Specifically, population projections, per capita water demand, industrial projections, and projected local demands for groundwater were checked against other sources where possible to assure their conservatism. Local conditions, such as onsite pumping and the influence of the relatively large proposed plant cooling reservoir were also evaluated. In addition, such factors as future groundwater legislation (the State of Texas presently has no legal restrictions on groundwater withdrawal), the availability of cost surface water supplies, and future agricultural trends were considered. (*Id.*, p. 13)

99. The Staff concluded, based upon its independent review, that the Applicant's regional projections of future groundwater requirements (municipal, industrial, and agricultural) and calculational procedures appear to be conservative. (*Id.*) The Board concurs.

100. Although the Applicant projected future agricultural demands for each of the six counties around the site, no attempt was made to identify specific areas where agricultural development is likely to occur. If development of irrigated acreage were to occur as postulated by the Applicant, this total groundwater demand could exceed the present withdrawal in the Houston area. (*Id.*, p. 14)

101. However, the drawdown experience in the Katy area is contrary to that at Houston. Though the total groundwater withdrawal at Katy has exceeded that

in the Houston area, the decline in piezometric levels is only about 100 feet, as compared to as much as 380 feet in the Houston area since the turn of the century. This difference is attributed both to basic dissimilarities in groundwater development practices for industrial/municipal use as opposed to agricultural use; *i.e.*, high well density versus relatively widely spaced wells; and to the relatively closer location of the Katy area to the zone of aquifer recharge. One would normally expect changes in piezometric levels to be less near the recharge area since the groundwater travel times would be relatively short and recharge could occur more rapidly. The proposed plant is even closer to the aquifer recharge zone than the Katy area. (*Id.*, pp. 14-15)

102. Therefore, agricultural development in the site area similar to that around Katy would be unlikely to result in development of a steep groundwater gradient across the ACNGS site. Even if agricultural or industrial development should occur very near the site involving large groundwater withdrawals similar to that in the Houston area, the extensive groundwater monitoring system required by the Staff would detect the resulting changes in piezometric levels, and remedial action could be taken before safety-related structures would be adversely affected. To assure that observation wells for the groundwater monitoring system would be located properly, the Staff recommended that the Applicant be required to identify those areas in the site vicinity that are most likely to be utilized for irrigation. (*Id.*, p. 15)

103. The influence of the proposed cooling reservoir and the possibility of the formation of a groundwater mound were also considered. Such a mound is considered unlikely since the Applicant plans to cover the more permeable areas of the bluff within the proposed reservoir with clay, and the bottom of the reservoir is primarily clay with a relatively low permeability. In any case, the required monitoring system would detect such an occurrence and, should a groundwater mound due to the cooling reservoir be formed that could adversely affect safety-related structures, the Applicant would be required to seal the reservoir to reduce the hazard. Feasible methods of sealing the reservoir after its creation include the use of bentonite, hydraulic asphalt, or concrete. Also, any mound that may be formed due to the Brazos River alluvium would probably not extend under plant structures with any severe gradient. (*Id.*, pp. 15-16)

104. The Applicant estimated the groundwater travel time of an onsite accidental spill of radioactive liquids to the nearest public well (the City of Wallis). The Staff's independent analysis, considering travel time and dilution, dispersion and ion exchange factors with the groundwater indicated that these factors are not significantly different than at other similar sites. (*Id.*, p. 16)

105. The Board concludes that the site safety-related buildings may be flood proofed and that an adequate safety-related water supply can be made available without unique design requirements. We further conclude that groundwater travel times, and dilution, dispersion and ion exchange factors are not

significantly different than at other similar sites. However, to assure that future changes in groundwater demand very near the site do not create an adverse situation, we would require an extensive groundwater monitoring system and, if so indicated, that remedial action be taken if necessary.

GEOLOGY

106. As previously indicated (Findings 6-7), the State of Texas formally withdrew its contentions respecting the adequacy of the evidence concerning the effects of and the monitoring system for subsidence and differential subsidence, on March 10, 1975. On the basis of informal notice of the State's intention, the Board requested assurance that the Applicant's and Staff's presentation respecting the matters covered by the State's contention not be diminished because of the State's withdrawal (see Board's letter of February 20, 1975), which assurance was given (see Staff's letter of March 6, 1975). In accordance with the Board's request, the Applicant and Staff each made an extensive and complete presentation at the evidentiary hearing on March 11 and 12, 1975. The presentation, covering all matters raised by the State, satisfied the Board concerning the suitability of the site, most particularly in regard to geological considerations. The State, continuing to participate pursuant to 10 CFR §2.715(c), cross-examined the Staff regarding its review and evaluation of the site's geological and seismological characteristics and the monitoring system proposed by the Applicant to detect subsidence and differential subsidence (Tr. 323-328).

107. The site is situated adjacent to the Brazos River on the west Gulf Coastal Plain Section of the Coastal Plain Physiographic Province. This province lies in the Gulf Coast Structural Province, a geosyncline containing a thick (20,000 feet at the site) sequence of Cenozoic sediments. The plant site is directly underlain by two unconsolidated sedimentary units: the Beaumont Formation (0-40 feet thick) and the Montgomery Formation (70-100 feet thick). These two Pleistocene formations unconformably overlie the Pliocene age Goliad Formation which is 85 to 160 feet thick in the site area. The Miocene age Fleming Formation is present below the Goliad Formation. Recent Brazos River flood plain and backswamp deposits, from 40 to 120 feet thick, occur within the meander scar at the proposed cooling reservoir location. (Applicant's Ex. 3, p. 2.5-2)

108. The ACNGS site is underlain by a system of normal Gulf Coast fault structures referred to as "growth faults." These faults are typical of the Gulf Coastal Plain in that they exist at great depth (10,000 feet at the site) and they ceased to be active over 40 million years ago. The Staff has confirmed the Applicant's determination that these faults are non-tectonic in nature and pose no threat of surface displacement. (Testimony of Gammill, *et al.*, pp. 18-19 [fol. Tr. 303])

109. In areas where growth faulting extends to the near surface these faults may be susceptible to continued or accelerated differential compaction due to increased effective stresses caused by groundwater withdrawals. (Testimony of J. W. Mitchell, pp. 26-27 [fol. Tr. 104]) Since there are a number of near surface faults in the Houston area which may have experienced reactivation caused by groundwater withdrawal, the Applicant undertook an extensive analysis of the potential for reactivation of the growth faults underlying the site. This extensive analysis involved projection of subsurface faults to the surface, utilizing very conservative assumptions. The subsurface faults, identified by a variety of geophysical investigations, confirmed that the closest surface intersection would be 1½ miles north of the site and that the maximum upward extent at the site is approximately 10,000 feet below the ground surface. The Staff has confirmed the Applicant's conclusion that the present lithostatic stresses on the faults at this depth are so large as to prohibit reactivation. (Testimony of Gammill, et al., p. 19 [fol. Tr. 303])

110. The Applicant identified a number of photographic tonal anomalies (often referred to as "linears") passing through the plant site. The study of tonal anomalies has long been a tool used by geologists to identify possible geologic structure. (Testimony of J. W. Mitchell, p.25 [fol. Tr. 104]) However, it is emphasized that linears have no geological significance in and of themselves—they are indicators only. Once it is shown that there are no geologic structures or faults associated with the linears then the linears are of no further importance. The Applicant has shown that the linears in the site area have no relationship to faulting or geologic structure in the site area. In this regard the Applicant's analysis gave particular attention to two linears identified by the Texas Bureau of Economic Geology ("TBEG"). The TBEG had identified to the Applicant and the Staff two linears of regional extent in the site area. Linear No.1 trends southwest, northeast and, while it is not visible at the site, its projection through the site from the southwest is continuous with a linear northeast of the site. Linear No. 1 coincides with the Höckley scarp (the possible surface expression of a fault) at distances between about 25 and 55 miles northeast of the site. (Applicant's Ex. 3, p. 2.5-J5) Linear No. 2 trends through the site, crossing the first near the site at an angle of 20° to the east. (Applicant's Ex. 3, p. 2.5-J6)

111. The Applicant's extensive geophysical analysis of the site combined with ground reconnaissance, demonstrated conclusively that the linears were not observable on the ground in the site area and that the linears had no relationship to faults or geologic structure in the site area. For further confirmation that the linears did not have structural significance at the site, the Applicant undertook a regional study to determine whether the two linears identified by the TBEG were coextensive with regional geological features. Exhaustive examination of geophysical data from the Katy Oil Field was reviewed because the linears both pass through the field. No evidence of faulting was found. (Applicant's Ex. 3, pp. 2.5-J6, 2.5-J7) Southwest of the site, the Applicant conducted extensive

subsurface studies consisting of numerous seismic reflection profiles and three subsurface profiles constructed from deep well geophysical logs. (Applicant's Ex. 3, p. 2.5-J6) Faults identified in the subsurface were projected to the surface and shown not to correlate with the mapped linears. The Staff has concluded that the Applicant's investigation demonstrates that the two linears which pass through the ACNGS site are associated over segments of their extent with surface faults or with surface projections of known faults at depth but that no associated faulting extends closer than 20 miles to the site, and therefore, within the site area no structural or other geologic cause of the linears exists that poses a hazard to the site. The Board agrees with the conclusion of the Staff and the Applicant in regard to the matter of the linears.

112. On the basis of Applicant's and the Staff's investigations (which included mappings, ground reconnaissance, trenching, logging and supplemental seismic reflection profiling) it is established that the linears crossing the site are not related to subsurface faults or other geological anomalies nor to topographical features which imply a hazard of ground failure at the site or otherwise affects its suitability or safety. (Testimony of Gammill, *et al.*, p. 22 [fol. Tr. 303]) The Board so finds.

113. In addition to the extensive analysis of faulting, the Applicant investigated the potential for subsidence at the site. Of particular concern is the fact that groundwater withdrawal in the Houston area has influenced the broad regional (or "areal") subsidence which is occurring naturally as a result of the geologic processes in the Gulf Coast area. There are several known mechanisms that can result in ground subsidence: natural consolidation, soil collapse, mineral extraction and groundwater withdrawal. Each of these mechanisms were considered at length during the course of the investigation for the ACNGS site (Testimony of J. W. Mitchell, pp. 29-35 [fol. Tr. 104]), and it was concluded and concurred with by the NRC Staff that subsidence resulting from groundwater withdrawal is the only subsidence mechanism of concern. (Testimony of Gammill, *et al.*, p. 28 [fol. Tr. 303])

114. Subsidence resulting from groundwater withdrawal is primarily a function of the amount of groundwater drawdown (or decline of piezometric surface) and the physical properties of the aquifer (*i.e.*, thickness of aquifer, percent of clay in the aquifer, consolidation characteristics of the clay). Groundwater in the vicinity of the site is drawn primarily from the Evangeline Aquifer. This aquifer is also a major source of water for the City of Houston. Due to large withdrawals of groundwater in the Houston and surrounding agricultural areas, piezometric groundwater levels are declining. The Applicant has estimated that piezometric levels in the site vicinity have dropped from 8 to 16 feet during the past 16 years. By comparison, piezometric levels in the Houston area have declined more than 300 feet in the last 30 years. Large declines in groundwater levels have also been experienced in the Katy area

(located about halfway between Houston and the site) due to rice irrigation around Katy and the expansion of the City of Houston municipal wells into that area. (Applicant's Ex. 3, pp. 2.5-G8, 2.5-I7)

115. In order to evaluate the possible magnitude of areal subsidence during the life of the plant, the Applicant made an evaluation of future groundwater demands based on three categories of use: (a) municipal; (b) industrial; (c) agricultural. This study was done in parallel with, and using data from, an extensive study prepared by a consultant for the City of Houston, which study evaluates not only the demand for groundwater but also the availability of water, taking into consideration limitations on groundwater use. The limitations on groundwater use include the physical properties of the aquifers, water quality of the aquifers, economic pumping limits and subsidence in the immediate vicinity of Houston. (Testimony of J. W. Mitchell, pp. 37-38 [fol. Tr. 104]) The extrapolation of data presented in the City of Houston report and independently assessed by the Applicant indicates that the expected drawdown at the plant site will be 60 feet during the life of the plant. The Applicant further conservatively assumed drawdowns of 50 feet due to agricultural use in the vicinity of the site and 30 feet due on-site usage. On this basis, total groundwater drawdown due to the demands discussed above would be 140 feet. Notwithstanding the fact that 140 feet is considered a very conservative estimate of the actual drawdown expected, a 200 foot total drawdown was adopted as a basis for evaluating effects at the site. (Testimony of J. W. Mitchell, pp. 39-42 [fol. Tr. 104]) The Staff and its consultants (Harza Engineering Company) made an independent review and analysis of potential groundwater drawdown, and concluded that the Applicant's assumptions were conservative. (Testimony of Gammill, *et al.*, pp. 12-15 [fol. Tr. 303])

116. It is conservatively predicted that there will be 2 feet of areal subsidence resulting from the 200 feet of assumed drawdown in the site vicinity. (Testimony of J. W. Mitchell, pp. 43, 49-51 [fol. Tr. 104]) This is less than in some parts of the Houston area where drawdown of the piezometric surface on the order 380 feet has caused surface subsidence of about 8 feet. (Testimony of Gammill, *et al.*, p. 30 [fol. Tr. 303]) Assurances that subsidence on the scale experienced in the Houston area will not occur at the site are based on a variety of geological and other dissimilarities between Houston and the site area. For example, in the areas of maximum subsidence in Houston up to 70% clay content has been reported in the aquifer, whereas the aquifer at the site is composed of about 40% clay. At least four other major differences in subsoil and hydrological conditions between the Houston area and the site were identified. Based on these differences, the Staff supported the Applicant's conclusion that subsidence comparable to that in Houston was highly unlikely to occur at the site. (Testimony of Gammill, *et al.*, pp. 31, 32 [fol. Tr. 303]) Moreover, the estimate of approximately 2 feet of areal subsidence as reasonable and conservative was independently confirmed by Staff's consultant. (USGS letter of March 10 at p. 3 [fol. Tr. 303])

117. In addition to analyzing the potential for subsidence at the site, the Applicant investigated the potential for ground failure due to withdrawal of groundwater, which is known to cause (1) reactivation of faults; (2) tension cracking; and (3) slumping. As stated earlier, the high confining stresses on the growth faults beneath the site would prevent their reactivation by groundwater withdrawal. (Testimony of J. W. Mitchell, pp. 44, 45 [fol. Tr. 104]; testimony of Gammill, *et al.*, pp. 34-37 [fol. Tr. 303]; also see par. 72)

118. As to the matter of tension cracking, studies by both the Applicant and the Staff demonstrate that stresses may form along the edges of a subsidence bowl and if the stress is large enough, tension cracks may form. The Applicant undertook an analysis of the potential for tension cracking at the site and determined that potential horizontal strains would be extremely small and would not cause tension cracking. (Testimony of J. W. Mitchell, pp. 47-49 [fol. Tr. 104]) The Staff concurred in the Applicant's conclusion that tension cracking is not likely to occur at the site. (Testimony of Gammill, *et al.*, pp. 32, 33 [fol. Tr. 303]); however, the Staff has recommended that the Applicant modify its monitoring program so as to monitor for horizontal strains. (Testimony of Hendron, pp. 1-5 [fol. Tr. 303]) The Applicant has agreed to make such revisions in its monitoring program. (Tr. 323)

119. The Applicant and the Staff have made detailed analyses of the potential for ground slumping or failure which would result from abrupt differential piezometric declines across near-surface impermeable boundaries. The Applicant concluded that the distribution of clays within the Evangeline Aquifer is such that an impermeable boundary (which is an essential pre-condition for this phenomenon) could not exist. (Testimony of J. W. Mitchell, p. 46 [fol. Tr. 104]) The U. S. Geological Survey questioned whether on the basis of current information the Applicant had sufficient data to demonstrate the validity of this conclusion; viz. stratigraphic distribution and physical properties of the aquifer at depths below 300 to 500 feet. (USGS letter of March 10, 1975, p. 6 [fol. Tr. 303]).¹⁸ The NRC Staff, however, assumed for purposes of a "worst case" analysis "an extreme condition [that] could not be realized" (i.e., a vertical stratigraphic boundary) and calculated approximately 7 inches of differential subsidence over a distance of 500 feet. (Testimony of Gammill *et al.*,

¹⁸ Letters from the U. S. Geological Survey under dates of February 14 and March 10, 1975, were received in evidence, constituting interim reports of that agency in its role as consultant to NRC (fol. Tr. 303). Although the USGS expressed certain concerns regarding subsidence questions, the USGS witness sponsoring the letters stated that certain questions were addressed in amendments to the PSAR which had not been completely reviewed and were, therefore, not addressed in the USGS question and testified that each had been considered and addressed by the NRC in its report on site suitability and supplementary testimony, with specific references. (Tr. 319-320)

p. 45) In contrast the Applicant's predictions of differential subsidence resulting from the same piezometric drawdown, but not including the extreme assumption of a vertical boundary, is $\frac{1}{4}$ inch per 1000 feet. (Testimony of J. W. Mitchell, p. 51 [fol. Tr. 104]) The Staff concluded, however, that differential subsidence resulting from the extreme assumption of such a vertical stratigraphic boundary presented no safety hazard in that such subsidence would be detected by the Applicant's monitoring program. (Testimony of Gammill, *et al.*, pp. 37-43 [fol. Tr. 303]) The Applicant intends, however, to perform confirmatory analyses of the stratigraphy to the bottom of the Evangeline Aquifer at the time of installing the subsidence monitor which will be used in the monitoring program. (Tr. 323)

120. The Board finds that the groundwater withdrawals anticipated by the Applicant and Staff are conservative. Moreover, the evidence of record is convincing that such groundwater withdrawals will not cause ground failure. There is a potential for gradual differential subsidence across the plant site, but this would be more than adequately accommodated by the design criteria for the plant (Testimony of J. W. Mitchell, p. 51 [fol. Tr. 104]), and NRC Staff experts have concluded that any strains placed on structures, piping, etc. resulting from differential subsidence could be accommodated with reasonable and technologically available design measures. (Testimony of R. J. Kiessel and C. P. Tan, pp. 1-4 [fol. Tr. 303])

121. The evidence of record demonstrates that the Applicant's monitoring program could detect subsidence long before such subsidence presented a safety hazard. (Testimony of J. W. Mitchell, pp. 51-54 [fol. Tr. 104]) The Applicant's subsidence monitoring program is described in detail in Exhibit 3, at pp. 2.5-G16 to G18, and can be briefly described as including the systematic reading, study and evaluation of the data obtained from site and plant area piezometers, site and plant area settlement monuments, plant structure settlement markers and a 1500 foot deep subsidence monitor. The plant site piezometric readings would be compared with those obtained by the U. S. Geological Survey from observation wells in the Houston and Katy areas for a regional comparison. The plant site level network would be related to a subsidence monitor at the plant site anchored in the bottom of the Evangeline Aquifer (1,500 feet). While there was some question raised as to the details of the monitoring program, both the Staff and the USGS agreed that a monitoring program of the nature proposed by the Applicant would be a feasible program. (Tr. 321)

122. The Board finds that the potential for subsidence at the site due to hydrocarbon extraction is extremely remote. Despite the fact that the Texas Gulf Coast is an area of extensive hydrocarbon production, the Applicant has presented evidence establishing that there is a very remote chance of there being extractable hydrocarbons or other minerals at the site. (Testimony of J. W. Mitchell, pp. 29-33 [fol. Tr. 104]) Even if hydrocarbons did exist at the site,

conditions necessary for subsidence due to hydrocarbon extraction are non-existent at the site. (Testimony of J. W. Mitchell, pp. 32, 33 [fol. Tr. 104])

123. The site is located in the Gulf Coastal Plain Tectonic Province. The Gulf Coastal Plain Tectonic Province projects well into the central United States in the Mississippi Embayment, but it narrows southward into Mexico where it is partly interrupted by the folds of the Cordillera; it widens again farther south in the Yucatan Peninsula. (Staff Report, p. 45)

124. For the purposes of establishing the Safe Shutdown Earthquake (SSE) for nuclear power plants, the Staff recognized that different regions of this large geologic province exhibit vastly different levels of seismicity. In particular, the Staff recognized three seismic zones: (1) the Mississippi Embayment Earthquake Zone; (2) the zone of the intersection of the Ouachita Tectonic Belt and Wichita structural system; and (3) a Gulf Coast Seismic zone. The closest approach of earthquakes associated with the Mississippi Embayment Earthquake zone is considered to be near Memphis, Tennessee, over 400 miles from the site. Within the remainder of the Gulf Coastal Plains (the region between west Florida and where the Gulf Coastal Plain is narrowed and partly interrupted by the folds of the Cordillera in Mexico), there is very little seismic activity. (*Id.*)

125. Few small earthquakes have been recorded and none larger than MMVII¹⁹ have been noted. It is unlikely that any typical MMVII event would have escaped detection, because they are felt over a large area. Strictly speaking, intensity is a measure of damage at a place and not of the energy (magnitude) of the earthquake, although correlations have been made between earthquake magnitude and epicentral intensity. (*Id.*, p. 46) Only during the last 10 to 15 years have enough instruments been available to locate smaller earthquakes in the Gulf of Mexico. Few earthquakes have occurred during this time in the Gulf and none larger than magnitude 4.8 (which corresponds to about a typical MMVI). (*Id.*)

126. One of the two MMVII earthquakes that have occurred in the general area of interest is the 1882 earthquake located near Paris, Texas north of Mexia-Talco fault zone in the Ouachita Tectonic Belt. This earthquake is located in a complex region where the Wichita structural system intersects the Ouachita Belt. The two tectonic belts are penecontemporaneous, and apparently interfere structurally in the area of the intersection. This region is considered to be a separate tectonic province. The closest approach of this province to the site is about 300 miles. (*Id.*)

127. Both the Mississippi Embayment Earthquake Zone and the zone in which the 1882 Paris, Texas earthquake occurred are so remote from the ACNGS site that the resulting intensity at the site from earthquakes located in these zones is less than would occur at the site from a random earthquake located in the Gulf Coast Seismic Zone. (*Id.*)

¹⁹Intensity as measured on the Modified Mercalli Scale.

128. The largest earthquake in the Gulf Coast Seismic Zone (using a regional correlation between intensity, felt area and magnitude) is the intensity MMVI event centered near Donaldsonville, Louisiana in 1930. The 1891 Rusk, Texas earthquake is atypical, although it apparently caused intensity VII damage over a very small area, the earthquake was only reported at Rusk. Typically, an intensity MMVII earthquake is felt over an area of 50,000 to 100,000 square miles. The Board agrees with the Staff's conclusion that the available data do not support the assessment of the Rusk event as a true MMVII earthquake but must be considered as a very small shallow earthquake. (*Id.*, p. 47)

129. The Staff has concluded that an earthquake of intensity MMVI (Tr. 318-319) and 0.1g is a conservative representation of the maximum earthquake in the Gulf Coast Tectonic province (Staff Report, p. 47).

130. On the basis of its review, the Board concludes that there are no seismological characteristics at the site of the proposed ACNGS for which appropriate design cannot be provided.

METEOROLOGY

131. The proposed Allens Creek site is located in a region where average atmospheric dispersion conditions are generally more favorable than most other areas of the country. A description of meteorological conditions at the site, including the climatology of the region, local meteorological conditions, and expected severe weather, is presented in Section 2.6 of the Final Environmental Statement for the plant, issued in November 1974 (Staff Ex. 1) (*Id.*, p. 48)

132. The Applicant has provided meteorological data (in joint frequency form as recommended in Regulatory Guide 1.23) from the onsite tower for the period August 1972 through July 1973, with data recovery exceeding the recommended minimum value of 90 percent. These data were used in the evaluation of short-term accidental releases and expected routine releases from buildings and vents. (*Id.*)

133. Based upon a comparison of the short-term atmospheric dispersion values at the exclusion distance (1320 m) with similar values at other sites, the dispersion conditions at the ACNGS site are better than those at about 50 percent of the sites which have been reviewed and found to be suitable for nuclear power plants. The ACNGS plant design is consistent with the Regulatory Tornado Model (360 mph maximum wind speed) which is adequately conservative for this region of the country. (*Id.*) The Board concludes that there are no meteorological characteristics that would preclude site acceptability.

IV. CONCLUSIONS OF LAW

134. The matters reviewed to date, which are reflected in the foregoing findings, have demonstrated no reason why the ACNGS site is not a suitable location for nuclear power reactors of the general size and type proposed under the requirements of the Atomic Energy Act of 1954, as amended, and Commission regulations promulgated thereunder.

V. ORDER

135. Based upon the Board's Findings and Conclusions, IT IS ORDERED that this Partial Initial Decision (as it may be subsequently modified) shall constitute a portion of the Initial Decision to be issued upon completion of the remaining environmental and site suitability matters and the radiological health and safety phase of this proceeding.

136. IT IS FURTHER ORDERED, in accordance with Sections 2.754, 2.760, 2.762, and 2.764(a) of the Commission's Rules of Practice, 10 CFR Part 2, that this Partial Initial Decision shall be effective immediately and shall constitute the final action of the Commission forty-five (45) days after the date of issuance hereof, subject to any review pursuant to the Rules of Practice. Exceptions of this Partial Initial Decision and supporting briefs may be filed by any party within seven (7) days after the service of this Partial Initial Decision. Within fifteen (15) days thereafter (twenty (20) days in case of the Staff) any other party may file a brief in support of, or in opposition to, the exception.

THE ATOMIC SAFETY AND
LICENSING BOARD

Glenn O. Bright, Member

Dr. E. Leonard Cheatum, Member

Frederic J. Coufal, Chairman

Dated at Bethesda, Maryland,
this 11th day of November, 1975.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

LBP-75-67

ATOMIC SAFETY AND LICENSING BOARD

Thomas W. Reilly, Chairman
Dr. Marvin M. Mann, Member
Dr. John R. Lyman, Member

In the Matter of

Docket No. STN 50-437

OFFSHORE POWER SYSTEMS

November 12, 1975

(Manufacturing License for
Floating Nuclear Power Plants)

Upon applicant's motion to dismiss one of the intervenors as a party, or alternatively to impose sanctions as a result of that intervenor's refusal to comply with the Licensing Board's order requiring responses to applicant's interrogatories, Licensing Board finds that the intervenor's failure to obtain counsel cannot vitiate its responsibility to prosecute its case in accordance with the requirements of the Commission's Rules of Practice, that it is accordingly in default, that the alternate sanctions suggested, respectively, by the applicant and the staff are inadequate, and that the intervenor should be dismissed from the proceeding.

Motion to dismiss granted; dismissal action stayed for 10 days to permit intervenor to respond to discovery requests and apply to the Board for vacation of the dismissal order.

RULES OF PRACTICE: RESPONSIBILITIES OF PARTIES

Status as a party to a Nuclear Regulatory Commission proceeding affords certain rights and involves certain obligations. While every party to such a proceeding has a right to counsel, the exercise of that right is not an absolute necessity for meaningful participation in the hearing process. A party that has refused to take action to obtain counsel cannot rely on its lack of counsel to vitiate its obligations to cooperate in the orderly, required procedures of a hearing, including discovery.

RULING ON APPLICANT'S MOTION TO DISMISS "ACCCE" AS A PARTY

The Atomic Safety and Licensing Board ("the Board") has before it for consideration the Applicant's Motion to Dismiss ACCCE as a Party or, In the Alternative, For Sanctions. The pertinent facts are as follows:

1. "ACCCE" is the Atlantic County Citizens Council on Environment, which organization was admitted as a party intervenor by this Board's order of May 21, 1974 (Second Prehearing Conference Order).

2. On December 20, 1974, Applicant initially submitted to ACCCE on an informal basis certain questions which Applicant desired ACCCE to answer.

3. After repeated attempts on the part of Applicant to obtain answers to the informal questions referred to in Paragraph 1 above, Applicant, on or about May 28, 1975, pursuant to 10 CFR §2.740(b) of the Rules of Practice of the Nuclear Regulatory Commission ("Commission"), transmitted to ACCCE and filed with the Commission, with service on all parties of record, "Offshore Power Systems' Interrogatories to Atlantic County Citizens Council on Environment" (Interrogatories").

4. The Interrogatories were accompanied by a letter dated May 28, 1975, from counsel for Applicant to ACCCE. In the letter transmitting the Interrogatories, Applicant sent ACCCE a copy of §2.740(b) of the Rules of Practice and advised ACCCE that §2.740(b) required ACCCE to respond to the Interrogatories within 14 days after receipt thereof unless a shorter or longer time period was allowed by this Board.

5. ACCCE did not petition this Board for an extension of time within which to answer the Interrogatories, and to date ACCCE has failed and refused to answer the Interrogatories propounded by Applicant.

6. The Interrogatories submitted by Applicant on May 28, 1975 were identical in substance to the questions initially submitted to ACCCE on an informal basis on December 20, 1974.

7. By registered letter dated June 19, 1975, Applicant's counsel notified Dr. Willard Rosenberg and Messrs. Harold B. Abrams and John F. Williamson of ACCCE that the 14-day interrogatory answer period prescribed by §2.740(b) had expired.

8. Having received no response to the Interrogatories, or any notification of a time when such response might be forthcoming, Applicant on August 1, 1975, filed with this Board a "Motion to Compel Answers by Atlantic County Citizens Council on Environment to Interrogatories Propounded by Offshore Power Systems".

9. Applicant's Motion to Compel Answers was argued at the Third Prehearing Conference held by this Board on August 13, 1975. At that Prehearing Conference this Board discussed with ACCCE its responsibility as

a party intervenor (Tr. 508-509) and advised ACCCE that it was its "responsibility as a party to the proceeding to respond to interrogatories". (Tr. 509) The Board orally granted the motion to compel answers. (Tr. 510)

10. In the Third Prehearing Conference Order dated October 14, 1975, the Board noted that it had granted the Motion to Compel Answers and "entered an oral order that ACCCE file responses to Applicant's Interrogatories on or before September 17, 1975".

11. ACCCE failed to respond to or answer the Interrogatories by the date set by the Board.

12. By registered letter dated September 26, 1975, to Dr. Rosenberg and Messrs. Abrams and Williamson, counsel for Offshore Power Systems noted that Applicant had not received answers to the Interrogatories and requested return mail advice as to when the answers would be furnished.

13. On October 2, 1975, by letter from Dr. Rosenberg to counsel for Applicant, ACCCE advised that it had made a "firm decision" that it would not proceed with discovery. The letter set forth all of the arguments which ACCCE previously had made to the Board as to why it would not comply with discovery. In his letter of October 2, 1975, Dr. Rosenberg recognized that the Board had ordered ACCCE to respond to the Interrogatories by September 17 and that the Board had told ACCCE it was its obligation to answer the Interrogatories. Nevertheless, ACCCE continued in its refusal to do so.

Copies of all pertinent correspondence referenced above were attached as exhibits to Applicant's October 31, 1975 "Motion to Dismiss . . ." copies of which were served on all parties, including ACCCE. There has been no reply from ACCCE to the Applicant's Motion.

The Staff opposes the Motion to Dismiss but suggests alternative sanctions which the Board does not find satisfactory. Similarly, the Board does not prefer the Applicant's proposed alternative sanctions over outright dismissal. In each case, the alternatives would leave ACCCE in a sterile sort of participation that would exalt the form of "party" status over the substance of mere silent presence in the hearing room.

There is no requirement that a party to an NRC proceeding "must" have legal counsel, but there is a definite requirement that each party to the proceeding, whether with or without counsel, perform their procedural duties in accordance with the Commission's Rules of Practice (10 CFR Part 2), and do so in a diligent, timely fashion. This includes answering or responding to documents filed by adverse parties, within the time periods established by the Rules or the presiding Board. A party cannot, at one and the same time, claim entitlement to all the "rights" of a party while claiming immunity from the basic "duties" of a party. Insofar as the technical complexities of the Commission's Rules of Practice are concerned, and occasional minor lapses or inadvertent deviations therefrom by "layman" parties, Boards have consistently been more liberal and

helpful to parties unrepresented by counsel, and patiently have endeavored to assist them in their honest efforts to understand and comply with the Rules. Thus, it cannot be said that representation by legal counsel is an absolute necessity for meaningful participation in the hearing process. In fact, it has not been unusual for organizations and individuals to appear on their own behalf in such NRC license proceedings; nor was it an unusual occurrence in similar license proceedings before the Atomic Energy Commission.¹

Without question every party has a "right" to counsel, but this is not equivalent to saying that any party may indefinitely "sit on his rights," to wit: *refuse* to retain counsel and then refuse to cooperate in the orderly, required procedures of the hearing process on the grounds that he still does not "have" counsel (i.e., has taken no action to obtain legal counsel).

Apparently the participation envisioned by ACCCE contemplates exercising only their rights as a party and not their obligations. Status as a party affords certain rights, including the right to ask questions; but it also involves certain obligations, including the duty to answer questions of other parties to the

¹ See also Third Prehearing Conference transcript, at 508-509, 510:

CHAIRMAN HEAD: Gentlemen, let me advise you first that as I indicated to you, while it would certainly be in your best interests to have counsel, you have on behalf of your organization moved to intervene in the proceeding, you have been granted intervenor status.

As I am sure I indicated at the earlier prehearing conference that that carries with it responsibilities that you will have to fulfill with or without counsel. While the Board is sympathetic to your attempts to obtain counsel, they appear to be worthwhile attempts, it does not relieve you or your organization from the responsibility of responding to legitimate discovery requests, such as the ones made in this particular case.

Your organization has entered into this proceeding as a party, and as its representatives, you must bear the responsibility for carrying out the representation. That includes responding to legitimate discovery requests.

The requests all appear to be related to contentions you have filed in the proceeding, and despite the fact that you have made efforts to obtain counsel, it is your responsibility as a party to the proceeding to respond to the interrogatories that have been put to you and to other legitimate discovery requests.

* * *

As a result, the Board is going to grant the motion to compel and it is going to order that you respond to the interrogatories. Other *pro se* intervenors, either individually representing themselves or organizations without counsel, appear in many of these proceedings, they are able to respond in a legitimate and responsible manner to questions.

The Board and other Boards that deal with individuals without counsel take into account the fact that they are not represented. However, the Board cannot ignore the rules of practice of the Commission, and must require that you comply with those rules.

proceeding. There are appropriate questions to be asked before the evidentiary hearing (i.e., discovery interrogatories, depositions of opposing parties, etc.) and there are questions to be asked at the evidentiary hearing (i.e., examination, cross-examination). But these rights to ask questions are on a "two-way street". A party may not insist upon his right to ask questions of other parties, while at the same time disclaiming any obligation to respond to questions *from* those other parties. This is a basic rule of any adjudicatory proceeding, whether it be a judicial trial in court or an administrative hearing.

While we sympathize with the fact that there are economic considerations in retaining legal counsel, we cannot countenance any party continuously claiming the right to counsel while indefinitely refusing to obtain counsel. The unused right to counsel does not vitiate the obligations of a party to prosecute his case in accordance with the requirements of the Commission's Rules of Practice.

It is obvious from the long time period since the Applicant's initial informal discovery requests to ACCCE and the elapsed time after each successive and more formal request from the Applicant to ACCCE, as well as from the frank and unambiguous responses of ACCCE, that this Intervenor has no intention of properly responding to the Applicant's discovery requests nor of complying with this Board's Order compelling such response.

Accordingly, it is the Order of this Board that the Atlantic County Citizens Council on Environment ("ACCCE") be *DISMISSED* from this license proceeding, and shall no longer have the status as a Party-Intervenor therein, pursuant to the "Default" provisions of the Commission's Rules of Practice (§2.707).

However, the dismissal action shall remain stayed for a period of ten (10) days from the date of this Order. In the event ACCCE complies with the earlier Order of this Board compelling its proper response to the discovery requests of Applicant before the expiration of said ten (10) days, then this Order will be vacated upon application to this Board and proof of compliance. Otherwise the dismissal ordered in the preceding paragraph will take effect automatically at the end of the period, without further action by this Board.

It is so ORDERED.

FOR THE ATOMIC SAFETY
AND LICENSING BOARD

Thomas W. Reilly, Esq.,
Chairman

Issued at Bethesda, Maryland,
this 12th day of November, 1975.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
ATOMIC SAFETY AND LICENSING BOARD

LBP-75-68

Douglas V. Rigler, Chairman
John M. Frysiak, Member
Ivan W. Smith, Member

In the Matter of
TOLEDO EDISON COMPANY AND
THE CLEVELAND ELECTRIC
ILLUMINATING COMPANY

Docket Nos. 50-346A
50-500A
50-501A

(Davis-Besse Nuclear Power Station,
Units 1, 2 and 3)

THE CLEVELAND ELECTRIC
ILLUMINATING COMPANY, ET AL.

Docket Nos. 50-440A
50-441A

(Perry Nuclear Power Plant,
Units 1 and 2)

November 19, 1975

Upon applicants' motion in antitrust proceeding to amend contentions previously accepted by Licensing Board, and for modification or clarification of certain portions of Board's previous prehearing conference order, the Licensing Board concludes (1) that a previous ruling should be modified to limit the City of Cleveland in its case-in-chief to contentions set forth in its petitions to intervene and to preclude the City from introducing affirmative evidence having no apparent direct relevance to its interests; (2) that applicants understand the Board's view with regard to "nexus" between the "situation inconsistent" and activities under the license and no further clarification is required; and (3) that witness and document lists may be supplemented upon a showing of good cause.

**ATOMIC ENERGY ACT: RELATIONSHIP BETWEEN
LICENSED ACTIVITIES AND SITUATIONS
INCONSISTENT WITH ANTITRUST LAWS**

A "situation" inconsistent with the antitrust laws may be comprised of a number of events or incidents, each legal in and of themselves, but collectively illegal or inconsistent with the policies underlying the antitrust laws. This overall

situation must have a substantial nexus to the licensed activities, but there need not be shown a direct nexus between each individual practice and act contributing to the overall situation and the activities under the license.

ORDER AND MEMORANDUM RULING ON APPLICANTS' OBJECTION TO THE SIXTH PREHEARING CONFERENCE ORDER

By papers filed October 8, 1975, Applicants object to and request modification or clarification of portions of the Sixth Prehearing Conference Order.

First, Applicants restate their request for an order to the effect that "The City should not be permitted to introduce any evidence in this proceeding regarding the competitive situation in the service areas of any Applicants other than CEI." Applicants correctly would not exclude evidence regarding other applicants if it concerns alleged anticompetitive conduct affecting the City. Second, Applicants seek clarification of the Board's modification of Matter-in-Controversy #11 relating to nexus.

1. In our order permitting City to present the case set out in its Statement Informing Applicants of the Nature of the Case to be Presented, we rejected the Applicants' earlier efforts to limit City in its proof.

We have reconsidered that ruling. The Board now believes that unlimited participation by City is not essential to a full and complete record and that the Board should be guided in this respect by *Northern States Power Company* (Prairie Island Units 1 and 2), ALAB-244, RAI-74-11, 857, 863 *et seq.*

In its Statement of the Nature of its Case, City materially enlarges upon its three petitions to intervene and now refers to activities outside CEI's service area which have no apparent direct relevance to City's interests as set forth in those petitions. City contends that such evidence relates to a possible conspiracy and thus falls within its petitions.¹ We do not believe that a fair reading of the City's petitions support its contention. In any event, City recognizes that Justice and the Staff intend to produce such evidence. The Board is confident that Justice and Staff will competently pursue the additional areas of concern to City. City will therefore be limited in its case-in-chief to contentions set forth in its

¹ At the Sixth Prehearing Conference, City responded to a patently incorrect statement by Applicants concerning the scope of City's petitions to intervene as they relate to Applicants other than CEI. (Tr. 1199-1202) City has not responded to Applicants' objections of October 8, 1975 upon which we now rule.

petitions to intervene as those contentions have been particularized in its Statement of the Nature of its Case.²

2. Applicants request a clarification of the Board's Modification of Matter-in-Controversy #11 relating to "nexus." This request is apparently generated by a concern that the Board does not fully understand Applicants' position on this vital issue. Applicants may be assured that this Board does understand their position. Applicants' fear that they may be "... deprived of the opportunity to develop fully at the evidentiary hearing their nexus position..."; (p. 7), is unwarranted.

The Board has reread the relevant portion of the Sixth Prehearing Conference Order and appreciates why Applicants seek to be assured that their positions have been understood. The statement on page 5 of the Sixth Prehearing Conference Order that "we find the parties to be in substantial agreement in *their appraisals* of Matter-in-Controversy #11" (underlining added) was not intended to mean that Applicants *agree* with their adversaries, but that all parties *understand the issue*.

Further, the Board observes that there have been two separate concepts advanced by the parties concerning the cumulative effect of separate practices.

ALCOA and IBM³ have been cited for the authority that separate practices, legal or illegal, regardless of "nexus", may be "bundled" to describe a larger anticompetitive scheme. A "situation" may be comprised of a number of events or incidents, each legal in and of themselves, but collectively illegal or inconsistent with the policies underlying the antitrust laws. This does not meet the thrust of Applicants' position.

In respect to nexus, we perceive Applicants' position to be that the overall situation inconsistent with the antitrust laws must have a significant nexus to the licensed activities *and* that each individual *practice* relied upon to describe the overall inconsistent situation must also be shown to have a *direct* nexus to the licensed activities.

The parties adverse to the Applicants recognize, as they must, that the overall situation inconsistent with the antitrust laws must have a substantial nexus to the licensed activities, but argue that they are not required to establish a *direct* nexus between each individual practice and act contributing to the overall inconsistent situation and the activities under the license. The issue has

²The effect of this ruling is minimal. City's right to cross-examine within the ambit of its broadest interests are preserved and it may offer affirmative evidence on issues which may be raised by the Board *sua sponte*. (*Northern States, supra*.)

³*United States v. Aluminum Company of America*, 148 F.2d 416 (2d Cir. 1945). *United States v. International Business Machines*, U. S. District Court, Southern District of New York, No. 69 Civ. 200 (DNE).

been briefed repeatedly, thoroughly and expertly and it is clear that Applicants understand the Board's view of this issue. Quite simply, the Applicants have lost this argument and the case will proceed on the Board's modification of Matter-in-Controversy #11 which requires no clarification.

Applicants also seek a modification to provide for supplementing witness and document lists. The Board intended by its Sixth Prehearing Conference Order to require identification of witnesses and documents proposed to be offered as of the due date for filing prehearing briefs. (Dates subsequently modified to November 24, 1975 for parties other than Applicants and December 1, 1975 for Applicants.) For good cause, the Board will permit each party to supplement its witness and document lists. (See Tr. 1275-76)

It is so ORDERED.

**ATOMIC SAFETY AND
LICENSING BOARD**

John M. Frysiak, Member

Ivan W. Smith, Member

Douglas V. Rigler, Chairman

Dated at Bethesda, Maryland,
this 19th day of November 1975.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

LBP-75-69

ATOMIC SAFETY AND LICENSING BOARD

Michael L. Glaser, Chairman
Dr. Kenneth G. Elzinga, Member
Marshall E. Miller, Member

In the Matter of
ALABAMA POWER COMPANY
(Joseph M. Farley Nuclear Plant,
Units 1 and 2)

Docket Nos. 50-348A
50-364A

November 25, 1975

Upon motions by applicant in antitrust proceeding to exclude certain evidence, Licensing Board, applying the "Noerr-Pennington" doctrine (*Eastern Railroad Presidents Conference v. Noerr Motor Freight, Inc.*, 365 U. S. 127 (1961); *United Mine Workers of America v. Pennington*, 381 U. S. 657 (1965)), holds admissible all evidence, direct or circumstantial, which reasonably relates to the allegedly sham nature of applicant's government-influencing activities, including evidence of sheltered activities which may shed light on the purpose and character of nonimmunized anticompetitive conduct and of transactions with the government in a commercial or proprietary capacity.

Motions denied.

RULES OF PRACTICE: DISCOVERY (NOERR-PENNINGTON DOCTRINE)

The "Noerr-Pennington" doctrine, which excludes evidence relating to attempts to influence the government, has little or no application to efforts to influence a governmental body acting in a commercial or proprietary rather than in a policy-making capacity.

MEMORANDUM AND ORDER

The Applicant has preserved objections to the admissibility of a number of documents and some testimony on the basis of the applicability of the so-called *Noerr-Pennington* doctrine to such evidence. These objections essentially revolve

around prior litigation between the Applicant and the Alabama Electric Cooperative (AEC); dealings with the REA Administrator and with the Southeastern Power Administrative (SEPA); contacts with Congressional committees and State legislative and regulatory authorities; and activities relating to the formation of the Southeastern Reliability Council (SERC). The Board has previously ruled on objections to the admissibility of evidence on all grounds except those involving *Noerr-Pennington*, and has granted a continuing objection as to the latter. The resolution of such continuing objections prior to commencement of the Applicant's case is the purpose of this order.

It should be noted at the outset that this ruling is limited to the question of admissibility of evidence. It would be both premature and inappropriate to attempt to weigh the proffered evidence, or to draw any inferences therefrom until the conclusion of the evidentiary hearing. Accordingly, any observations as to the possible probative value, materiality, or effect of this evidence are related to the issue of admissibility only, and do not foreshadow any ultimate determination.

The determination of the nature and effect of the *Noerr-Pennington* doctrine involves a consideration of the four Supreme Court decisions known as *Noerr*,¹ *Pennington*,² *Trucking Unlimited*,³ and *Otter Tail*.⁴ In *Noerr* a group of railroads allegedly conspired to restrain and monopolize trade in the long-distance freight business by carrying out an intensive publicity campaign to secure the passage and enforcement of legislation favorable to themselves and unfavorable to the trucking industry. This campaign was described as "vicious, corrupt, and fraudulent" in that the sole motivation was to injure the truckers and destroy them as competitors, and the third-party technique was used to make the adverse publicity appear to be spontaneously expressed by independent persons. The court held that where restraints upon trade were "the result of valid governmental action" (citing *Parker v. Brown*),⁵ there was no violation of the antitrust laws, and no violation could "be predicated upon mere attempts to influence the passage or enforcement of laws." The court concluded that there was an "essential dissimilarity between an agreement jointly to seek legislation or law enforcement and the agreements traditionally condemned by Section 1" of the Sherman Act. The court was concerned that there be no substantial

¹ *Eastern Railroad Presidents Conference v. Noerr Motor Freight, Inc.*, 365 U. S. 127, 5 L. Ed. 2d 464, 815 S. Ct. 523 (1961).

² *United Mine Workers of America v. Pennington*, 381 U. S. 657, 14 L. Ed. 2d 626, 855 S. Ct. 1585 (1965).

³ *California Motor Transport Co. v. Trucking Unlimited*, 404 U. S. 508, 30 L. Ed. 2d 642, 92 S. Ct. 609 (1972).

⁴ *Otter Tail Power Co. v. United States*, 410 U. S. 366, 35 L. Ed. 2d 359, 93 S. Ct. 1022 (1973); 417 U. S. 901, 41 L. Ed. 2d 207, 94 S. Ct. 2594 (1974).

⁵ *Parker v. Brown*, 317 U. S. 341, 87 L. Ed. 315, 63 S. Ct. 307 (1942).

impairment of the power of government to take action through its legislature and executive, stating:

In a representative democracy such as this, these branches of government act on behalf of the people and, to a very large extent, the whole concept of representation depends upon the ability of the people to make their wishes known to their representatives. To hold that the government retains the power to act in this representative capacity and yet hold, at the same time, that the people cannot freely inform the government of their wishes would impute to the Sherman Act a purpose to regulate, not business activity, but political activity, a purpose which would have no basis whatever in the legislative history of that Act.

Of equal significance, such a construction would raise important constitutional questions, since the "right of petition is one of the freedoms protected by the Bill of Rights, and we cannot, of course, lightly impute to Congress an intent to invade these freedoms." Even accepting the district court's finding that the railroads' sole purpose was to destroy the truckers as competitors, that fact was held not to "transform conduct otherwise lawful into a violation of the Sherman Act." Moreover, the court held that it was neither unusual nor illegal for people to seek action on laws in the hope that they may bring an advantage to themselves and a disadvantage to their competitors, stating:

Indeed, it is quite probably people with just such a hope of personal advantage who provide much of the information upon which governments must act. A construction of the Sherman Act that would disqualify people from taking a public position on matters in which they are financially interested would thus deprive the government of a valuable source of information and, at the same time, deprive the people of their right to petition in the very instances in which that right may be of the most importance to them.

The railroads' use of the third-party technique and other deceptive practices was held legally irrelevant, although reprehensible and far short of the ethical standards generally approved. Insofar as the Sherman Act sets up a code of ethics at all, it is a code that condemns trade restraints, not political activity. The court acknowledged that the truckers sustained some direct injury as an incidental effect of the railroads' campaign to influence governmental action, and that the railroads were hopeful that this might happen. But it was regarded as inevitable that an incidental effect of such a campaign may be the infliction of some direct injury, which would not render the campaign itself illegal. However, the court also articulated the so-called "sham exception" to this rule of antitrust immunity in the following often-quoted language:

There may be situations in which a publicity campaign, ostensibly directed toward influencing government action, is a mere sham to cover what is actually nothing more than an attempt to interfere directly with the business

relationships of a competitor and the application of the Sherman Act would be justified.

Viewing the campaign as a "no-holds-barred fight" such as is commonplace in the halls of legislative bodies, the court concluded that there was a genuine effort to influence legislation and law enforcement practices, and hence no sham exception in that case.

In *Pennington* the Supreme Court extended the *Noerr* principle to other public officials, and expanded the rule beyond the protection of political activity. In that case, it was alleged that the UMW union and certain large coal operators had conspired to impose agreed-upon wage and royalty scales throughout the industry, regardless of the ability of smaller operators to pay, for the purpose of eliminating them from the industry. As part of this broad anti-competitive conspiracy, it was contended that the parties had successfully induced the Secretary of Labor to set a minimum wage under the Walsh-Healey Act for companies selling coal to TVA, which was higher than in other industries and difficult for small companies to meet. Attempts were also made to induce the TVA itself to curtail "spot market" purchases, a substantial portion of which were exempt from the Walsh-Healey order. A jury verdict for damages was entered against the union. The Supreme Court reversed and remanded for a new trial because of erroneous instructions relating to the Secretary of Labor and TVA episodes, and because part of the damages returned could have been based on these episodes. The Court stated:

Noerr shields from the Sherman Act a concerted effort to influence public officials regardless of intent or purpose Joint efforts to influence public officials do not violate the antitrust laws even though intended to eliminate competition. Such conduct is not illegal, either standing alone or as part of a broader scheme itself violative of the Sherman Act It is clear under *Noerr* that Phillips could not collect any damages under the Sherman Act for any injury which it suffered from the action of the Secretary of Labor. The conduct of the union and the operators did not violate the Act, the action taken to set a minimum wage for government purchases of coal was the act of a public official who is not claimed to be a co-conspirator, and the jury should have been instructed, as UMW requested, to exclude any damages which Phillips may have suffered as a result of the Secretary's Walsh-Healey determinations.

However, the Court also held that although the Walsh-Healey episodes were themselves protected from the Sherman Act, nevertheless the existence of the protected activity did not immunize the other parts of the scheme.⁶ In

⁶Jacobs, *The Quagmire Thickens: A Post-California Motor View of the Antitrust and Constitutional Ramifications of Petitioning the Government*, 42 U. Cin. L. Rev. 281, 299 (1973).

often-cited note 3, the Court stated:

It would of course still be within the province of the trial judge to admit this evidence, if he deemed it probative and not unduly prejudicial, under the "established judicial rule of evidence that testimony of prior or subsequent transactions, which for some reason are barred from forming the basis for a suit, may nevertheless be introduced if it tends reasonably to show the purpose and character of the particular transaction under scrutiny."

In *Trucking Unlimited* it was held that the right to petition extends to all departments of the government, including state and federal administrative agencies and courts. The right of access to the courts was deemed to be but one aspect of the right of petition. However, the Court also considered extensively the sham exception, of *Noerr* as adapted to the adjudicatory process. It was alleged that a number of trucking companies had conspired to monopolize trucking in California and to put their competitors out of business. To that end the defendants agreed jointly to finance, carry out and publicize a systematic program of opposing, with or without probable cause and regardless of the merit of the cases, virtually every application for operating rights before the PUC, the ICC, and the courts. It was further alleged that the power, strategy and resources of the defendants were used to harass and deter their competitors in their use of administrative and judicial proceedings so as to deny them free and unlimited access to those tribunals. The Court held that the allegations were not that the defendants sought to influence public officials as in *Noerr*; but that they sought to bar their competitors from meaningful access to adjudicatory tribunals. It stated:

The nature of the views pressed does not, of course, determine whether First Amendment rights may be invoked; but they may bear upon a purpose to deprive the competitors of meaningful access to the agencies and courts. As stated in the opinion concurring in the judgment, such a purpose or intent, if shown, would be "to discourage and ultimately to prevent the respondents from invoking" the processes of the administrative agencies and courts and thus fall within the exception to *Noerr* Petitioners, of course, have the right of access to the agencies and courts to be heard on applications sought by competitive highway carriers. That right, as indicated, is part of the right of petition protected by the First Amendment. Yet that does not necessarily give them immunity from the antitrust laws. It is well settled that First Amendment rights are not immunized from regulation when they are used as an integral part of conduct which violates a valid statute First Amendment rights may not be used as the means or the pretext for achieving "substantive evils" (citation omitted) which the legislature has the power to control. Certainly the constitutionality of the antitrust laws is not open to debate. A combination of entrepreneurs to harass and deter their competitors from having "free and unlimited access" to the agencies and courts, to

defeat that right by massive, concerted, and purposeful activities of the group are ways of building up one empire and destroying another . . . If these facts are proved, a violation of the antitrust laws has been established. If the end result is unlawful, it matters not that the means used in violation may be lawful.

The Court noted that the political campaign operated by the railroads in *Noerr* employed deception, misrepresentation and unethical tactics, but also observed that Congress has traditionally exercised extreme caution in legislation respecting political activities. However, it further stated that "unethical conduct in the setting of the adjudicatory process often results in sanctions," citing cases dealing with perjury, use of a patent obtained by fraud to exclude a competitor, conspiracy with a licensing authority to eliminate a competitor, and bribery of a public official. The Court then continued:

There are many other forms of illegal and reprehensible practice which may corrupt the administrative or judicial processes and which may result in antitrust violations. Misrepresentations, condoned in the political arena, are not immunized when used in the adjudicatory process. Opponents before agencies or courts often think poorly of the other's tactics, motions or defenses and may readily call them baseless. One claim, which a court or agency may think baseless, may go unnoticed; but a pattern of baseless, repetitive claims may emerge which leads the factfinder to conclude that the administrative and judicial processes have been abused. That may be a difficult line to discern and draw. But once it is drawn, the case is established that abuse of those processes produced an illegal result, viz., effectively barring respondents from access to the agencies and courts. Insofar as the administrative or judicial processes are involved, actions of that kind cannot acquire immunity by seeking refuge under the umbrella of "political expression."

The *Otter Tail* cases are the most recent application of *Noerr* principles by the Supreme Court. That litigation involved monopolization by an electric utility company by hindering or preventing municipalities which it formerly served at retail from replacing it with municipal distribution systems. The principal means employed were refusals to sell power at wholesale, refusals to wheel power from others, the institution and support of litigation designed to prevent or delay establishment of those systems, and the invocation of contracts with other power suppliers relieving it of any duty to wheel power. The lower court found that most of the litigation was carried to the highest available appellate court, and although all of it was unsuccessful on the merits, the pendency of litigation prevented the marketing of municipal bonds necessary to establish an electric system. The delays and financial burdens caused by such litigation dampened local enthusiasm for public ownership. However, the district

court held that the *Noerr* doctrine was applicable "only to efforts aimed at influencing the legislative and executive branches of the government." (331 F. Supp. 54). The Supreme Court vacated that phase of the order and remanded for consideration in light of its intervening decision in *Trucking Unlimited*, stating:

That was written before we decided [*Trucking Unlimited*], where we held that the principle of *Noerr* may also apply to the use of administrative or judicial processes where the purpose is to suppress competition evidenced by repetitive lawsuits carrying the hallmark of insubstantial claims and thus within the "mere sham" exception announced in *Noerr*. (410 U. S. 366).

Upon reconsideration the district court reached the same conclusion as before, finding that:

The repetitive use of litigation by Otter Tail was timed and designed principally to prevent the establishment of municipal electric systems and thereby to preserve defendant's monopoly. I find the litigation comes within the sham exception to the *Noerr* doctrine as defined by the Supreme Court in *California Transport*. (360 F. Supp. 451).

The Supreme Court affirmed this judgment entered on remand, per curiam. (417 U. S. 901).

From the foregoing cases it appears that there is no antitrust liability for genuine, as distinguished from sham, attempts by the Applicant to influence valid governmental action by any branch of the government, state or federal. Within the scope of the constitutional right of petition, the motives which accompany such attempts are irrelevant, regardless of their anticompetitive intent or purpose. Activities in a legislative or other nonadjudicatory setting are not within the antitrust laws even though they may include unethical or reprehensible conduct. However, unethical practices which may corrupt administrative or judicial processes can result in antitrust violations. Joint efforts to influence public officials are not illegal though intended to eliminate competition, either standing alone or as part of a broader scheme itself violative of the Sherman Act. But attempts to influence governmental action, when used as an integral part of conduct which violates the antitrust laws, are not immunized from antitrust liability and fall within the sham exception. In the adjudicatory process, the sham exception may involve such matters as misrepresentation, conspiracy with a licensing authority, a pattern of baseless claims amounting to abuse of the judicial process, or repetitive use of insubstantial litigation to suppress competition.

While courts⁷ and commentators⁸ have not completely agreed on the implications of the concept of sham litigation, it is apparent that many issues of law and fact are involved in its application. There is a long line of authority, both before and after *Noerr*, wherein the federal courts have held that patent infringement litigation could constitute an integral part of a Sherman Act violation.⁹ One such case, *Walker Process Equipment, Inc. v. Ford Machinery & Chemical Corp.*,¹⁰ involving patent infringement litigation as an integral part of the means employed to enforce a patent obtained by fraud; was cited by Justice Douglas in *Trucking Unlimited*. And in *Bendix Corp. and Sellew Corp. v. Belax, Inc.*,¹¹ the Seventh Circuit Court of Appeals held that a patent infringement suit is an antitrust abuse where it is an integral part of a conspiracy to restrain trade or to monopolize over and beyond the monopoly created by the patent. A similar result has been reached in a case involving unfair competition under Section 5 of the Federal Trade Commission Act.¹²

In the instant case, it is contended that the Applicant has engaged in various conduct designed to influence governmental action, which is within the sham exceptions to *Noerr*. The total pattern of such alleged anti-competitive conduct is claimed to include sham litigation in state and federal courts, sham opposition to AEC financing new generation and various attacks on its H-loan efforts, activities related to SEPA, restrictive contract provisions, efforts to exclude AEC from regional economic coordination, and timed rate reductions to disrupt generation plans. We have previously ruled on the admissibility of such proffered evidence, reserving however the determination of such objections as are based on *Noerr-Pennington* considerations.

⁷ *Metro Cable Co. v. CATV of Rockford, Inc.*, 516 F.2d 220, 225 (CA 7, 1975); *Israel v. Baxter Laboratories, Inc.*, 466 F.2d 272 (CA DC, 1972); *Rodgers v. F. T. C.*, 492 F.2d 228 (CA 9, 1974); *Semke v. Enid Auto Dealers Ass'n.*, 456 F.2d 1361 (CA 10, 1972); *Edward B. Marks Music Corp. v. Colorado Magnetics, Inc.* 497 F.2d 285 (CA 10, 1974); *Adolph Coors Co. v. A & S Wholesalers, Inc.*, 1975 Trade Cases ¶ 60,187 (D. Colo., 1975); *United States v. Johns-Manville Corp.*, 245 F. Supp. 74 (E. D. Pa., 1965).

⁸ Howe, *The Noerr-Pennington Doctrine and Inroads Into It*, 26 Mercer L. Rev. 527 (1975); Jacobs, *supra*, 42 U. Cin. L. Rev. 281 (1973); Note, *Limiting the Antitrust Immunity for Concerted Attempts to Influence Courts and Adjudicatory Agencies: Analogies to Malicious Prosecution and Abuse of Process*, 86 Harvard L. Rev. 715 (1973); Handler, *Twenty-Five Years of Antitrust*, 73 Columbia L. Rev. 415 (1973).

⁹ *United States v. Singer Manufacturing Co.*, 374 U. S. 174, 10 L. Ed. 2d 823, 83 S. Ct. 1773 (1963); *Kobe Inc. v. Dempsey Pump Co.*, 198 F.2d 416 (CA 10, 1952); *Mach-Tronics, Inc. v. Zirpoli*, 316 F.2d 820 (CA 9, 1963); *United States v. Krasnov*, 143 F. Supp. 184, 193 (E. D. Pa., 1956), *aff'd. per curiam*, 355 U. S. 5 (1957). See cases collected by Blecher and Bennett, *Litigation As An Integral Part of a Scheme to Create or Maintain An Illegal Monopoly*, 26 Mercer L. Rev. 479, 491 (1975).

¹⁰ 382 U. S. 172, 15 L. Ed. 2d 247, 86 S. Ct. 347 (1965).

¹¹ 471 F.2d 149, 159 (1972).

¹² *L. G. Balfour Co. v. FTC*, 442 F.2d 1, 16 (CA 7, 1971).

We now hold that since the sham character of the Applicant's government-influencing activities has been placed in issue, evidence relating thereto is admissible. It would be inappropriate at this time to attempt to weigh this evidence or to determine what inferences, if any, flow from it. That must await the conclusion of a full evidentiary hearing. The sham exception issue is at least a mixed question of fact and law, and all of the facts have not yet been fully developed. In the present state of the record it should not be resolved solely as a matter of law, nor in terms of the exclusionary rules of evidence as adapted to administrative proceedings.¹³ As the Supreme Court observed¹⁴ in *Continental Ore Co. v. Union Carbide Corp.*:

In cases such as this, plaintiffs should be given the full benefit of their proof without tightly compartmentalizing the various factual components and wiping the slate clean after scrutiny of each The character and effect of a conspiracy are not to be judged by dismembering it and viewing its separate parts, but only by looking at it as a whole.

Finally, there remains the question whether, in the absence of sham exceptions as ultimately decided, evidence of Applicant's actions in attempting to influence government action is nevertheless admissible as proof of purpose and intent or admissions against interest. In *Pennington, supra*, the Court in note 3 laid down the standard for determining when litigants may use the fact of efforts to influence the government as evidence of a general anticompetitive intent which may have accompanied other, nonexempt transactions. It stated that although the Walsh-Healey episodes could not form the basis of antitrust liability or damages, "it would of course still be within the province of the trial judge to admit this evidence, if he deemed it probative and not unduly prejudicial," to show the purpose and character of the nonexempt transactions still under scrutiny. The case was remanded for a new trial before a jury to determine whether the nonimmunized transactions violated the Sherman Act. Although the cases cited by the Court in support of note 3 related to actions prior to or during a hiatus in the antitrust laws, or prior to the time period described in indictments, the evidence referred to in *Pennington* was not so time limited. Such other contemporary, nonexempt transactions related to collective bargaining contracts between the union and the large coal companies agreeing to rapid mechanization, imposing the agreement upon all operators regardless of their ability to pay, and agreements not to lease land to or sell or buy coal from nonunion operators. The Court's statement in note 3 was not dicta as asserted by Applicant, because it was giving guidance to the district court on future evidentiary rulings, since there were to be further proceedings below upon

¹³ *Richardson v. Perales*, 402 U. S. 389, 28 L. Ed. 2d 842, 91 S. Ct. 1420 (1971); *Federal Trade Commission v. Cement Institute*, 333 U. S. 683, 705, 92 L. Ed. 1010, 1037 (1948).

¹⁴ 370 U. S. 690, 699, 8 L. Ed. 2d 777, 82 S. Ct. 1404 (1962).

retrial.¹⁵ *Pennington* itself therefore involved a situation where intent and purpose as to nonexempt transactions could be inferred in part from participation in constitutionally protected activities (Walsh-Healey episodes), provided such evidence was deemed probative and not unduly prejudicial to the jury.

Following *Pennington*, other courts have applied the reasoning of note 3 and have admitted evidence relating to protected activities if probative and not unduly prejudicial within the exercise of judicial discretion. In *Hayes v. United Fireworks*,¹⁶ efforts to obtain favorable fireworks legislation were held admissible under *Pennington* when accompanied by the following jury instruction:

Evidence has been introduced relating to efforts on the part of one or more of defendants to influence public officials in the passage of fireworks legislation and in the issuance of licenses to sell fireworks. This evidence has been admitted for whatever light it may shed upon the purpose and character of the particular transactions and issues involved in this case. But I wish to emphasize, members of the jury, that efforts to influence public officials, sometimes called lobbying, do not violate the antitrust laws, even though intended to eliminate competition. Such conduct is not illegal either standing alone or as part of a broader scheme, itself violative of the antitrust laws.

Other cases have likewise held that such "purpose and character" evidence is admissible, provided that adequate cautionary instructions are given the jury regarding liability and damage issues.¹⁷ And in a case involving restraint of trade and monopolization under Section 5 of the Federal Trade Commission Act, it was held that although evidence of a trademark misrepresentation not pleaded in the complaint could not sustain a finding on that issue, nevertheless the "evidence of misrepresentation of the fraternities' trademark protection, however, does add weight to the finding of the more general unlawful use of the IRAC and its role in harassing petitioners' competitors,"¹⁸ and the Commission's other findings of violations were sustained.

In several cases such purpose and character evidence has been held inadmissible on grounds of undue prejudice to a jury,¹⁹ or its cumulative nature

¹⁵ Moore's Federal Practice (Second Edition), ¶0.404 [1] and [10].

¹⁶ 420 F.2d 836, 840 (CA 9, 1969).

¹⁷ *Household Goods Carrier's Bureau v. Terrell*, 417 F.2d 47, 52, rehearing en banc, 452 F.2d 152, 158 (CA 5, 1971); *Ramsey v. United Mine Workers*, 265 F. Supp. 388, 399 (E. D. Tenn., 1967), rev'd. on other grounds 401 U. S. 302; *Wall Products Co. v. National Gypsum Co.*, 320 F. Supp. 295, 296 (N. D. Cal., 1971).

¹⁸ *L. G. Balfour Company v. F. T. C.*, 442 F.2d 1, 17 (CA 7, 1971).

¹⁹ *Lamb Enterprises, Inc. v. Toledo Blade Co.*, 461 F.2d 506, 516 (CA 6, 1972) [attorney's letter to corporate client and another attorney concerning strategy involving "an effort to forestall a competitor through action of the Toledo City Council."]; *Schenley Industries, Inc. v. N. J. Wine & Spirit Wholesalers*, 272 F. Supp. 872 (D. N. J., 1967).

and lack of probative value.²⁰ This result is clearly consistent with *Pennington* note 3, which contemplates the exercise of judicial discretion regarding the probative value or undue prejudice of such evidence. However, such limitations are not applicable in the instant case. It would be somewhat artificial for this Board, which must view or hear the evidence in order to pass upon its admissibility, to reject it because it might unduly prejudice the same Board. Likewise such evidence is arguably probative on various facets of the Applicant's purpose and intent in connection with a number of transactions which have been put in evidence. It must of course also be material, and relevant to the issues or subissues in this case. That is all we are required to decide at this time.

It should also be noted that this Board has previously held that the *Noerr-Pennington* doctrine "has little or no application" to efforts to influence a governmental body acting in a commercial or proprietary rather than in a policy-making capacity.²¹ We adhere to this ruling,²² although we recognize that there is some contrary authority as urged by Applicant.²³ This ruling is consistent with the opinion of the Supreme Court in *Otter Tail*, relating to transactions between the utility and the U. S. Bureau of Reclamation. Such evidence was considered by the Court, which held it immaterial that some of the restrictive provisions were contained in a contract with the Bureau, for "government contracting officers do not have the power to grant immunity from the Sherman Act."²⁴

For the foregoing reasons, we hold admissible all evidence, direct or circumstantial, which reasonably relates to the allegedly sham nature of Applicant's various efforts to influence governmental action. Evidence of sheltered government-influencing activities which may shed light on the purpose and character of nonimmunized anticompetitive conduct is also admissible, as well as transactions with the government in a commercial or proprietary

²⁰ *United States v. Johns-Manville Corp.*, 259 F. Supp. 440, 453 (E. D. Pa., 1966). This case was characterized as the "most expansive treatment" of First Amendment rights under *Noerr-Pennington* in *Hecht v. Pro-Football, Inc.*, 444 F.2d 931, 940 (CA DC, 1971), which did not regard it as binding precedent. Neither did the First Circuit Court of Appeals in *George R. Whitten, Jr., Inc. v. Paddock Pool Builders, Inc.*, 424 F.2d 25, 29 note 5 (CA 1, 1970).

²¹ Order Granting in Part and Denying in Part Motion to Compel Production, dated November 1, 1973, p. 2.

²² *George R. Whitten, Jr., Inc. v. Paddock Pool Builders, Inc.*, 424 F.2d 25, 32 (CA 1, 1970); *Hecht v. Pro-Football, Inc.*, 444 F.2d 931 (1971), cert. denied, 404 U. S. 1047; *Breard v. City of Alexandria*, 341 U. S. 622, 641, 95 L. Ed. 1233, 71 S. Ct. 920 (1951); *Valentine v. Chrestensen*, 316 U. S. 52, 86 L. Ed. 1262, 62 S. Ct. 920 (1942).

²³ *United States v. Johns-Manville Corp.*, 245 F. Supp. 74, 81 (E. D. Pa., 1965); *Hackensack Water Co. v. Village of Nyack*, 289 F. Supp. 671, 686 (S. D. N. Y., 1968). Cf. *Household Goods Carrier's Bureau v. Terrell*, 417 F.2d 47, rehearing en banc, 452 F.2d 152 (CA 5, 1971).

²⁴ 410 U. S. 366, 378-379.

capacity. Accordingly, Applicant's objections to exhibits or testimony or motions to strike evidence based on *Noerr-Pennington* grounds are overruled.

It is so ORDERED.

**THE ATOMIC SAFETY AND
LICENSING BOARD**

Dr. Kenneth G. Elzinga, Member

Marshall E. Miller, Member

Michael L. Glaser, Chairman

**Dated at Bethesda, Maryland,
this 25th day of November, 1975.**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

CLI-75-14

COMMISSIONERS:

William A. Anders, Chairman
Edward A. Mason
Victor Gilinsky
Richard T. Kennedy

In the Matter of
**CONSOLIDATED EDISON COMPANY
OF NEW YORK, INC.**

Docket No. 50-286

December 2, 1975

**(Indian Point Nuclear Generating
Station, Unit No. 3)**

Upon review pursuant to 10 C.F.R. §2.786 of Appeal Board decision (ALAB-287), which (*inter alia*) interpreted parties' stipulation and, as so interpreted, approved it, the Commission concludes that (1) the stipulation was a proper means for resolving the cooling-system issues presented in the proceeding, and (2) to the extent that ALAB-287 materially modified the stipulation, it must be vacated.

Appeal Board decision vacated in part; stipulation approved.

RULES OF PRACTICE: STIPULATIONS

Although the Rules of Practice encourage the fair and reasonable settlement of contested issues (10 C. F. R. §2.759), the Commission and its boards have an independent obligation to assure that important NEPA policies have been protected in the agreed course of action.

MEMORANDUM AND ORDER

Consolidated Edison Company of New York, Inc., is the licensee of Units 2 and 3 of the Indian Point Nuclear Generating Station located on the Hudson River. These colocated reactors are of similar design and rated power and, in operation, will have similar environmental effects. Construction permits for both reactors were issued prior to the effective date of the National Environmental Policy Act of 1969 ("NEPA"), and both reactors are now fully constructed.

Unit No. 2 was licensed for full-power operation in September 1973, following a protracted hearing which generated a record in excess of 50,000 pages. There were five intervenors, including three before us in this proceeding—the Hudson River Fishermen's Association, Inc., the State of New York, and the New York State Atomic Energy Council. The most sharply contested issue in that proceeding was whether Unit No. 2 should be allowed to operate with a once-through cooling system, or whether closed-cycle cooling should be required to protect marine life in the Hudson River. The principal concern was that once-through cooling would adversely affect the Hudson as an important spawning ground for salt-water species of striped bass. The regulatory staff and most of the intervenors took the position that a once-through cooling system would, in the long run, significantly damage the spawning ground and that a closed system was necessary. The licensee contended that once-through cooling would not significantly damage the spawning ground, and that the benefits of a closed system would be outweighed by its costs.¹ The Licensing Board ruled in favor of closed-cycle cooling, conditioning the operating license on installation of a closed-cycle cooling system by 1978. 6 AEC 751(1973).

The operating license for Unit No. 2 was subsequently modified by the Appeal Board in ALAB-188. 7 AEC 323(1974). The Board undertook a searching review of the record with respect to the cooling system issue. The Board opined that the staff's environmental statement was inadequate in several respects and directed the staff to take a "fresh look" at the matter. The Board concluded, however, that Unit No. 2 could be allowed to operate under careful monitoring with a once-through system for five years without significantly damaging marine life in the river. Accordingly, the Board conditioned effectiveness of the operating license upon the installation of a closed-cycle system by 1979, subject to the applicant's right to seek to reopen the question on the basis of empirical data collected during once-through operation.

Most of the intervenors who participated in the extensive hearings for the Unit No. 2 operating license also intervened in the present proceeding involving an operating license for Unit No. 3. Following the Appeal Board's ALAB-188 decision, the regulatory staff prepared an environmental statement covering both Units 2 and 3, in response to the Appeal Board's "fresh look" directive in ALAB-188. In addition, the parties entered into successful negotiations for a stipulated settlement of the issues. A copy of the stipulation is published with the Licensing Board's decision and is attached hereto. In essence, it calls for installation of closed-cycle cooling for Unit No. 3 after five years of operation,

¹ The costs of a closed-cycle system are both environmental and economic. Depending on the type of system used (in this instance, one of the several types of cooling towers), those effects may be aesthetic damage, noise, construction impacts and occasional salt deposition, icing and other weather effects.

subject to possible reopening of that question pursuant to the stipulation and the Commission's rules of practice. Unless the matter is thus reopened, there would be no further need to examine the question whether some form of closed-cycle cooling is required by the stipulated deadline, now September 15, 1981.² The stipulation recites that it must be approved by the Licensing and Appeal Boards before it becomes effective. The Licensing Board approved the stipulation, found the staff's environmental statement adequate under NEPA, decided certain other issues, and authorized issuance of a full-term, full-power license, subject to the stipulation.

The stipulation was then presented to the Appeal Board for approval. The Appeal Board stated its approval of the stipulation but, in so doing, interpreted the stipulation in light of its understanding of certain ambiguous language in the prior ALAB-188 decision. ALAB-287, NRCI-75/9 379 (September 3, 1975). Most importantly, the Appeal Board found the staff's "fresh look" at the cooling system question in the environmental impact statement for Unit No. 3 (and covering Unit No. 2 as well) to be inadequate. Dissatisfied with that disposition, the regulatory staff expressed its intention to seek reconsideration. The intervenors, Hudson River Fishermen's Association, Inc. and Save Our Strippers, Inc., petitioned for review in the United States Court of Appeals for the Second Circuit,³ and were joined by New York State and the New York Atomic Energy Council. In these circumstances, we called for briefs from the parties on a series of related issues, and extensive briefs have been received from all parties. The parties are in agreement as to how this matter should be resolved. They propose that we vacate portions of the Appeal Board's decision which all but the licensee view as having materially modified the stipulation. For the reasons set forth below, we believe that the parties' suggested resolution is appropriate in the circumstances of this case, meets the requirements of NEPA, and is otherwise in the public interest.

As demonstrated by the briefs before us, the present dispute is largely given over to semantic debate. There is much discussion of what the Appeal Board intended in ALAB-188 and what the parties intended in entering into their stipulation. We believe the stipulation speaks for itself and, in many situations, we would simply approve such a stipulation without further inquiry. Our rules expressly state that "the fair and reasonable settlement of contested initial

²Under certain specified circumstances, the stipulation provides for extension or acceleration of the deadline for closed-cycle cooling. For example, failure of governmental entities to act on permit requests by the applicant could result in an extension.

³*Hudson River Fishermen's Association, Inc., et al. v. U. S. Nuclear Regulatory Commission* (2d Cir. No. 75-4212). On October 29, 1975, the NRC moved to dismiss, or alternatively, to hold the petition for review in abeyance. On November 18, 1975, the Court granted the NRC's motion to hold the petition for review in abeyance and denied its motion to dismiss. It also denied the petitioners' cross motion for a stay of ALAB-287 pending decision by the Commission.

licensing proceedings is encouraged." 10 CFR 2.759. The procedural history of Indian Point Units 2 and 3 demonstrates the wisdom of this policy. But the parties may not simply stipulate that there has been compliance with NEPA. As the Appeal Board rightly recognized, the Commission and its Boards have an independent obligation to assure that the important policies of that act have been protected in the agreed course of action. As we view the matter, then, the basic question becomes whether the staff's exploration of the issue of once-through versus closed-cycle cooling was sufficient to satisfy NEPA. We turn now to that question.

Our independent review of the regulatory staff's environmental statement leads us to differ with the Appeal Board's conclusion. Having been told by the Appeal Board in ALAB-188 to correct certain deficiencies,⁴ the regulatory staff produced an environmental statement for Units 2 and 3 which we deem thoroughly responsive to the Board's concerns.⁵ Our central concern, however, is whether the statement was adequate to satisfy NEPA's requirements, in particular with respect to the requirement that closed-cycle cooling be installed for the last 35 years of the useful lives of these reactors. All of the parties agree that the FES is adequate. And our independent review discloses no deficiencies.⁶

Neither the parties nor the Appeal Board question, and the record fully supports the conclusion, that properly monitored short-term operation of Indian Point Units 2 and 3 with once-through cooling will not cause unacceptable harm. Under the terms of the license for Indian Point 2 and the stipulation regarding Indian Point 3, the applicant must monitor the ecological effects of its discharges and disclose its data to the parties. If necessary to avoid unacceptable adverse effects, the applicant must take remedial measures, such as power reduction.

⁴The deficiencies concerned the following matters: (1) thermal effects (ALAB-188, at 378-79); (2) entrainment and impingement (ALAB-188, at 379-80); (3) recruitment to the Mid-Atlantic fishery (ALAB-188, at 361-65); and (4) evaluation of the applicant's research program (ALAB-188, at 396-99).

⁵We note in particular the portions of the staff's "fresh look" which appear at FES, pages V-10-28, V-31-32, V-40, V-99-101, V-105-106, V-135-212.

⁶The Appeal Board noted that "the Unit 3 FES did not take into account the new studies prepared by the applicant on the effects of various types of closed-cycle cooling." Although the FES contains considerable information on alternative closed-cycle systems for dissipating heat and rules out some possibilities, it does not finally decide the type of system to be used. FES, at XI-12 to -17 and Appendix G. However, the failure to include the report in question is of little consequence since the applicant continues to compile new data concerning cooling systems. Moreover, the staff will prepare a draft and final environmental statement before approving a particular type of closed-cycle cooling system. See 40 F. R. 30882. All that is required now is a basis adequate to decide that, absent a demonstrated basis for change, some form of closed-cycle cooling must be employed after these reactors have operated for five years. This procedure fully complies with NEPA. See *Brooks v. Coleman*, 7 ERC 2150 (9th Cir. 1975).

Although the staff concluded that short-term use of once-through cooling at Indian Point was acceptable, it decided that, on present knowledge, the environmental risks of long-term use of once-through cooling at Indian Point were such that a closed-cycle method of operation was required. The staff's conclusion, supported by the intervenors, was grounded on extensive data concerning the aquatic organisms in the Hudson River and the probable impact thereon of discharges from a once-through cooling system. For example, the staff predicted the impact of once-through cooling, as opposed to closed-cycle operation using cooling towers, on the striped bass fishery in the Hudson River. FES, section XI. But as the staff recognized, cooling towers have environmental impacts of their own and because of their cost, materially affect the plant's cost-benefit ratio. FES, pp. XI-12 to -31.

Environmental data obtained during actual operation may shed new light on the impact of once-through cooling, and during the same period other data may emerge regarding the impacts of closed-cycle systems. In these circumstances, the stipulation before us was a proper means to resolve an issue concerning the preferable cooling system, and yet provide a mechanism for considering additional information. In this regard, the stipulation is in harmony with the established rule that NEPA determinations need not be based on every scrap of data which could conceivably be gathered. *Jicarilla Apache Tribe v. Morton*, 471 F.2d 1275 (9th Cir. 1973). Likewise, the fact that the environmental impacts of Indian Point Units 2 and 3 will be further studied in no way undermines the adequacy of the Commission's NEPA review. *Environmental Defense Fund v. Corps of Engineers*, 492 F.2d 1123 (5th Cir. 1974).

Having found the regulatory staff's analysis of the matter adequate under NEPA for both Units 2 and 3, resolution of the present dispute follows from the stipulation of the parties and the Commission's rules of practice. No further Commission consideration of the once-through versus closed-cycle question is necessary for either unit. However, pursuant to the stipulation, the licensee can seek to reopen the matter based upon empirical data collected during the interim period of once-through operation. Should the licensee seek to reopen, it would do that by an application for a license amendment. The present intervenors and other interested persons⁷ could participate in that proceeding and the licensee would have the burden of justifying the proposed amendment by a preponderance of the evidence.⁸ Any such amendment would have to be accompanied by

⁷For example, the licensee is currently litigating against the Village of Buchanan, New York, where the station is located, the question of a zoning permit for natural draft cooling towers. Upon a timely showing, the Village could participate in such a proceeding.

⁸The Appeal Board stated a preponderance of the evidence standard in ALAB-188 and reiterated that standard in ALAB-287. We agree with that standard and note that no party objects to it.

draft and final environmental impact statements to be prepared by the staff. In addition, under the stipulation the staff could also raise the once-through versus closed-cycle question.⁹ And other interested members of the public could seek to reopen the question based on new information under 10 CFR 2.206.

In view of the foregoing, we hereby approve the stipulation of the parties and authorize issuance of a full-term, full-power operating license. Fuel loading and testing authority leading to such a license may issue, in accordance with representations made to the court in which this proceeding is pending, five days following the date hereof, absent an agreement by the parties to waive the full period of advance notice.

The stipulation calls for approval by the Appeal Board. As we view it, our approval will have the effect of making the stipulation binding on the parties thereto, since the Appeal Board acts pursuant to delegated authority. To remove any doubt on that score, however, and as suggested by the parties, we hereby vacate those portions of the Appeal Board's decision which the parties have all agreed should be vacated.¹⁰

⁹Stipulation, paragraph 5. See, ALAB-287, *slip op.* pp. 12-13 (NRCI-75/9, 385), as modified by this order.

¹⁰The portions of the slip opinion hereby vacated are as follows: (a) Page 6, the last sentence of the first full paragraph beginning "Given the similarities . . ." (NRCI-75/9 382, the last full sentence of the second full paragraph); (b) All of page 7; (c) All of page 8; (d) All of page 9; (e) All of page 10; (f) The first three lines of page 11; (NRCI-75/9, last three lines of page 382; all of page 383 through page 384, 4th paragraph, 4th line, through word "contrast,"); (g) The first two lines of page 13 provided that the paragraph begin by adding the words "The intent of paragraph 5 was to provide . . ." (NRCI-75/9, page 385, second full paragraph, lines 1 and 2 through the word "intent"); (h) The last full sentence of the first paragraph of page 13 beginning "This intent of . . ." (NRCI-75/9, page 385; last full sentence of 2nd full paragraph); (i) The last paragraph of page 13; (j) All of page 14; (NRCI-75/9, page 385, last paragraph, through first paragraph of page 386); (k) The first three words of page 21 reading "As interpreted above." (NRCI-75/9, page 388, third full paragraph, line 1, first three words).

There are limits, of propriety if not law, on the selective editing of an opinion of a lower tribunal through the exercise of our power to vacate. In the unusual circumstances of this case, however, and in the interest of terminating already protracted litigation, we are reluctantly adopting that course here.

On November 24, 1975, the intervenors, Hudson River Fishermen's Association, Inc., and Save Our Stripers, filed a motion seeking a stay of ALAB-287 pending decision by the Commission. Since the Commission has now rendered its opinion, the motion for a stay is dismissed as moot. In any event, since all parties are agreed that the reactor may operate for five years with once-through cooling without substantial environmental harm, there is no possibility of irreparable harm.

It is so ORDERED.

By the Commission

SAMUEL J. CHILK
Secretary of the Commission

Dated at Washington, D. C.
this 2nd day of December, 1975.

Attachment: Appendix A (Stipulation)

APPENDIX A
STIPULATION

WHEREAS the Atomic Energy Commission has recognized that the public interest may be served through the fair and reasonable settlement of contested licensing proceedings;

WHEREAS the Hudson River Fishermen's Association ("HRFA"), Save Our Stripers ("SOS"), the Atomic Energy Council of the State of New York, the Attorney General of the State of New York, the Regulatory Staff of the Atomic Energy Commission ("the Regulatory Staff"), and the Consolidated Edison Company of New York, Inc. ("Applicant"), wish to settle all matters in controversy among them relating to the cooling system of Indian Point Unit No. 3 ("the Plant") and the protection of the aquatic biota of the Hudson River; and

WHEREAS the Atomic Safety and Licensing Appeal Board has ruled on related licensing conditions in *Consolidated Edison Company of New York, Inc.* (Indian Point Station, Unit No. 2), ALAB-188, RAI-74-4 323 (Apr. 4, 1974);

IT IS HEREBY STIPULATED by and among the attorneys for the parties to the above-captioned proceeding that:

1. The requests for a hearing in this proceeding are withdrawn.
2. HRFA, SOS, the Atomic Energy Council of the State of New York, the Attorney General of the State of New York, and Applicant agree that the Director of Regulation may issue to Applicant or its successor in interest an operating license for a term of 40 years for operation of the Plant at steady-state power levels not to exceed 3,025 megawatts thermal ("rated power"), provided that such license and any other operating license that may be issued earlier (for such purposes as fuel-loading, testing and limited power operation) shall contain the following condition:

Operation of Indian Point Unit No. 3 ("the Plant") with the once-through cooling system will be permitted during an interim period, the termination date for which will be September 15, 1980 ("the September 15 date"). Thereafter, except as hereinafter provided or as ordered by the Atomic Energy Commission, the Plant shall be operated with an approved closed-cycle cooling system. Such interim operation is subject to the following conditions, none of which shall be interpreted to limit or to affect in any way such other conditions as are imposed by the Atomic Energy Commission or any other governmental body (including, but not limited to, the State of New York) in accord with applicable law:

(a) Interim operation shall only be permitted to the extent that the requirements of this license (including such technical specifications as may be imposed by the Director of Regulation) to protect the aquatic biota of the Hudson River from any significant adverse impacts are satisfied; any necessary mitigating measure shall be promptly taken; such measures to include any authorized remedy deemed to be appropriate by the Atomic Energy Commission, including an acceleration of the September 15 date to an earlier date which is deemed reasonable and warranted by the circumstances.

(b) The September 15 date is subject to acceleration or extension depending upon whether the Licensee, acting with due diligence, obtains all governmental approvals required to proceed with the construction of the closed-cycle cooling system by the end of the twelfth month following submission of the evaluation required by subparagraph (g) ("the twelve-month deadline"). In the event all such government approvals are obtained a month or more prior to the twelve-month deadline, then the September 15 date shall be accelerated accordingly. In the event the Licensee has acted with due diligence in seeking all such governmental approvals, but has not obtained such approvals by the twelve-month deadline, then the September 15 date shall be extended accordingly. If this license is issued before May 1, 1975, the twelve-month deadline shall be June 1, 1976.

(c) If the Licensee believes that the empirical data collected during this interim operation justify an extension of the interim operation period, or other relief, it may make an application to the Atomic Energy Commission. The filing of such application in and of itself shall not warrant an extension of the interim operation period.

(d) After the commencement of construction of a closed-cycle cooling system, a request for an extension of the interim operation period will be considered by the Atomic Energy Commission on the basis of a showing of good cause by the Licensee which also includes a showing that the aquatic biota of the Hudson River will continue to be protected from any significant adverse impacts as a result of operation of the Plant during the period for which an extension is sought. The filing of such application in and of itself shall not warrant an extension of the interim operation period.

(e) The September 15 date is subject to extension if the empirical data referred to in subparagraph (c) are insufficient solely because the Plant has not operated at at least 40% of rated power for 45 or more full days (8:00 a.m. to 7:59 a.m.) during the period from May 15 to July 31 in each calendar year, commencing January 1, 1975. The September 15 date will be extended one year for each calendar year in which such operation is not achieved. However, no such extension shall be granted after the Plant has achieved such operation in two calendar years, and no more than two such extensions shall be granted. This subparagraph shall not bar an application for an extension under subparagraph (c) because of lack of operation. As long as an extension of the September 15 date is possible pursuant to this subparagraph, whenever the Plant operates at less than 20% of rated power for more than 12 consecutive hours during the May 15 to July 31 period, no more than three circulating water pumps shall be used.

(f) In addition to the reporting requirements otherwise imposed by this license, the Licensee is directed to file with the Commission and serve on the parties reports of its analysis of data collected during interim operation which bear on the environmental effects of once-through cooling on the aquatic biota of the Hudson River. Such reports shall be made publicly available. The first such report shall be made as soon as is feasible after the end of the 1975 striped bass spawning season but no later than July 31, 1976, and thereafter as significant new data become available.

(g) Evaluation of the economic and environmental impact of alternative closed-cycle cooling systems shall be made by the Licensee in order to determine a preferred system for installation. This evaluation shall be submitted to the Atomic Energy Commission by one month following the receipt of the full-term, full-power operating license, for review and approval prior to construction.

(h) The September 15 date assumes that the installation of a closed-cycle cooling system for the plant will require the relocation of the natural gas pipeline owned by Algonquin Gas Pipeline Company. If the final determination as to the location of the closed-cycle cooling system does not require the relocation of the pipeline, the date for the termination of the interim period of operation with the once-through cooling system will be May 1, 1980, and all dates in this condition shall be deemed changed to reflect those circumstances by substituting "May 1, 1980 ('the May 1 date') for "September 15, 1980 ('the September 15 date') and the "May 1 date" for "the September 15 date" throughout this condition and subparagraph (j)(1) of this condition shall be ineffective.

(i) No acceleration of the September 15 date shall be made pursuant to subparagraph (b) or (h) to the extent that such acceleration would result in the simultaneous excavation or outage for the construction of closed-cycle cooling systems for both Indian Point Unit Nos. 2 and 3.

(j) In construing and applying this condition, the following definitions shall govern:

(1) "governmental approvals" shall include, among others, approval by the Federal Power Commission of a certificate of public convenience and necessity, or amendment thereto, authorizing relocation of the natural gas pipeline owned by Algonquin Gas Pipeline Company and crossing the Plant site in order to permit excavation for a cooling tower adjacent to the Plant;

(2) "Licensee" shall include Applicant or any successor to its interest in the license to operate the Plant or any joint holder of the license to operate the Plant.

3. The Regulatory Staff agrees that the foregoing license condition is appropriate and that it will not require or recommend any conditions or provisions in its technical specifications or otherwise in the operating license with respect to operation of the Plant with once-through cooling inconsistent with said license condition.

4. (a) In the event that the Licensee applies for an extension of the interim operation period or other relief pursuant to subparagraph (c) or (d) of the license condition set forth in paragraph 2 of this stipulation, the Licensee shall serve such application on each party as provided in paragraph 7(a) hereof. The Regulatory Staff shall promptly review said application and shall issue a report stating the Regulatory Staff's findings and conclusions concerning said application and a recommendation that the relief requested be approved, modified, or denied. A copy of such report shall be served on each party to this stipulation.

(b) Within 30 days following such service, any party to this stipulation may serve upon the other parties and file with the Commission a request for a hearing concerning the Regulatory Staff's recommendation. Each party, including the Regulatory Staff, hereby agrees to support any request for a hearing made by any party pursuant to this subparagraph (b). Such support for a request for hearing by any party to this stipulation shall not be construed as agreement with the substantive position of the party initiating the request for hearing. Any hearing and all subsequent proceedings held pursuant to this paragraph shall be governed by the Rules of Practice of the Atomic Energy Commission, or any successor agency, as such rules may then be in effect pursuant to the Atomic Energy Act of 1954 as now or hereafter amended, and to any other applicable laws. If no request for hearing is made, the Director of Regulation or his successor may amend the license condition as recommended by the Regulatory Staff.

5. In the event that the Regulatory Staff proposes any modification of the license condition set forth in paragraph 2 of this stipulation, pursuant to subparagraph (a) of said condition or otherwise, the Regulatory Staff shall issue a report setting forth the proposed change and the basis therefor. A copy of such report shall be served on each party to this stipulation. Following service, the procedure set forth in paragraph 4(b) of this stipulation shall govern.

6. Acceptance of this stipulation shall not be deemed a waiver by any party hereto of the right, in any future hearing or other proceeding, to advance or to oppose any contention not expressly barred by this stipulation, including but not limited to the contention that the analysis and statement required by section 102 of the National Environmental Policy Act of 1969 must include: (a) analysis of the effects on the fisheries of the Hudson River of all power plants situated on the Hudson River or whose design or construction on the Hudson River is imminent as of the time of the hearing, and (b) analysis of the need for power generated by the Plant and the availability of power from other sources.

7. The Licensee will serve on the other parties to this stipulation:

(a) any request for modification of the September 15 date, pursuant to paragraph 2(c) or 3(d) hereof;

(b) a notice of any modification of the twelve-month deadline, with the reasons therefor; and

(c) a notice that the September 15 date has been advanced or set back pursuant to paragraph 2 hereof, with the reasons therefor.

The request referred to in subparagraph (a) above shall be served at the same time it is submitted to the Atomic Energy Commission, and the notices referred to in subparagraphs (b) and (c) above shall be served as soon as possible after the circumstances giving rise to the modification have occurred. If the twelve-month deadline is extended more than eight months pursuant to subparagraph (b) of paragraph 2 of this stipulation, any further extension shall be subject to the approval of the Regulatory Staff. The Licensee shall submit any such request for a postponement and the Staff shall review such request and issue within 30 days of receipt of such request a written determination whether due diligence has been exercised by the Licensee. A copy of said determination shall be served on each party to this stipulation. Within 30 days following such service, any party to this stipulation may serve a request for a hearing on the Secretary of the Atomic Energy Commission and all other parties. Each party, including the Regulatory Staff, hereby agrees to support any request for a hearing made by any party pursuant to this subparagraph. Such support for a request for hearing by any party to this stipulation shall not be construed as agreement with the substantive position of the party initiating the request for hearing. Any hearing and all subsequent proceedings held pursuant to this subparagraph shall be governed by the Rules of Practice of the Atomic Energy Commission, or any successor agency, as such rules may then be in effect pursuant to the Atomic Energy Act of 1954 as now or hereafter amended, and to any other applicable laws. In any hearing involving subparagraph (b) of paragraph 2 of this stipulation, the Licensee shall have the burden of proof on the issue of due diligence, and in any hearing involving subparagraph (d) of said paragraph 2, the Licensee shall have the burden of proof on the issue of good cause. Nothing herein shall be construed to limit any party's rights to relief under the Rules of

Practice or otherwise should it wish to maintain that a necessary governmental approval has been substantially granted or denied by passage of time or otherwise.

8. All parties agree to exercise due diligence in the performance of their various responsibilities under this stipulation. All parties also agree to cooperate in the expeditious processing of any applications for the various governmental approvals required under subparagraph (b) of paragraph 2 of this stipulation, and further agree not to object to the participation of any party to this stipulation in any proceeding relating to any such application.

9. Each party to this stipulation, other than the Regulatory Staff, expressly reserves the right to seek judicial review of any final order of the Atomic Energy Commission following a hearing under paragraph 4, 5, or 7 of this stipulation.

10. All parties, including the Regulatory Staff, shall serve on the other parties to this stipulation all correspondence, papers, and documents exchanged between them which relate to matters in controversy among the parties concerning the cooling system of the Plant or the protection of the aquatic biota of the Hudson River.

11. This stipulation shall be binding upon any successor-in-interest to the Applicant or any future co-applicant who shall come to hold or have any interest whatsoever in the operating license, and shall be binding upon any successor-in-interest to any of the parties hereto who has notice of the terms hereof as if such successor-in-interest had been an original party hereto, and shall remain in effect among the parties hereto and their successors-in-interest regardless of the addition or substitution of parties to the proceeding.

12. The license condition provisions of this stipulation shall not be final and binding on the parties hereto until this stipulation has been approved by the Atomic Safety and Licensing Board and the Atomic Safety and Licensing Appeal Board.

For the Applicant:

Harry H. Voigt

For the Attorney General
of the State of New York:

James P. Corcoran

For the Hudson River
Fishermen's Association:

Angus Macbeth

For the Regulatory Staff:

Joseph Gallo

For the New York State
Atomic Energy Council:

J. Bruce MacDonald

For Save Our Strippers:

Nicholas A. Robinson

Dated: January 13, 1975

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

CLI-75-15

COMMISSIONERS:

William A. Anders, Chairman
Marcus A. Rowden
Edward A. Mason
Victor Gilinsky
Richard T. Kennedy

In the Matter of
CONSUMERS POWER COMPANY
(Big Rock Point Nuclear
Power Station)

Docket No. 50-155
December 31, 1975

Upon requests for exemptions from certain aspects of the ECCS Final Acceptance Criteria, the Commission (1) grants exemption to permit facility operation until March 1, 1976 (subject to restrictive technical specifications) despite noncompliance with the requirement of invulnerability to subsequent equipment failures, including failure of offsite power, following the failure initiating the loss-of-coolant accident, pending modifications to the facility's ECCS and installation of a reactor depressurization system; and (2) denies requested life-of-plant exemption from requirements of the failure criterion as applied to the specific case of a break in either core spray line, but grants such exemption until March 1, 1976, and permits licensee to file further information in support of its broader exemption request.

TECHNICAL ISSUE DISCUSSED: ECCS

MEMORANDUM AND ORDER

Consumers Power Company, operator of the Big Rock Point Nuclear Power Station, has requested two exemptions from the requirements of 10 CFR 50.46, the Final Acceptance Criteria (FAC) for the Emergency Core Cooling System (ECCS). The first exemption would permit facility operation despite noncompliance with 10 CFR 50.46 (in particular, the requirement of Appendix A, Criterion 35, that the ECCS safety function can be accomplished despite failures, including failure of offsite power, in addition to the one initiating the

loss-of-coolant accident) until March 1, 1976, pending modifications to the facility's ECCS and installation of a reactor depressurization system. Operation during the interim would be subject to the most restrictive of the technical specifications proposed in the evaluation of ECCS performance required by 10 CFR 50.46 (a) (2) (ii) and set out in an attachment to the applicant's exemption request. The second requested exemption would relieve Big Rock Point until plant decommissioning from the requirements of the failure criterion of 10 CFR 50.46, Appendix K, Paragraph I.D.1 as applied to the specific case of a break in either core spray line.¹ At present, Big Rock Point is operating under a variance from the requirements of the Interim Acceptance Criteria (IAC) (see 36 *F.R.* 12247, as amended by 36 *F.R.* 24082) granted by the AEC's Director of Regulation (39 *F.R.* 29403). The purpose of the variance was to permit Consumers Power Company to undertake analysis of the measures required to bring Big Rock Point into conformity with the IAC, and to accomplish any necessary work on the plant. In accordance with the AEC's August 5, 1974, Memorandum and Order (8 AEC 213), compliance with the FAC has not been required during the pendency of the present exemption requests.

Notice of receipt of the present exemption requests was published in the *Federal Register* (40 *F.R.* 32273), and comments were solicited from interested persons and from the Director of Nuclear Reactor Regulation. No outside comments were received. Subsequently, in response to questions raised by the Office of the General Counsel, the Director submitted a Clarification of Comments.

The Director supports the first exemption request, finding that good cause exists to exempt Big Rock Point until March 1, 1976, from the requirements of 10 CFR 50.46 as applied to the deficiencies which are the subject of this request, and that the facility can operate under such an exemption without undue risk to public health and safety. It is apparent from the Director's comments and from the ECCS performance evaluation that, apart from the question of meeting the Appendix K, Paragraph I.D.1 criterion, Big Rock Point will meet the performance criteria of 10 CFR 50.46 (relating to peak clad temperature, maximum cladding oxidation, maximum hydrogen generation, coolable geometry, and long-term cooling) following completion of the proposed modifications, assuming operation subject to the proposed Technical Specifications. These modifications are to be made during the scheduled fuel outage from

¹ Although the criterion of Appendix K, Paragraph I.D.1, is entitled the "Single Failure Criterion," the criterion actually requires that the ECCS equipment function effectively despite the failure of a component following the break in the reactor coolant pressure boundary which initiates the loss-of-coolant accident. The additional requirement of Appendix A, criterion 35, that abundant emergency core cooling be provided despite a component failure, even when there is also a failure of either offsite or onsite power, makes clear that the system must be able to function despite multiple failures with respect to certain sequences of incidents.

January 9, 1976, to March 1, 1976, which includes most of the remaining period of operation covered by the first exemption request. In view of the Director's finding that operation of the facility in its present configuration involves no undue risk to public health and safety and of the heightened inspection requirements he has imposed, we see no emergent reason to disturb the normal outage schedule, and we therefore grant the first requested exemption.

The subject of the second exemption request is a recently discovered deficiency. If a loss-of-coolant accident is initiated by a break in one core spray line, the Big Rock Point ECCS is vulnerable should the valves in the alternate core spray line fail to open. If offsite power is not available, it would not be possible to keep the core covered in this situation. A capability for flooding the core through the plant feedwater system exists when offsite power is available. This flooding capability through use of non-ECCS systems is, of course, relevant to whether continued operation under an exemption would involve undue risk to the health and safety of the public.

We agree with the Director's interpretation of 10 CFR 50.46, Appendix K, Paragraph I.D.1, namely, that the ECCS must provide performance meeting the FAC in the event of the worst failure of a single active ECCS component, exclusive of the passive initiating failure which causes the loss-of-coolant accident. The Big Rock Point ECCS does not meet this criterion, since in the event of a loss-of-coolant accident caused by the initiating failure of one core spray line, an additional failure of an active component in the unaffected core spray line would disable the system.² Either corrective modification or an exemption from the criterion is required for the facility to continue operation.

The Commission finds that the material before it is not adequate for a final disposition of the second exemption request. In order to assess properly any risk involved in operating Big Rock Point under the proposed exemption and the cost of possible methods for limiting the risk, the Commission needs additional information. Such information should describe any factors unique to the Big Rock ECCS which would indicate an unusually low probability of occurrence of the relevant failure modes over the life of the plant. The Commission finds the statistical analysis based on operating experience described in the licensee's letter of August 22, 1975 to be an inadequate basis for decision. For example, this analysis does not address the probability of failure of other critical components of the system that must also function at the same time in the event of a loss-of-coolant accident and therefore could overestimate the reliability of this

²In a subsequent letter, dated August 22, 1975, the applicant asserted that the core spray system did in fact meet the test of Appendix K, Paragraph I.D.1. As this memorandum makes clear, we reject the interpretation of that paragraph offered by the applicant, that in the event of a loss-of-coolant accident initiated by passive failure of an ECCS component the ECCS need not be invulnerable to an additional failure. See note 1 above.

portion of the ECCS. The applicant should provide, insofar as possible, an improved analysis of the probability at Big Rock Point of those types of loss-of-coolant accidents and ECCS component failures relevant to the exemption request.

In addition, the applicant should indicate all alternate modes of operation or additional activities for maintaining the level of safety otherwise provided by full compliance with the requirements of 10 CFR 50.46, with an assessment of the costs involved for each. The submission should include full information on any equipment needed to comply with the criterion of Appendix K, Paragraph I.D.1, as interpreted in this memorandum and order, including cost and minimum time needed for procurement and installation. The submission should also include proposals for enhanced inspection procedures or other unusual measures which the applicant is prepared to undertake to reduce risk during interim operations pending correction of deficiencies, and any other information necessary for the Commission to evaluate the alternative of exempting Big Rock Point from the criterion of Appendix K, Paragraph I.D.1, for the time needed to correct the existing deficiency. This information should be provided the Commission by March 1, 1976.

Although we are not prepared to grant a plant-life exemption now, we do find cause to exempt Big Rock Point from the criterion of Appendix K, Paragraph I.D.1, until March 1, 1976, because of the recent discovery of the deficiency and the Director's determination that no undue risk to public health and safety is created by operation for the period covered by this exemption. It is our intention in granting this limited exemption to minimize disruption of the applicant's outage schedule while providing an opportunity for the applicant to submit additional information described in the paragraph above to support the plant-life exemption request and, in the alternative, a request for exemption for a specified period necessary to achieve compliance. The Commission will be prepared to act expeditiously upon an exemption request submitted with this additional documentation and other appropriate supporting material. We are also prepared to consider extending the present limited exemption to cover the duration of the next regular fueling cycle if necessary to avoid disrupting the Big Rock Point operations program, provided that the applicant can demonstrate a need for this additional time to complete the requested documentation, and provided that the Director finds that such an extension involves no undue hazard to public health and safety. Simultaneously with the issuance of this order, the Commission is issuing a request to the Director for information and comments on the possibility of such an extension.

In summary,

(1) As requested, exemption is granted from the requirements of 10 CFR 50.46 until March 1, 1976, with respect to the deficiencies in design and diversity of emergency systems and the diversity of emergency power sources which the proposed modifications to the Big Rock Point ECCS are intended to meet.

(2) Exemption is granted until March 1, 1976, from the criterion of 10 CFR 50.46, Appendix K, Paragraph I.D.1 as applied to the specific case of a break in either core spray line.

(3) Consumers Power Company shall comply with conditions now in effect relating to inspection, testing, or operating of the Big Rock Point facility and with such additional conditions as hereafter may be imposed by the Director of Nuclear Reactor Regulation relating to inspection and testing.

(4) Except for matters of redundancy and diversity covered by the exemptions granted in this order, the Director of Nuclear Reactor Regulation may impose further restrictions on reactor operation in accordance with 10 CFR 50.46(a)(2)(v) as may be required to bring operation of the Big Rock Point reactor into conformity with the performance requirements of 10 CFR 50.46.

It is so ORDERED.

By the Commission

SAMUEL J. CHILK
Secretary of the Commission

Dated at Washington, D. C.
this 31st day of December 1975.

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Alan S. Rosenthal, Chairman
Dr. Lawrence R. Quarles
Michael C. Farrar

In the Matter of
HOUSTON LIGHTING & POWER COMPANY
(Allens Creek Nuclear Generating
Station, Units 1 and 2)

Docket Nos. 50-466
50-467

Upon review *sua sponte* in construction permit proceeding of an early partial initial decision (LBP-75-66) of certain environmental and site suitability matters, Appeal Board endorses the Licensing Board's conclusion that matters reviewed to date demonstrate no reason why the site is not a suitable location for nuclear power reactors of the general size and type proposed, but emphasizes that (1) the Licensing Board has not completed its environmental or safety review; and (2) even those findings already made are subject to later revision should further developments or new information so warrant.

Partial initial decision affirmed.

RULES OF PRACTICE: PARTIAL INITIAL DECISION

That no construction activities are authorized by a partial initial decision does not mean that the decision lacks significance. A principal justification for early findings on site-related issues is that legitimate interests may be furthered by a prompt determination whether the proposed location for a facility has features which might render it unacceptable from an environmental or safety standpoint. *Potomac Electric Power Co.* (Douglas Point Nuclear Generating Station, Units 1 and 2), ALAB-277, NRCI-75/6 539 (June 18, 1975).

RULES OF PRACTICE: APPELLATE REVIEW

Partial initial decisions which do not authorize any construction activity are (1) appealable to the same extent as a partial initial decision which has the greater immediate effect of permitting the issuance of a limited work authorization; and (2) are subject to review by an appeal board *sua sponte*.

MEMORANDUM AND ORDER

December 9, 1975

This is a construction permit proceeding involving the Allens Creek Nuclear Generating Station, Units 1 and 2. In March 1975, the Licensing Board conducted an evidentiary hearing on environmental and site suitability matters. Thereafter, the applicant announced its intention to defer indefinitely the construction of the facility. Notwithstanding this development, the applicant invoked our recent *Douglas Point* opinion¹ to urge that the Board proceed to decision on certain of the issues canvassed in the hearing. The Board has done so in a partial initial decision rendered on November 11, 1975. LBP-75-66, NRCI-75/11 776. Based upon the findings contained therein, the Board has concluded (paragraph 134) that "[t]he matters reviewed to date . . . have demonstrated no reason why the [Allens Creek] site is not a suitable location for nuclear power reactors of the general size and type proposed" insofar as the Atomic Energy Act and relevant Commission regulations are concerned.

The partial initial decision does not pave the way for a limited work authorization for either unit of the facility. As 10 CFR 50.10 (e)(2) makes clear, the issuance of a limited work authorization is to be preceded by, *inter alia*, all of the environmental findings which must be made by a licensing board before the construction permit itself can be issued. Here, many of those environmental findings are still to be made.

That no construction activities are authorized by it does not mean, however, that the partial initial decision lacks significance. A principal justification for early findings on site-related issues is that legitimate interests may be furthered by a prompt determination whether the proposed location for the facility has features which might render it unacceptable from an environmental or safety standpoint. See *Douglas Point*, ALAB-277, *supra*, NRCI-75/6 at 545-47. Although not dispositive on the question of the acceptability of the site, the findings here made by the Licensing Board are directed to that end.

For these reasons, we think that partial initial decisions of this variety should be deemed appealable to the same extent as a partial initial decision which has the greater immediate effect of permitting the issuance of a limited work authorization. Beyond that, in the absence of exceptions, partial initial decisions such as that before us should be subject to review forthwith by this Board *sua sponte*.

¹ *Potomac Electric Power Co.* (Douglas Point Nuclear Generating Station, Units 1 and 2), ALAB-277, NRCI-75/6 539, 544-47 (June 18, 1975).

In the present instance, the NRC staff apparently reached the same conclusion on appealability. For it sought and obtained from us an extension of the time within which to file exceptions to the November 11 decision. We are now advised, however, that the staff has decided against taking an appeal. Likewise, the applicant has not appealed.

Given these circumstances, the Board has elected to make at this juncture an independent examination of the partial initial decision and the underlying record. This examination has disclosed nothing which might bring into serious question the Licensing Board's conclusion in paragraph 134, quoted above. Although we therefore endorse that conclusion, it bears reemphasis that (1) the Licensing Board has not completed its environmental or safety review; and (2) even those findings already made are subject to later revision should further developments or new information so warrant. Thus, our endorsement of what already has been decided below cannot be taken as reflecting a final judgment on the suitability of the proposed site or, indeed, on any other matter which must be considered before a limited work authorization or a construction permit can issue.

It is so ORDERED.

FOR THE ATOMIC SAFETY AND
LICENSING APPEAL BOARD

Margaret E. DuFlo
Secretary to the Appeal Board

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ALAB-302

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Alan S. Rosenthal, Chairman
Dr. Lawrence R. Quarles
Richard S. Salzman

In the Matter of
DUKE POWER COMPANY
(Perkins Nuclear Station,
Units 1, 2 and 3)

Docket Nos. STN 50-488
50-489
50-490

Appeal Board dismisses appeal from the Licensing Board's rejection of one of the contentions contained in a successful intervention petition on the ground that the rejection did not constitute an appealable order. *Puerto Rico Water Resources Authority* (North Coast Nuclear Plant, Unit 1), ALAB-286, NRCI-75/8 213 (August 26, 1975).

Mr. Thomas S. Erwin, Raleigh, North Carolina, for the intervenors, Mary Apperson Davis and the Yadkin River Committee.

DECISION

December 10, 1975

By order of November 21, 1975, the Licensing Board granted the untimely amended petition of Mary Apperson Davis and the Yadkin River Committee for leave to intervene in this construction permit proceeding involving the Perkins Nuclear Station, Units 1, 2 and 3. In doing so, the Board ruled on the acceptability of six contentions contained in the amended petition. Two were admitted to the proceeding; three were found unacceptable unless recast; the sixth (III(C)) was rejected outright.

The intervenors have noted an appeal to us from the Board's action on Contention III(C). Without reaching the question of the correctness of that

action, we dismiss the appeal on the authority of *Puerto Rico Water Resources Authority* (North Coast Nuclear Plant, Unit 1), ALAB-286, NRCI-75/8 213 (August 26, 1975). In that case, as here, successful petitioners for intervention attempted to take an interlocutory appeal from a licensing board determination which rejected certain of their contentions. We said:

10 CFR 2.730 (f) contains a general prohibition against interlocutory appeals from licensing board rulings made during the course of a proceeding. The single exception to this prohibition is found in 10 CFR 2.714a. Insofar as a petitioner for intervention is concerned, that Section allows an appeal from an order concerning his petition if—but only if—the order denied the petition outright. Although [appellants] attempt to invoke Section 2.714a here, it is plainly inapplicable since their intervention petition was granted at least in part.

In the circumstances, the appeal must be dismissed as foreclosed by the Rules of Practice of this Commission. *Boston Edison Co.* (Pilgrim Nuclear Generating Station, Unit 2), ALAB-269, NRCI-75/4R 411, 413 (April 28, 1975) and cases there cited.

NRCI-75/8 at 214; footnote omitted.

Appeal *dismissed* because not taken from an appealable order.

FOR THE ATOMIC SAFETY AND
LICENSING APPEAL BOARD

Margaret E. DuFlo
Secretary to the Appeal Board

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ALAB-303

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Alan S. Rosenthal, Chairman
Dr. John H. Buck
Richard S. Salzman

In the Matter of

Docket No. 50-367

NORTHERN INDIANA PUBLIC
SERVICE COMPANY

(Bailly Generating Station,
Nuclear 1)

Assistant Attorney General Marvin N. Benn, Chicago, Illinois, argued the cause for the State of Illinois, appellant; with him on the brief was Illinois Attorney General William J. Scott, Chicago, Illinois.

Mr. Edward W. Osann, Jr., Chicago, Illinois, argued the cause for the Joint Intervenors, Porter County Chapter of the Izaak Walton League of America *et al.*, appellants; with him on the brief was Mr. Robert J. Vollen, Chicago, Illinois.

Mr. William H. Eichhorn, Hammond, Indiana, argued the cause and filed a brief for the applicant, Northern Indiana Public Service Company, appellee; with him was Miss Kathleen H. Shea, Washington, D. C.

Mr. Stuart A. Treby argued the cause and filed a brief for the Nuclear Regulatory Commission Staff.

Upon exceptions to supplemental initial decision (LBP-75-3, NRCI-75/2 61 (1975)) approving the utilization of a slurry wall in lieu of a well-point dewatering system, the Appeal Board rules that (1) the Licensing Board's findings of fact are correct and supported by the record; (2) the Commission's partial limitation on discovery procedures did not prevent Joint Intervenors from obtaining crucial evidence; (3) the Licensing Board's exclusion of a

witness's testimony was correct; (4) the Licensing Board properly left to the applicant and the NRC staff the implementation of monitoring of localized well point dewatering; and (5) the Commission has carried out in total measure its NEPA obligations with respect to the Bailly project.

Supplemental initial decision affirmed.

RULES OF PRACTICE: EXPERT WITNESSES

The possibility that inconsistent or even contrary inferences could be drawn from an expert witness' testimony if the views of the opposition's experts are accepted does not prevent a licensing board's findings from being supported by substantial evidence.

RULES OF PRACTICE: APPELLATE REVIEW

In acting for the Commission, an appeal board need not accept every finding a licensing board makes. If, after giving a licensing board's decision the probative force it intrinsically commands, an appeal board is convinced that the record warrants a different result, it may reject or modify a licensing board's findings.

RULES OF PRACTICE: DISCOVERY

Denial of a party's request to depose certain witnesses is not prejudicial when those from whom depositions were sought later appear as witnesses at the hearing and are thus made available for cross-examination by the party seeking discovery.

RULES OF PRACTICE: APPELLATE REVIEW

To establish reversible error arising from curtailment of discovery procedures, a party must demonstrate that the action made it impossible to obtain crucial evidence, and implicit in such showing is proof that more diligent discovery was impossible.

RULES OF PRACTICE: DISCOVERY

In common with the Federal Rules of Civil Procedure, the Commission's Rule of Practice provides that discovery may be limited by order, or may not be had, or even may be had only by a method of discovery other than that selected by the party seeking discovery. (10 C.F.R. §§2.740(a), (b) and (c); Rule 26(a), (b) and (c), Federal Rules of Civil Procedure.)

NEPA: NEGATIVE DECLARATION

As judicially construed, NEPA imposes a duty upon an agency undertaking major federal action either to file a detailed environmental impact statement or

to furnish a negative declaration of reasons why it has determined the statement is not required.

NEPA: NEGATIVE DECLARATION

No precise format for a negative declaration has been prescribed; and it may be incorporated in an adjudicatory decision. Under the most stringent judicially-imposed standards it is enough that it appear from the declaration that the agency took a "hard look" at the problem, identified the "relevant areas of environmental concern," and made a "convincing case" that the impact is insignificant. *Maryland-National Cap. Pk. & Pl. Comm. v. U. S. Postal Service*, 487 F.2d 1029, 1039-40 (D.C. Cir. 1973).

TECHNICAL ISSUE DISCUSSED: Construction and use of a bentonite slurry wall

SUPPLEMENTAL DECISION

(Slurry Wall Construction)

December 17, 1975

The basic issue here is whether a "slurry wall" would be better than a "well point dewatering system" to keep groundwater from flowing into the excavation for the substructure of the Bailly nuclear power facility. The question is a salient one in this case but not because construction would be easier or cheaper under one method than the other. The Bailly site, though in an industrialized area, lies within several hundred yards of the western edge of the Indiana Dunes National Lakeshore. That federal parkland encompasses not only shoreside recreational facilities but also marsh areas of ecological significance, including Cowles Bog, a National Natural Landmark.¹ It is thus important to preclude the possibility that the Bailly excavation may cause a "drawdown" (*i.e.*, drain) of groundwater from the Lakeshore in quantities sufficient to disturb the ecology of those wetlands. Hence the concern about the method selected to keep the excavation dry.

With this preface, we turn to the particulars of the appeal before us. This proceeding has had a long history. The significant events up to the end of 1974

¹ Cowles Bog itself, however, is more than a mile from the Bailly site according to Joint Intervenors' evidence. See ALAB-224, 8 AEC 244, 274 (1974).

are detailed in our decision of December 24, 1974, ALAB-249, 8 AEC 980, and need not be retold here.² We pick up the saga at the beginning of this year.

As directed by our December 24th decision, the Licensing Board reopened a special hearing which the Commission itself had ordered in October 1974.³ The limited purpose of that hearing was to explore the environmental impact of the applicant's proposal—first formally advanced after we had affirmed the initial decision authorizing the issuance of a permit to construct the Bailly facility⁴—to change the means of keeping the excavation dry while building the facility's substructure. The applicant had originally proposed to employ a well point dewatering system for that purpose, which would be carefully monitored to insure that groundwater was not being drained from the wetlands.⁵ The new proposal called instead for the placing of a "slurry wall" around the excavation. "Such a wall is an impermeable barrier constructed . . . by implanting under pressure a mixture containing bentonite clay and cement in the soil around the site perimeter."⁶ Slurry walls have been employed previously in this country—most frequently in connection with drilling oil, gas and water wells⁷—and the construction technique which has been proposed here has been extensively used abroad.⁸ According to the applicant, a slurry wall would be a better guard against drawdown of water from the National Lakeshore than the well point dewatering system and, therefore, was preferable from an environmental standpoint.

The Licensing Board reopened the slurry wall hearing, received additional evidence and, on February 21st, entered a supplemental initial decision. That decision, after reviewing the environmental and other costs and benefits of the proposal, approved the utilization of a slurry wall in lieu of the well-point dewatering system. LBP-75-3, NRCI-75/2 61 (1975). The Joint Intervenors and the State of Illinois noted appeals which were argued before us on April 1st.

²In ALAB-249, we vacated the Licensing Board's original decision on the slurry wall issue (LBP-74-85, 8 AEC 901 (1974)) and ordered the hearing reopened on the basis of our determination that the trial schedule followed by that Board had unnecessarily and prejudicially precluded the full participation of the Joint Intervenors and the State of Illinois.

³CLI-74-39, 8 AEC 631 (1974).

⁴ALAB-224, 8 AEC 244 (1974), *affirming* LBP-74-19, 7 AEC 557 (1974).

⁵This system is described in the Licensing Board's initial decision authorizing the Bailly construction permit. See 7 AEC at 589-91.

⁶ALAB-249, *supra*, 8 AEC at 981-82.

⁷See S. W. Tr. 115, 684-87. "S. W. Tr." refers to the transcript of the supplemental Licensing Board hearing on the slurry wall issue. Although that hearing was held in two distinct sessions (October 31-November 7, 1974 and January 3-21, 1975), the transcript pages of the second hearing are numbered *seriatim* after those of the first.

⁸Applicant's written testimony, Attachment A, p. 1, following S.W. Tr. 199.

On that same date, the United States Court of Appeals for the Seventh Circuit handed down its ruling on the petition previously filed with it for review of our prior affirmance of the initial decision authorizing the issuance of a construction permit.⁹ For reasons unrelated to the slurry wall question, the Seventh Circuit set aside that affirmance and directed that the existing excavation on the site be filled in and that there be no further site dewatering. *Porter County Chapter of the Izaak Walton League v. A.E.C.*, 515 F.2d 513 (1975).¹⁰ The Court of Appeals' action had the effect of mooting, at least temporarily, the slurry wall question. Accordingly, we deferred further consideration of the appeals pending before us. Last month, however, the Supreme Court reversed the judgment of the Seventh Circuit and remanded the cause to that Court for consideration of other issues not reached in its April decision. *Northern Indiana Public Service Co. v. Porter County Chapter of the Izaak Walton League*, 423 U. S. —, 44 U.S.L.W. 3276 (November 11, 1975).

In these circumstances, it is now incumbent upon us to take up consideration of the slurry wall matter where we left off and proceed to a decision.¹¹ Therefore, we have carefully perused the briefs and record and closely examined the findings of fact in the Licensing Board's supplemental initial decision. For the reasons which follow, we have determined that those findings are correct and supported by the record and, additionally, that the Board below committed no reversible error of law. Accordingly, its decision is affirmed.

I

We cover in this portion of our decision the exceptions taken to the Licensing Board's findings of fact. In Part II (*infra*, pp. 868-877), we turn to the legal errors which the appellants claim that Board to have made.

A. RECORD AND FINDINGS BELOW.

1. *Salient features of the project.* The Bailly site borders Lake Michigan and the excavation needed for the facility must, at least in part, penetrate the water

⁹ See fn. 4, *supra*, The Atomic Energy Commission elected not to review our decision (ALAB-224) and, therefore, it represented final agency action on the matters encompassed by it. 10 C.F.R. § 2.762, 2.785 and 2.786.

¹⁰ Rehearing and rehearing *in banc* were denied on May 28, 1975.

¹¹ By order of November 14, 1975 we invited the parties to bring to our attention any recent developments bearing upon the issues presented by the appeals. Supplemental memoranda were filed by the Joint Intervenors and Illinois, to which the applicant and the staff responded.

table. The slurry wall proposal is intended as a means of keeping the groundwater from flooding that excavation while construction is in progress.¹² As its name implies, the wall would be put in place by implanting under pressure a "slurry" or fluid mix of cement, water and bentonite clay. Bentonite has a unique ability to absorb water. With the addition of an appropriate wetting agent¹³ it can swell up to twenty times its original volume in two hours; the addition of cement increases its viscosity and reduces the possibility of erosion. If completed as proposed, the process would create an essentially impermeable barrier which, unless physically removed, would remain indefinitely in the earth around the excavation. NRCI-75/2 at 65-66, 68.

Briefly summarized, construction would be undertaken in the following manner. About 70 tons of bentonite, 250 tons of cement and minor amounts of the wetting agent would be needed for the proposed wall. The dry bentonite, already mixed with the wetting agent, would be brought to the site by railroad car and stored in a silo; the cement would be trucked in. The bentonite would thereafter be piped from the storage silo to a mixing vessel and combined with water. After the bentonite and water became thoroughly mixed, the cement would be added to obtain the proper consistency and the resultant slurry mixture put in the ground with the assistance of a vibrating steel I-beam. *Id.* at 66-67.

The I-beam to be used is approximately 55 feet long, 31½ inches wide, with 12½ inch flanges and a 1¼ inch diameter injection pipe having a nozzle at its lower end welded lengthwise along its middle. The beam would be driven into the ground by a vibrator connected to its top. Both the beam and the vibrator would be suspended from a construction crane. A lead connected to the vibrator would keep the beam in an essentially upright position, plumbness to be maintained by a foreman using devices designed for that purpose. *Id.* at 67-68.

The slurry mixture would be injected under pressure as the I-beam penetrated the earth and until the required depth was reached at a point where an impervious layer of clay underlies the site.¹⁴ The I-beam would be driven about six inches into the clay and then extracted. During extraction the slurry injection would be continued to fill the void. The I-beam would then be moved, reinserted at a point overlapping its previous position by at least four inches, and the procedure repeated until the wall was completed. *Id.* at 68.

¹²When the facility is complete the basement walls will be waterproof and protection against groundwater flooding no longer will be needed. See 7 AEC at 589.

¹³The wetting agent proposed is polyacrylic acid (CH₂:CHCOOH).

¹⁴The Licensing Board found that borings made throughout the site area indicate that an impervious clay layer underlies the entire area to be enclosed by the slurry wall. NRCI-75/2 at 70. If, however, no clay layer were to be encountered for any length of the wall, the I-beam will be inserted as deeply as its physical dimensions allow to provide at least a partial barrier.

When fully installed, the top of the slurry wall would at all points extend above the highest expected ground water levels. Although the wall would have to be penetrated by various service pipes, it could be sealed around them. Any water captured within the excavation would be removed by two sump pumps. *Id.* at 69.

Installation of the slurry as described would be carried out by a joint venture of American and European contractors, the latter having had extensive experience abroad with this technique.¹⁵

2. *The Licensing Board's analysis of environmental consequences.* The Board below listed and analyzed the possible environmental consequences of using a slurry wall to keep the Bailly excavation dry. The question of the wall's effectiveness to one side (we discuss this later, pp. 866-867), the Board reviewed the need to bring the constituent materials to build the wall onto the site, the noise of installation, the likelihood that the installed slurry would "migrate," whether the wall would leach acid into the surrounding soil, the effects of vibrations during installation, the possible formation of molds, the wall's seismological significance, the likelihood that the groundwater flow off-site would be disturbed, the consequences of penetrating the wall, the effects of leaving the wall in place when no longer needed, and the consequences of taking it out. For reasons amply supported in the record, the Board below found no significant adverse environmental consequences attributable to the foregoing. NRCI-75/2 at 73-75.

In addition, the Board found using a slurry wall would have positive attributes. First, should there ever be an accidental leak of radioactive liquid within the confines of the wall after the plant is in operation, the wall would help prevent its spread offsite. NRCI-75/2 at 75. Second, and more significant, if successful, the wall would eliminate the need for extensive "dewatering" at the site. *Id.* at 76.

3. *The Board's cost-benefit evaluation.* The Licensing Board determined that the expense of installing the slurry wall was essentially comparable to that of using the well point dewatering system and negligible compared to the overall cost of the facility.¹⁶ Taking this into consideration along with its detailed findings on the wall's environmental ramifications, the Board concluded (NRCI-75/2 at 76-77, par. 39)

that the adverse environmental impacts of construction of the slurry wall are negligible and will not be felt off-site. Further, the Board can identify no adverse environmental impact associated with the slurry wall's remaining in place indefinitely after construction of the Bailly facility has been

¹⁵ NRCI-75/2 at 66. As we have mentioned, the slurry wall concept is not new to this country. This technique for installation is novel here, but the record indicates its successful use in Europe over the past 15 years. Applicant's prepared testimony, Attachment A, p. 1, following S.W. Tr. 199.

¹⁶ NRCI-75/2 at 76, par. 38.

concluded. On the benefit side, if the proposed slurry wall is successful, it will substantially reduce or eliminate the need for dewatering during construction, thereby providing additional protection from the possibility, although a remote possibility, of adverse environmental impact off-site, particularly on the Indiana Dunes National Lakeshore, from dewatering during construction . . . The Board has found that the likelihood of success of the slurry wall is high and therefore the additional environmental protection will probably be achieved. From a cost standpoint, the Board considers that the slurry wall cost is insignificant when the cost of the project as a whole is considered. Considering all factors, the Board finds that the use of the slurry wall construction technique is acceptable and that the construction of the slurry wall will be beneficial from an environmental standpoint.

While the Board found that the likelihood of the slurry wall's successful operation was "high," it did not overlook the possibility that it might fail. "In that event," the Board said (*id.* at 77, par. 40),

there would be an economic detriment to the Permittee, but again this would not be significant when the cost of the entire project is considered. While the ineffective slurry wall would remain in place on the [applicant's] property, this also would be insignificant since there are no identifiable adverse environmental impacts of the wall remaining in place. Also, the construction effects are negligible, so no real environmental detriment would occur even if the wall failed totally. The Board considers the risk of failure to be acceptable from an environmental standpoint when weighed against the potential for added environmental protection represented by the slurry wall proposal. In addition, if the wall is unsuccessful, the Permittee will revert either totally or in part to the well-point dewatering system which was previously considered at length and approved after having been found to be environmentally acceptable by the prior Licensing Board and the Appeal Board. [Footnote omitted].

4. *The monitoring condition.* As the Licensing Board noted, in the unlikely event that the slurry wall were a complete failure the applicant would simply revert to the previously approved well point dewatering system to keep the excavation dry. The Board was also alert to the possibility that the slurry wall might be less effective than anticipated. In such a case, the two sump pumps might be insufficient to keep the excavation dry and some dewatering might have to be accomplished through use of a limited number of well points concentrated near the leak. The Board was concerned that this procedure might impair the ability of the monitoring program (designed for an evenly spaced, full well point dewatering system) to detect and mitigate possible offsite effects from that limited dewatering. To guard against this contingency, the Board conditioned its approval of the slurry wall upon the requirement that the

applicant notify the staff before commencing any well point dewatering. The staff must then insure that a monitoring system adequate to protect against offsite drawdown is in place and working properly before allowing dewatering by the well point method to be undertaken.¹⁷

B. THE CHALLENGE TO THE FINDINGS BELOW.

In asking that we reverse the decision below, the appellants do not contend that the Licensing Board failed to consider one or more possible environmental effects of the slurry wall. Nor do they appear to take issue with the overwhelming majority of the Board's conclusions respecting the insignificance of those effects which were considered. Rather, the thrust of their argument is that (1) the record is inadequate to establish that a satisfactory slurry wall could be installed by the methods just described, and (2) a slurry wall could induce the formation of "sand boils" which, appellants say, might cause a greater drawdown of groundwater than well point dewatering or no slurry wall at all. We deal with each in turn.

1. *Installing the slurry wall.* The Licensing Board found that slurry walls have been successfully used to keep groundwater out of excavations in this country and abroad for many years, that the engineering contractors engaged to construct the wall have had extensive experience in Europe erecting structures of this type, that test walls have been successfully installed by these contractors at another site in Indiana, and that adequate studies were made of the geology and hydrology of the Bailly site to confirm that it has a soil structure suitable for a slurry wall. On this basis the Board concluded that the wall can be successfully constructed.¹⁸

These findings and conclusions are firmly supported in the record. They rest on the testimony of ten expert witnesses, eight offered by the applicant and two by the staff, including an engineer with a doctorate in hydrology, a biological chemist, and experienced structural, chemical and nuclear engineers. These experts were familiar with the properties and uses of bentonite and were well acquainted with slurry walls of various types. And two of the witnesses had taken part in supervising the installation, successfully, of slurry walls at six other projects using techniques similar to the ones proposed for the Bailly project.¹⁹ Of course, the appellants offered expert witnesses of their own who took issue with some of those conclusions. But it is now well settled that the possibility that inconsistent or even contrary inferences could be drawn if the views of the appellants' experts were accepted does not prevent the trial board's findings from being supported by substantial evidence. See *Illinois Cent. R. R. v. Norfolk & W. R.R.*, 385 U. S. 57, 69 (1966); *Consolo v. F.M.C.*, 383 U. S. 607, 620 (1966).

¹⁷ *Id.* at pp. 72-73 (paras. 21-23) and 87.

¹⁸ See NRCI-75/2 at 66 (par. 4); 70-72 (paras. 14-19).

¹⁹ S.W. Tr. 89-138, 522-25.

To be sure, in acting for the Commission, we need not accept every finding a licensing board makes and we do not apply the “clearly erroneous” test of Rule 52(a) of the Federal Rules of Civil Procedure, which governs appellate review of district court findings. But we are not free to disregard the fact that the Licensing Boards are the Commission’s primary fact finding tribunals. As we have previously ruled, the test—laid down by the courts—which we follow allows us to reject or modify a board’s findings “if, after giving its decision the probative force it intrinsically commands,” we are convinced that the record warrants a different result. *Niagara Mohawk Power Corporation* (Nine Mile Point Nuclear Station, Unit 2), ALAB-264, NRCI-75/4R 347, 357 (1975). See also *Wisconsin Electric Power Company* (Point Beach Nuclear Plant, Unit 2), ALAB-78, 5 AEC 319 (1972); *Hamlin Testing Laboratories v. A.E.C.*, 357 F.2d 632, 637 (6th Cir. 1966); *F.C.C. v. Allentown Broadcasting Corp.*, 349 U.S. 358, 364 (1955); Davis, *Administrative Law Treatise* (1958 Ed.), §§10.03 and 10.04.

Having applied that test to the record before us, we find no occasion to dispute the Board’s findings; indeed, we are convinced they are the correct ones. One of the appellants’ own witnesses conceded that “[t]he concept of the slurry wall is quite clear and I believe scientifically sound.”²⁰ The import of the appellants’ evidence, as the Board below correctly noted,²¹ “was not that the [applicant’s] evidence was inaccurate” but merely that additional study was needed. We do not agree. We think the Licensing Board acted reasonably in accepting the testimony of qualified and experienced engineers. We therefore reject appellants’ claim and hold that the record more than adequately demonstrates that the slurry wall can be installed successfully at the Bailly site as proposed by the applicant and that there is at least a reasonable likelihood that it will fulfill its intended purpose.

2. *Sand boils.* The Board below was equally correct in rejecting the appellants’ arguments about “sand boils”. This phenomenon, resembling boiling water on the surface of the ground, occurs when groundwater is forced upward, under pressure, to the sand surface.²² Appellants’ theory is that the installation of a slurry wall might somehow force groundwater into the excavation at a rate greater than if there were no such wall, hence increasing the possibility that there would be a “drawdown” of off-site groundwater. As the Board below noted, however, the appellants’ own witnesses were at odds with one another over how such a condition might come about. As the Board’s opinion indicates, the evidence in the record is that the prerequisite differential in underground artesian pressures is simply not present at the Bailly site. See NRCI-75/2 at 80-81.

²⁰ Cartwright (an hydrologist), at S.W. Tr. 1260. See also S.W. Tr. 1290-91.

²¹ NRCI-75/2 at 79.

²² See S.W. Tr. 1471.

Because Illinois concentrated much of its argument before us on the sand boil issue, however, we pressed counsel to explain how an aquifer directly connected to surface water in the Lakeshore (a necessary postulate if a sand boil caused through differential pressure were to have offsite effects in that area) could maintain high pressure at the Bailly site without erupting into the Lakeshore itself, a short distance away. (There is no evidence of any such eruption). We were given no adequate explanation. We agree with the Board below that there is simply no technical basis for the appellants' assumptions. Finally, the record indicates (through Illinois' own witness) that, even were sand boils to form, they could be corrected by either use of filters or local dewatering, thereby eliminating any threat to the slurry wall's effectiveness.²³

In short, we think the Board's conclusion that the slurry wall's advantages over well point dewatering in guarding against any off-site "drawdown" would not be undermined by the formation of sand boils (assuming they were to occur), is also amply supported in the record.²⁴

II

We turn now to the legal errors assertedly made by the Board below.

A. JOINT INTERVENORS' CLAIMED DENIAL OF DISCOVERY.

The Joint Intervenors insist that the proceeding must be remanded and reopened again because they were denied discovery.²⁵ To evaluate that claim, it is first necessary to take a moment and place it in context. The Commission ordered the Licensing Board to hear the slurry wall matter on October 3, 1974. On October 21, the Joint Intervenors served interrogatories and demands for documents on the applicant and staff and sought to depose two of applicant's employees, Messrs. Bohn and Dunn. The Commission's October 3rd order, however, permitted only limited discovery, providing in pertinent part that (8 AEC at 632):

At the earliest possible time, the regulatory staff and the [applicant] shall make available to those intervenors [who had contested the dewatering issue] all documents in their possession (not already provided) which are relevant to the slurry wall and which are not privileged. There shall be no additional discovery.

²³ See, e.g., DuMontelle, S.W. Tr. 1403-05.

²⁴ Appellants' other factual exceptions are amply answered by the opinion of the Board below; we see no occasion to address them further here except to note our concurrence in the opinion below on those issues.

²⁵ Illinois makes no similar claim. Illinois' Brief and Exceptions, March 7, 1975.

Before the hearing commenced, the staff and the applicant turned over all relevant documents to the Joint Intervenors (and the State of Illinois) as the Commission had directed.²⁶ The applicant initially objected to making any further discovery and sought a “protective order” (see 10 C.F.R. §2.740(c)) from the Licensing Board, arguing that it did not have to answer interrogatories or to respond to deposition requests because the Commission had ordered that “[t]here shall be no additional discovery.” The Board below agreed and ordered the deposition notice and the interrogatories stricken on October 25, 1975. But, in taking that action, it also observed that “the Board’s ruling herein should not be construed as restricting voluntary compliance by the [applicant] or the Staff with the discovery requests.”²⁷ Three days later the applicant—and two days thereafter the staff—voluntarily answered all the interrogatories.

The applicant did not make Messrs. Bohn and Dunn available for deposition. Those individuals, however, were to appear as witnesses at the hearing scheduled to start on October 31, and on October 23 the applicant had sent Joint Intervenors advance copies of their testimony. They did testify at that hearing but, unfortunately, an unavoidable conflict precluded Joint Intervenors counsel’s attendance on the days they appeared. For that reason (among others), on December 24 we ordered the proceedings reopened to give the intervening parties a chance to cross-examine those witnesses. See ALAB-249, *supra*, 8 AEC at 984-86. Thereafter the hearing reconvened on January 3, 1975, Messrs. Bohn and Dunn (and other witnesses) were recalled to the stand, and intervenors were afforded opportunity for extensive cross-examination. S.W. Tr. 677 *et seq.*

When read against this background, the Joint Intervenors’ discovery claims are seen to be insubstantial. They had demanded documents, answers to interrogatories and the right to depose two witnesses. No document they sought was withheld and no interrogatory they posed went unanswered. It is true, however, that Joint Intervenors were not permitted to depose the witnesses. But this was not prejudicial “because those from whom depositions were sought appeared as witnesses at the hearing and were thus made available to cross-examination by the party seeking discovery.” *N.L.R.B. v. Interboro Contractors, Inc.*, 432 F.2d 854, 860 (2nd Cir. 1970), *certiorari denied*, 402 U.S. 915 (1971). *Accord: N.L.R.B. v. Miami Coca-Cola Bottling Company*, 403 F.2d 994, 996-97 (5th Cir. 1968); *N.L.R.B. v. Safeway Steel Scaffolds Company*, 383 F.2d 273 (5th Cir. 1967). Moreover, to establish reversible error arising from curtailment of discovery procedures, a party must demonstrate that the action made it impossible to obtain crucial evidence, and implicit in such showing is proof that more diligent discovery was impossible. *Eli Lilly and Company v. Generix Drug Sales, Inc.*, 460 F.2d 1096, 1105 (5th Cir. 1972).

²⁶In so doing, the staff also waived any claim of privilege to which it might have been entitled.

²⁷Memorandum of October 29, 1975, p. 5, commenting on the order previously entered on October 25 (unpublished).

Here, as we noted, Joint Intervenors had in hand well before the hearing in January 1975 the prepared written testimony of the witnesses as well as the transcript of their oral testimony at the prior November hearing. Joint Intervenors are silent about what further information they needed from those witnesses before the January trial. Neither do they indicate why they could not have elicited any such information by interrogatory. (As the responses show, Mr. Bohn answered intervenors' interrogatories on behalf of the applicant.) In these circumstances, even if it were assumed *arguendo* that the Commission's limitation on discovery procedures was erroneous, it is not a ground for remanding the cause.

A party's right to use a particular discovery mode is no more unqualified in administrative than in judicial proceedings. Like the Federal Rules of Civil Procedure, this agency's Rules of Practice provide that discovery may be "limited by order," or may "not be had," or even "may be had only by a method of discovery other than that selected by the party seeking discovery."²⁸ The partial limitation on discovery procedures was consonant with the Commission's rules and neither arbitrary nor irrational. The limitation was motivated by the Commission's not unreasonable desire to insure, to the extent it could, that the hearing to explore the slurry wall system not unnecessarily delay judicial review of the main parts of the *Bailly* decision, then pending in the Seventh Circuit. The slurry wall issue was not only a narrow one, it represented a relatively minor aspect of construction of the proposed facility about which information was available to the parties through other modes of discovery. The Commission's decision to dispense with depositions for this single phase of the case in order to expedite the proceeding cannot fairly be criticized as an abuse of its discretion, much less as prejudicial to the Joint Intervenors.

Finally, we are familiar with no legal system—judicial or administrative—which allows a lower tribunal to disregard the directives of a superior one. Joint Intervenors could not avoid being aware that it was the Commission itself which had precluded any party from taking depositions. If, as they now claim, discovery by this means was essential to them, it was at the Commission's door that they should have gone knocking for relief, for the trial board was bound by the Commission's order. If this was not self-evident, we called it to the Joint Intervenors' attention last December 24th. ALAB-249, *supra*, 8 AEC at 986-87. Neither before nor after that reminder did they initiate any attempt to have the Commission reconsider and allow them to take depositions. Accordingly, they may not complain about it here.

²⁸ Compare 10 C.F.R. § 2.740(a), (b) and (c) with Rule 26(a), (b) and (c) of the Federal Rules of Civil Procedure.

B. THE EXCLUSION OF THE TESTIMONY OF MR. MARIE

The Joint Intervenors called Mr. James R. Marie, an hydrologist with the Interior Department's Geological Survey, to testify about the potential "drawdown" (lowering of the ground water level) at Bailly if the well point system were used to "dewater" the site. The Licensing Board excluded that testimony. It ruled that this issue had been fully explored previously and that the present hearing was limited to consideration of evidence relating to the environmental impact of the slurry wall system, a substitute for the well point system. NRCI-75/2 at 83-85. When asked to reconsider that ruling on the theory that Mr. Marie's testimony was relevant because well point dewatering might be used to remedy "sand boils" that might develop if the slurry wall were less than fully effective, the Board declined to do so. It pointed out that local well point dewatering to eliminate sand boils would involve substantially less than full well point dewatering (the subject of Mr. Marie's proffered testimony); that Mr. Marie testified that he had not done any analysis on partial effectiveness of the slurry wall; and, moreover, when he was asked whether he had any opinion about the environmental effects of the slurry wall he had responded, "none whatsoever". *Ibid.* See S.W. Tr. 1136-37, 1155.

The Board's rulings were correct for the reasons given. Rather than unnecessarily lengthen an already long opinion, we simply note our concurrence.

C. THE VALIDITY OF THE MONITORING CONDITION.

Appellants challenge the monitoring condition imposed by the Licensing Board (see pp. 865-866, *supra*) as an "abdication" of the Board's own responsibilities. In their view, the Board should not have left it either to the applicant to decide whether to employ localized well point dewatering or, in the event of such employment, to the staff to determine what action must be taken to insure the continuing effectiveness of the prescribed monitoring program. We think otherwise.

As we have seen, resort to localized well point dewatering would become necessary only if the sump pumps were unable to remove all the water seeping into the excavation. Patently, the applicant would be in the best position to determine whether this circumstance had arisen. Insofar as the staff's involvement is concerned, should full well point dewatering be employed it indisputably will fall to the staff to oversee the operation of the monitoring system to insure that it is properly working. This being so, we can perceive no good reason why, in the event of partial resort to well point dewatering, it should not likewise be the staff's function to ascertain whether the monitoring system might be affected thereby and to decree such alterations, if any, as might be

required to avoid the impairment of that system. This is manifestly not the kind of undertaking which can—or should—be assumed by an adjudicatory tribunal.

D. NATIONAL ENVIRONMENTAL POLICY ACT CONTENTIONS.

Notwithstanding the sufficiently detailed analysis by the Licensing Board of each suggested possible environmental aspect of the slurry wall proposal, the Joint Intervenors and Illinois have told us that the Commission has not discharged its responsibilities under the National Environmental Policy Act. In their brief on the appeal, the Joint Intervenors insisted that the Commission's staff was obliged to amend or supplement its Final Environmental Statement (FES) on the Bailly project to include a discussion of the proposal. Beyond that, the staff was there charged with a failure to have evaluated independently the environmental impact of slurry wall use. Now, in supplemental memoranda (see fn. 11, *supra*), both appellants advance for the first time the further claim that, at the very least, the staff was obligated by 10 C.F.R. §§ 51.5(c) and 51.7 (1975 ed.) to prepare a "negative declaration"; *i.e.*, a statement of the Commission's reasons for not preparing an environmental impact statement, accompanied by its appraisal of the basis for that decision. Neither of those parties raised this point before the Licensing Board or in the exceptions filed to that Board's supplemental initial decision. What has seemingly prompted its assertion at the eleventh hour is the fact that, during the course of oral argument last April, we inquired regarding the applicability of 10 C.F.R. Part 51 to this proceeding.

1. The Joint Intervenors have favored us with no analysis to support their bald assertion that Commission acceptance of the slurry wall proposal is "clearly" major federal action which requires the preparation of an environmental impact statement in order to satisfy NEPA dictates. Our own evaluation of the question leaves us unconvinced that this is so.

Obviously, the licensing of the construction of the Bailly facility at the selected site was a federal action both "major" and of potential significant effect upon the "quality of the human environment" within the meaning of 42 U.S.C. § 4332(2)(C). Thus, the Commission prepared a comprehensive environmental impact statement on the facility. Moreover, prior to the authorization of construction, all consequential environmental issues were thoroughly canvassed by the Licensing Board and, on review, by this Board—both of which concluded that the adjudicatory record established that the building of the facility would not cause significant environmental harm.

What is involved here is, once again, simply a proposed alteration in the method to be utilized for keeping the excavation site dry while the facility's substructure is being put into place. As we have seen, after obtaining its construction permit, the applicant came to the conclusion that a slurry wall would likely work out even more satisfactorily than the well point dewatering system which it had previously proposed to employ for that purpose.

In our view, it is at best doubtful that the term "major" can be reasonably applied to a Commission action which does no more than allow a licensee to turn to a new, and assertedly superior, construction technique in carrying out one limited aspect of the overall process of building a nuclear plant. Be that as it may, after a full hearing and on findings which we have concluded to be amply supported by the record adduced at that hearing, the Licensing Board has determined that substitution of the slurry wall for the well point dewatering system would have but a negligible impact upon the quality of the human environment.

In this regard, we think that the Joint Intervenor^s erroneously construe the Commission's October 3, 1974 order as reflecting a belief that the slurry wall proposal triggered a NEPA responsibility to prepare an environmental impact statement on the proposal. Apart from the fact that it does not mention an environmental impact statement, read in its entirety the order conveys the distinct impression that the Commission thought that an expedited evidentiary consideration of the "environmental effects, if any, of the slurry wall" would suffice. 8 AEC at 631-32.

2. The argument of the Joint Intervenor^s that the staff did not itself conduct a sufficient appraisal of the slurry wall proposal stands on no firmer footing. Our examination of the record as a whole satisfies us that the proposal was thoroughly assessed by qualified staff experts who testified at the hearing with regard to the conclusions derived from that assessment.

True enough, the staff witnesses had relied upon technical information supplied by the applicant with respect to both the method by which the slurry wall would be installed and the past utilization of bentonite slurry to form fluid barriers. But it is difficult to understand why this was improper. Obviously, the staff was called upon to evaluate the proposal in terms of the procedures which its proponent—the applicant—intended to invoke in putting it into effect. And we have been pointed to no requirement of statute or regulation which imposes a duty upon the staff to conduct its own field investigations in connection with proposals of this type. It appears from the record that the principal staff witness had prior experience with bentonite slurry walls. It also appears that he, as well as the other staff witness, had reviewed the information supplied by the applicant in the light of that experience as well as in consultation with foundation, hydraulic and construction engineers (S.W. Tr. 539, 935-36). Especially since there is no claim that the information was inaccurate, that approach was acceptable.

3. We turn now to the belated claim of the Joint Intervenor^s and Illinois that, if no FES were to be prepared on the slurry wall proposal, the staff was required by 10 C.F.R. Part 51—specifically Sections 51.5(c) and 51.7—to file a negative declaration. We agree with the applicant that the failure to have timely asserted this claim constituted a waiver of it. The fact remains, however, that we ourselves raised at oral argument the question of the applicability of

Part 51 of this proceeding. We did so because of our independent responsibility to insure that the requirements of NEPA and the implementing regulations of this Commission have been satisfied. See, e.g., *Texas Utilities Generating Co.* (Comanche Peak Steam Electric Station, Units 1 and 2), ALAB-255, NRCI-75/1 3 (January 23, 1975). Accordingly, we decide the point even though it has not been properly placed before us by the appellants.

(a) Part 51 is entitled "Licensing and Regulatory Policy and Procedures for Environmental Protection" and was promulgated in July 1974 as a replacement for Appendix D to 10 C.F.R. Part 50 (1974 ed.). By its express terms, it is not applicable to facility licensing proceedings in which the notice of hearing was published in the *Federal Register* on or before August 19, 1974—those proceedings remain subject to the provisions of Appendix D to Part 50 which were in effect on that date.²⁹

Thus, whether Part 51 applies here hinges in turn upon whether the slurry wall hearing constituted a reopening of the construction permit proceeding (which, of course, had been noticed for hearing long before August 1974) or, instead, was the main ingredient of an entirely new facility licensing proceeding. In its supplemental initial decision, the Licensing Board concluded, albeit in a different context, that the Commission's October 3, 1974 order indicated "that this is not a separate proceeding but is a reopening of the basic licensing proceeding for the limited purpose of determining the environmental impact of the slurry wall." NRCI-75/2 at 86.

We agree. Indeed, to us the relevant portions of the text of the October 3 order preclude any other interpretation:

As a general rule, records should not be reopened merely because some detail involving plant construction or operation has been changed. Though the addition of a slurry wall might not ordinarily warrant reopening, circumstances in the present case suggest that a limited expedited hearing is appropriate. The effect of dewatering upon the Lakeshore was a seriously contested issue throughout the proceedings. At the hearings, dewatering was the sole method considered for purposes of keeping the site dry. A shift, in an area involving a contested issue which played a critical role in the prior hearings, tends to undermine the significance of the adjudicatory system which the Act requires. This is especially so where, as here, the interval between the close of adjudicatory proceedings and the slurry wall approval was not great. . . .

²⁹ Appendix D to Part 50 did not impose a negative declaration requirement. In many other respects, however, Part 51 reflects provisions originally found in Appendix D. This doubtless explains the passing reference in some recent decisions to Part 51 despite the fact that Appendix D governed the proceeding to which the decision was addressed. E.g., *Allied-General Nuclear Services* (Barnwell Nuclear Plant Separations Facility), ALAB-296, NRCI-75/10 671 (October 30, 1975), referring to a portion of 10 C.F.R. 51.52(b)(3) which had a precise equivalent in paragraph A.11 of Appendix D.

The hearing shall be conducted before an Atomic Safety and Licensing Board to be appointed by the Chairman of the Licensing Board Panel. *The parties shall include the permittee, the regulatory staff, and those intervenors who contested the dewatering issue in the prior hearings. . . .*

8 AEC at 631-32 (emphasis supplied).³⁰ Further, the Commission took note (fn. 1, *id.* at 632) of the pendency in the Court of Appeals for the Seventh Circuit of the petition for review of our decision (ALAB-224, *supra*) affirming the Licensing Board's authorization of the construction permit. It then stated: "Counsel for the Commission are instructed to file appropriate motions with the Court of Appeals seeking leave to conduct the further hearings directed by this Memorandum and Order." Of course, such leave would not have been required had the slurry wall hearing been thought to be a part of an entirely distinct proceeding rather than a reopening of the construction permit proceeding over which, by reason of the petition for review, the Seventh Circuit had assumed exclusive jurisdiction.

(b) It follows from the foregoing that, irrespective of whether the approval of the use of a slurry wall to keep the Bailly site excavation dry constitutes "major" federal action, no applicable regulation of this Commission required the staff to prepare a negative declaration in advance of the hearing.³¹ The question remains whether, still assuming *arguendo* that major federal action is here involved, such an obligation arose by reason of the interpretation given NEPA by the courts. We conclude not.

There can be little doubt that, as judicially construed, NEPA imposes a duty upon the agency either to file a detailed environmental impact statement or to furnish reasons why it has determined the statement is not required. See, *e.g.*, *Nucleus of Chicago Homeowners v. Lynn*, ___ F.2d ___, 8 ERC 1388 (7th Cir. October 6, 1975); *First National Bank of Chicago v. Richardson*, 484 F.2d 1369, 1381 (7th Cir. 1973); *Arizona Public Service Co. v. Federal Power Comm.*, 483 F.2d 1275, 1282 (D. C. Cir. 1973); *Hanly v. Mitchell*, 460 F.2d 640, 647 (2nd Cir.), *certiorari denied*, 409 U. S. 990 (1972); *Hanly v. Kleindienst*, 471 F.2d 823, 836 (2nd Cir. 1972), *certiorari denied*, 412 U. S. 908 (1973); *Harlem Valley Transportation Ass'n. v. Stafford*, 500 F.2d 328, 337 (2nd Cir.

³⁰That the Commission directed the Chairman of the Licensing Board Panel to appoint a licensing board to conduct the slurry wall hearing does not detract from the conclusion that the construction permit proceeding was being reopened. As the Commission was aware, the Chairman of the *Bailly* Licensing Board had died in July 1974. The Board assigned to the slurry wall hearing consisted of the same two technical members who had served throughout in this proceeding and a new chairman designated to replace the deceased former chairman.

³¹For purposes of our just concluded discussion of Part 51, we assumed that slurry wall approval constitutes "major" federal action. If (as we believe) it does not, then there exists a second, independent reason why Part 51 is here inapplicable. See 10 C.F.R. § 51.1.

1974); and *Sierra Club v. Morton*, 514 F.2d 856, 882 (D. C. Cir. 1975). But no precise format for the negative declaration has been prescribed; under the most stringent judicially-imposed standards it is enough that it appear from the declaration that the agency took a "hard look" at the problem, identified the "relevant areas of environmental concern," and made a "convincing case" that the impact is insignificant. *Maryland-National Cap. Pk. & Pl. Comm. v. U. S. Postal Service*, 487 f.2d 1029, 1039-40 (D. C. Cir. 1973). Further, the declaration may be incorporated in an adjudicatory decision. *Arizona Public Service Co. v. Federal Power Commission*, 490 F. 2d 783 (D. C. Cir. 1974).

The Licensing Board's supplemental initial decision here contains all of the requisite ingredients of a negative declaration. As earlier seen, that Board therein considered every reasonably conceivable environmental effect of slurry wall utilization and assigned detailed reasons for its conclusion that the overall environmental impact would be negligible. Moreover, those reasons find ample support in an adjudicatory record, developed at a public hearing in which full participational rights were given to the principal opponents of the Bailly facility. *Cf. Hanly v. Kleindienst*, *supra*, 471 F. 2d at 836. Thus the requirement has been met that the agency "develop a reviewable administrative record supportive of a decision not to file an impact statement". *Nucleus of Chicago Homeowners v. Lynn*, *supra*, 8 ERC at 1391.

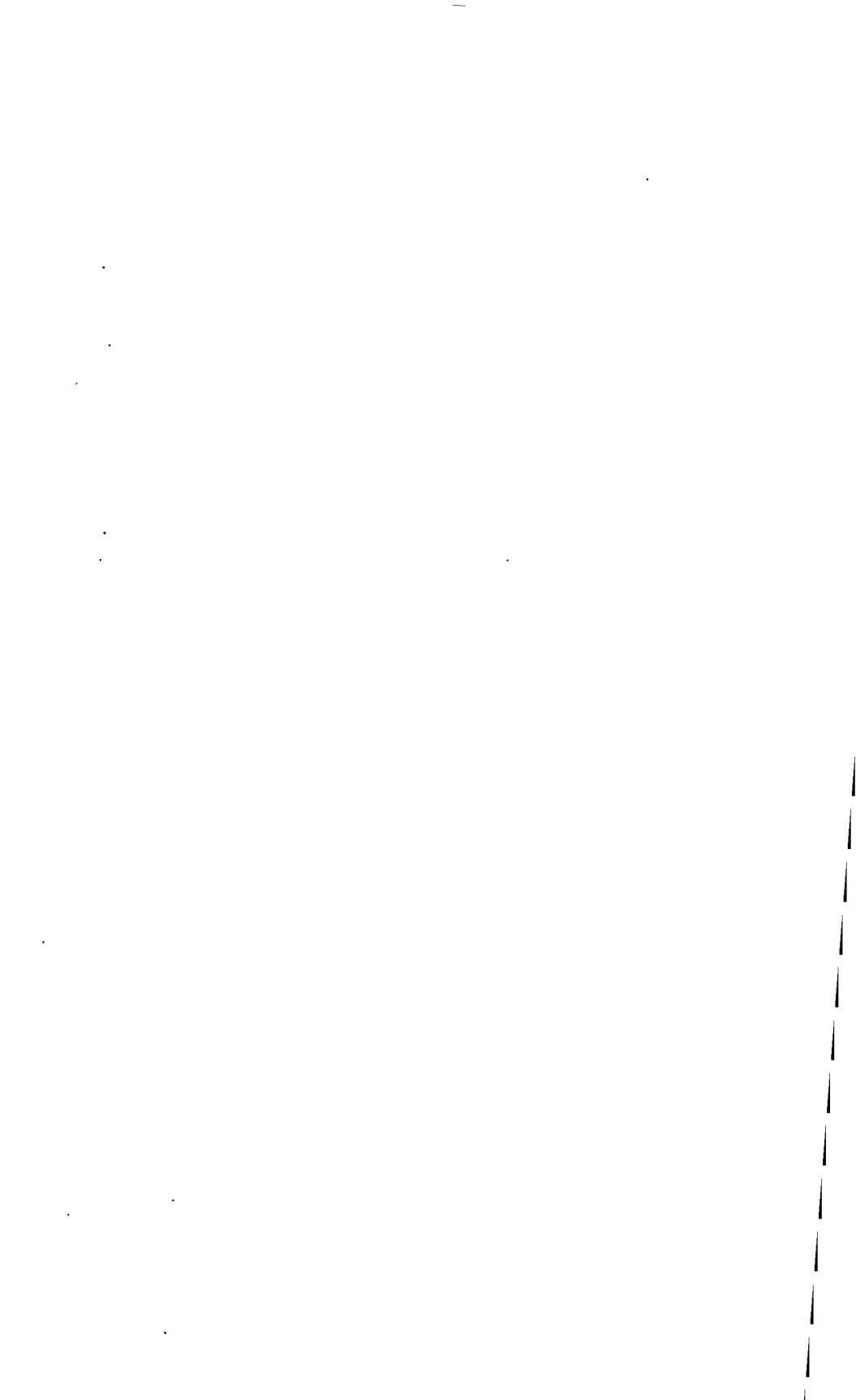
4. In sum, we are satisfied that this Commission has carried out in total measure its NEPA obligations with respect to the Bailly project in general and the concern for preserving the integrity of the National Lakeshore in particular. The inescapable facts are: (1) both in the FES for the facility and in the environmental hearing which preceded the issuance of the construction permit, there was extended consideration of the possible impact of excavation activities upon the wetlands of the National Lakeshore; (2) on the basis of the disclosures in the FES and at that hearing, the Licensing Board found (and we agreed) that the Lakeshore would be adequately protected through the utilization of a properly monitored well point dewatering system; (3) when the applicant thereafter proposed the substitution of an assertedly still better method for avoiding significant drainage of ground water from the Lakeshore, the Commission determined that the environmental effects (if any) of the employment of that method should be explored in a further evidentiary hearing; (4) all of the earlier participants—as well as a newcomer on the scene (the State of Illinois)—were allowed to introduce their own evidence as well as to cross-examine the witnesses for other parties regarding any potential environmental effect of the slurry wall; and, finally, (5) the Licensing Board has rendered a decision evaluating each suggested effect and that decision has now had our independent review. Given all these facts, it cannot be fairly said that the potential environmental consequences to the Lakeshore of facility construction have not received the close scrutiny contemplated by NEPA. To the contrary, it appears that the Joint Intervenors' real grievance is not that the

dewatering question has been insufficiently examined. Rather, their dissatisfaction stems from the fact that the Licensing Board has reached a conclusion on the merits of the slurry wall other than the one they advocated. We have found, however, the Board's conclusion to be correct. This being so, NEPA does not call for disturbing the result arrived at by the Board below.

The decision of the Licensing Board is *affirmed*.
It is so ORDERED.

FOR THE ATOMIC SAFETY AND
LICENSING APPEAL BOARD

Margaret E. DuFlo
Secretary to the Appeal Board



UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

LBP-75-70

ATOMIC SAFETY AND LICENSING BOARD

Frederic J. Coufal, Chairman
R. B. Briggs, Member
Lester Kornblith, Jr., Member

In the Matter of
VIRGINIA ELECTRIC AND POWER
COMPANY

Docket Nos. 50-338
50-339
December 5, 1975

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

In proceeding under 10 C.F.R. Part 50, Appendix D, Section B (1974), involving route of proposed transmission line to serve North Anna facility, Licensing Board finds that, after balancing the environmental, economic, technical and other benefits and costs, the route proposed by the applicant is the appropriate one.

Construction permits authorized to be continued in effect, subject to being modified to include specified conditions relating to construction of transmission line; previous order suspending work on transmission line authorized to be suspended.

Appearances

Michael W. Maupin, Esq., Hunton, Williams, Gay and Gibson, 700 East Main Street, P. O. Box 1535, Richmond, Virginia and Randolph W. Church, Jr., Esq., McCandlish, Lillard, Church and Best, 4069 Chain Bridge Road, Fairfax, Virginia, for the Applicant, Virginia Electric & Power Company

Carroll J. Savage, Esq., 1700 Pennsylvania Avenue, N. W., Washington, D.C. and John T. Schell, Esq., Kinney, Smith and Bitner, 2007 North 15th Street, Arlington, Virginia, for the Intervenor, Fauquier League for Environmental Protection

Clarence T. Kipps, Jr., Esq., Miller and Chevalier,
1700 Pennsylvania Avenue, N.W., Washington, D.C., for the
Intervenor, Culpeper League for Environmental Protection

Gregory Lewis, Esq., and Albert V. Carr, Jr., Esq., Nuclear
Regulatory Commission, Washington, D. C., for the NRC
Regulatory Staff

INITIAL DECISION (Appendix D, Section B)

1. This Decision is concerned with the route of a proposed power line originating at Applicant's North Anna Power Station plant now under construction in Louisa County, Virginia and extending to Morrisville in the same state. A short history of the proceeding is appropriate.¹ Construction permits were issued for North Anna Units 1 and 2 in 1970 before the adoption of Section B of Appendix D to 10 CFR 50. After adoption of that section and on December 19, 1972, a Notice of Hearing was published. A number of petitions to intervene were filed and several petitioners were admitted as parties including Clarence T. Kipps and J. R. Bowen representing themselves and the Culpeper County League for Environmental Protection (all hereafter referred to as Culpeper League) and the Fauquier League for Environmental Protection (Fauquier League).

2. Culpeper League and Fauquier League were concerned only with the route of the line mentioned but the balance of the intervenors had no interest in that matter. The parties agreed and the Board concurred that the issues other than those having to do with routing of the line would be heard separately. Those issues were heard and were resolved in a Partial Initial Decision.²

3. Meanwhile it was agreed by the parties to the transmission line issues³ that the hearing would be delayed until the State Corporation Commission of Virginia had decided whether or not to issue a certificate of public convenience and necessity for the line. Such a certificate issued May 15, 1975 (App. T-9), and, after some delay, the hearing began September 19, 1975, and concluded September 30, 1975. A list of the witnesses and the location of the testimony of

¹For a detailed history, see the Partial Initial Decision issued October 30, 1974, RAI-74-10, 773.

²*Ibid.*

³These issues were stipulated; a copy of the stipulation appears as Attachment C hereto. [Attachment C is omitted from this publication but is available at the NRC's Public Document Room, Washington, D. C.]

each in the transcript appears as Attachment A hereto; a list of the exhibits received in evidence appears as Attachment B. [Attachments A and B are omitted from this publication but are available at the NRC's Public Document Room, Washington, D. C.]

4. The basic issue before this Board is quite simple—whether, after weighing the environmental, economic, technical and other benefits and costs, the appropriate route for a south to north transmission line from the North Anna Power Station is that proposed by the Applicant (the Applicant's route) or another. Seven days of testimony have been devoted to this subject. At least 15 routes or alternatives to sections of routes have been considered in varying degrees of detail during the hearings and the Board considered others on its own initiative. None, of course, is ideal, and the nature and importance of the deficiencies vary. Construction of a line along any of the routes would require the clearing of new or additional right-of-way and would be subject to the temporary destructive effects of construction activities. The major and almost exclusive concern of the intervening parties was, however, the long term visual impact of the transmission lines, towers, and corridor. Before discussing the individual deficiencies, it is appropriate to describe the Applicant's route and to consider in general the area to be traversed by the route and by alternate routes.

5. According to the Applicant's plan the proposed 500 kV line, starting at the North Anna Power Station in Louisa County would cross Lake Anna into Spotsylvania County and proceed northward through that county and Orange County almost to the Rapidan River. Then, trending toward the northeast, it would cross the Rapidan River, pass through Culpeper County, and cross the Rappahannock River into Fauquier County where it would terminate at a proposed new substation near Morrisville. The route covers a distance of 32.6 miles and the 150 ft right-of-way for a 500 kV line would occupy about 593 acres.⁴ Morrisville is located along a proposed 500 kV line that would begin at the Applicant's Mt. Storm plant in West Virginia, go to Morrisville, and continue east about 8 miles to a point known as Bristers where it would join an existing line from Loudon, Va. The Intervenor contend that Bristers would equally well serve as the terminus for the North Anna line if a different route were adopted. Routes terminating at Morrisville, at Bristers, and at an intermediate point were among the alternates considered by the Board.

6. The land between North Anna and Morrisville-Bristers is largely forested and moderately rolling. Some cultivated areas and lumbered areas are found along the Applicant's and the alternate routes. Except for a development known as "Lake of the Woods" there are only occasional farm dwellings or other structures along any of the routes. The topographical relief is relatively small and only in a few places do the maximum and minimum elevations differ by as much

⁴The Applicant is acquiring a 235 ft right-of-way and proposes to parallel the 500 kV line with a 230 kV line at some future time. As explained in Paragraph 32 only the requirements and effects of the 500 kV line were considered in this decision.

as 100 feet within a distance of a mile. Thus, there are no routes where a line such as this, with towers about 100 ft high, could, in the absence of vegetation, be significantly hidden by features of the terrain. The nature of the vegetation is such, however, that at most places an observer on the ground is shielded from the line (rather than the transmission line being shielded). Consequently, a line, along any of the routes, would be visible only from points almost directly under it and from some cleared areas. It appeared to the Board, from its inspections of the area and study of the topographic maps among the exhibits and from the testimony in the record, that, in general there is little, if any, choice among the various routes with respect to overall visibility of the line and that significant changes in degree of visibility could not be achieved by making minor adjustments in the routes such as placing the line higher or lower on the slopes or behind a row of hills.

7. The Rapidan and Rappahannock Rivers flow generally from west to east and join about 8 miles east of the crossings on the Applicant's route. The area between the rivers and along the rivers from several miles west of the proposed crossings on that route to several miles below the confluence is considered to possess scenic, natural, and historic values of statewide significance. The Rappahannock and Rapidan Rivers are being considered for inclusion in the National and State Scenic River Systems. Although access to the rivers and the area in general is presently very limited, plans for the future call for small park and access areas along the rivers and for a 1000 to 2000 acre state park between the rivers. Preferably, the large park would be near the confluence of the rivers but, recognizing that a location along a river would be most desirable, it might be anywhere on the Culpeper peninsula. Because of the recreational potential of the area, the Virginia Commission of Outdoor Recreation considers it undesirable for the 500 kV transmission line to be located between the town of Richardsville (about 1.6 miles east of the Applicant's route) and the confluence of the rivers.

8. The Applicant's route was selected, surveyed and staked in about 1969. Since that time several events have occurred which have the potential for requiring, or making reasonable, changes in the route. NEPA was enacted in January 1970, the Federal Power Commission guidelines for the design and location of rights-of-way and transmission facilities were issued in November 1970 and the Department of Interior—Department of Agriculture criteria were issued in October 1970. The Salem Church Dam project, which involved a dam on the Rappahannock River near Fredericksburg that would create an impoundment extending several miles upstream of the river crossings on the Applicant's route, was, for all practical purposes, abandoned in February 1975 by the Corps of Engineers, as being uneconomic. Two adjoining tracts of land, the Setti (or Thorn) tract and the Maddux tract, totaling about 3800 acres along the north bank of the Rappahannock River and through which the Applicant's route would pass, were acquired in June 1975 by the Virginia Commission of

Game and Inland Fisheries (Game Commission) with assistance from the Nature Conservancy for the purpose of establishing the Rappahannock Wildlife Management Area. With regard to these events the Intervenor's major contentions can be summarized as follows:

a. Since the Applicant's route was chosen prior to the enactment of NEPA and publication of the guidelines, choices were guided primarily by economic considerations with little concern for the protection of environmental values. No significant changes have been made in the original proposal for the route so it does not satisfy the requirements of NEPA or the guidelines. Specifically, priority was not given to the use of existing transmission line corridors in establishing the route. Advantage was not taken of features of the terrain to conceal the line. The route consists primarily of long straight sections based on high ground with little attention given to the visual impact.

b. Abandonment of the Salem Church Dam may make it possible to move the route to lower ground thus reducing the visual impact and making practical crossings of the Rappahannock and the Rapidan at less sensitive locations.

c. Acquisition of the Setti and Maddux tracts has provided the State with a unique area with great potential for recreational development. The presence of a transmission line which bisects the property will reduce the options for development and the recreational value to the public.

In the Board's consideration of the environmental effects of a transmission line along the various routes, special attention was accorded these contentions.

9. Although the Applicant chose its route before the enactment of NEPA and the publication of guidelines by the governmental agencies, the record shows that consideration was given to environmental effect. Departments of the Commonwealth of Virginia were consulted concerning the routing and their recommendations were given substantial weight in the selection process. The initial proposal was changed just north of Lake Anna to avoid the location of a proposed state park and in the vicinity of the Rapidan River to reduce the impact on land of the Foundation of Germana Colonies, which is considered to have historical significance. Although the line consists primarily of long straight sections, an offset was provided at the road crossing at Sumerduck, a location of high visibility, in order to reduce the tunneling effect. The record and the Board's review do not indicate that introducing additional changes in direction or, as explained above, making minor adjustments in the position on hillsides would appreciably affect the overall visibility of a line along the Applicant's route. The record shows that the Applicant's staff made recommendations to governmental agencies during their preparation of the guidelines and were knowledgeable concerning what the guidelines were likely to be. The basis on which the route was originally selected is considered by the Board to be

unimportant to a decision. The major concern is whether the route as it is presently proposed complies reasonably with the guidelines and whether, after balancing environmental and other costs and benefits, that route or another would have the least overall adverse impact.

10. In its consideration of the many alternate routes, the Board found no evidence that changes permitted by abandonment of the Salem Church Dam project would tip the balance in favor of any particular route or would open a new and more favorable alternative. The water level in the impoundment created by the dam was to have been 240 ft MSL. The footings for the transmission towers would have been above this level and the towers would have had to be of sufficient height to provide proper clearance between the conductors and the water. Absent the dam, the elevation at the tower footings is governed by the estimated 100 year flood level. This has been established as being about 228 ft MSL at the river crossings along the Applicant's proposed route and would decrease with distance toward the confluence of the rivers. This reduction in design elevation is small. However, when coupled with a smaller allowable clearance between water level and conductors, it has made possible a substantial reduction in tower heights at the crossings of the Rappahannock and Rapidan. It also makes possible a reduction in span at some of the alternative river crossings and, thereby, increases their attractiveness. Abandonment of the dam also changes the locations of the most favorable recreation sites along the river and, thereby, the desirability of some locations for river crossings. However, it does not appear that any of these changes would significantly affect the overall evaluation of any of the more favorable routes.

11. The Applicant's route, on crossing the Rappahannock River into Fauquier County, passes through an area that is now known as the Rappahannock Wildlife Management Area (RWMA). The RWMA contains about 3800 acres of mostly forested land and includes about 5½ miles of river front. The RWMA was established in June 1975 by the purchase of property, known then as the Setti and Maddux tracts, by the Virginia Commission of Game and Inland Fisheries with assistance from the Nature Conservancy. The Commonwealth of Virginia received title to part of the land in June and expects to receive title to the remainder in January 1976. The land is being purchased entirely with sportsmen's funds, one-fourth state and three-fourths federal, derived from sales of licenses and excise taxes on hunting and fishing equipment. The Game Commission plans to use the RWMA to provide hunting and fishing for Virginia citizens.

12. The Staff of the Game Commission and the Nature Conservancy were aware of the Applicant's plans prior to the acquisition and the property was purchased subject to easements for a transmission line right-of-way that had been acquired by the Applicant. The Game Commission Land Coordinator testified that the transmission line would be a benefit to the wildlife management area in that it would provide edge effect and increased browse area

for certain game species that would otherwise have to be provided by clearing with a bulldozer at public expense. He stated that the Game Commission had granted easements for transmission line rights-of-way through other wildlife management areas and that experience in connection with transmission lines had been favorable. The NRC Staff similarly testified that the transmission line corridor would have a beneficial effect on game management. A representative of the Nature Conservancy testified that in his opinion edge effect of the type provided by clearing for the transmission line was unnecessary. The Board, while recognizing that the additional browse area provided by clearing for the transmission line may produce some increase in the wildlife productivity of the RWMA, has not attached much weight to the asserted benefits.

13. The question of how the transmission line would affect users of the RWMA was also considered. Most of the witnesses were of the opinion that if the principal use of the area is for hunting and fishing, as presently planned, the transmission line would not have an adverse effect. However, the consensus was that if the area were intended primarily for general public park use, presence of the transmission line would be highly objectionable. Although the Game Commission considers the area to be for hunting and fishing, additional uses will occur. The public will have access to the area for hiking and general recreation and to the river for boating, so these may be the principal activities during the spring and summer when hunting is not in season. As presently planned, facilities for general recreation will be minimal. No camping will be permitted, picnicking will be limited, and no trails will be developed for hiking. The Executive Director of the Virginia Commission of Outdoor Recreation (COR), which is an agency for planning outdoor recreation areas and for administering state and federal funds for acquiring and developing those areas but is without direct land management responsibilities, testified to plans for a day use area on the RWMA to provide a river access and a small picnic area with trash receptacles and restroom facilities. He indicated no plans for more extensive park facilities on the property. It is the Board's view, based on the testimony, study of the maps in evidence, and personal observation that a day use facility of the type described could be located and developed on the RWMA such that the visual effect of the transmission line would not be disturbing.

14. Throughout the proceeding the Intervenors argued that consideration should not be limited to presently proposed plans for the RWMA because the increasing need for general recreational facilities might, in the future, alter those plans. They contended that construction of a power line through the area would greatly reduce the options for its future use as a public park. The transmission line right-of-way through the RWMA parallels a stream which if dammed would form a large attractive lake. Although presence of the power line might not affect the enjoyment of the fishermen, it could seriously detract from the beauty of the lake and its value for general recreation. The Board finds that a transmission line constructed along the proposed route through the RWMA will

make the area somewhat less attractive for general recreational use and is likely to detract from the beauty of the lake if one is impounded. However, it will not preclude use of the area for a public park. In view of the plans of the State to develop a large park on the Culpeper peninsula within less than 10 miles of the RWMA and the pressure for hunting and fishing facilities, the Board has given little weight to the possibility that the area might someday be converted into a public park.

15. The guidelines for the location of rights-of-way for transmission lines recommend that established rights-of-way should be given priority or should be used where warranted for the location of additions to existing transmission facilities. Two transmission line rights-of-way run generally south to north in the vicinity of the North Anna Power Station. One right-of-way, considerably west of North Anna, is the location of a 115 kV line from Charlottesville to Remington. Even partial use of that right-of-way is precluded by a requirement that 500 kV lines be kept at least 5 miles from a government communications installation on a U. S. military reservation which is about midway between the Rapidan and Rappahannock Rivers and a little more than 6 miles west of the Applicant's route through Culpeper County. The Charlottesville-Remington right-of-way passes within about 7000 feet of the communications site.

16. The second right-of-way is east of North Anna and contains a 500 kV line which runs north from Elmont (near Richmond), through Ladysmith to Bristers and then eastward to a location called Ox. A 500 kV line from the North Anna Power Station connects to the Ladysmith-Ox line at Ladysmith, about 14 miles directly east of the station. Presently this line provides power for construction activities at North Anna and it is the first of the two lines that are required for fuel loading and initial operation of Unit 1. The alternative to the Applicant's route that would make the most use of existing rights-of-way would parallel the North Anna-Ladysmith line to Ladysmith and then the Ladysmith-Ox line to Bristers. The total length of that route to Bristers would be 53.01 miles. Expanding the existing right-of-way by 100 ft to accommodate another 500 kV line would take about 643 acres. The Ladysmith-Ox right-of-way crosses the Rappahannock River just below the confluence. That section of river is of unusual scenic interest and includes a section of old canal and locks recently included in the National Register of Historic Landmarks. There was general agreement that crossing by an additional line at that point would be undesirable. During the hearing a proposal was made that this objection could be eliminated by deviating to the east below the Rappahannock, crossing the river east of the present crossing and rejoining the existing right-of-way several miles farther north. Such a deviation would involve about 8 miles of new right-of-way and 148 additional acres of land. It would isolate a scenic and historic section of river between the two crossings and the new crossing would occur in an area having its own desirable scenic features.

17. The Applicant proposes to build the North Anna-Morrisville line as the second of the two lines to the station that are required to begin the fuel loading and operation of Unit 1. Placing that line on the same right-of-way as the North Anna-Ladysmith line, while not precluded by safety considerations, is less desirable than having the lines well separated. Also, use of that right-of-way for two lines now would prevent it from being used, as has been planned by the Applicant, for a section of a line to Possum Point when Unit 4 is constructed at the station. So, two other alternates that parallel the Ladysmith-Ox line and other utility lines over parts of their lengths were considered.

18. The North Anna-Robertson Run-Bristers route would follow the Applicant's route about $13\frac{1}{2}$ miles north to Robertson Run where it would turn east, paralleling a telephone line part of the way, to intersect the Ladysmith-Ox line about $6\frac{3}{4}$ miles south of the Rappahannock. It would then parallel the Ladysmith-Ox line northward across the Rappahannock to Bristers. This route would be 45.38 miles long and would require 696 acres of additional right-of-way. In spite of the paralleling this line would require about 23 miles of new right-of-way if the present Rappahannock crossing were used or about 31 miles if a new crossing were provided. The North Anna-Robertson Run-Burdis-Morrisville route would follow the North Anna-Robertson Run-Bristers route to Burdis, about $6\frac{3}{4}$ miles north of the Rappahannock, and then would parallel an existing 34.5 kV line to Morrisville. This route would be 45.18 miles long and would utilize 715 acres of right-of-way. Both of these lines, in addition to requiring many miles of new right-of-way, would have the deficiencies of the North Anna-Ladysmith-Bristers line at the crossing of the Rappahannock. Although the Board does not consider the problem of the Rappahannock crossing to be so serious as to remove the three above alternates from consideration, it does weigh heavily against the adoption of any of them.

19. In addition to routes that make substantial use of existing rights-of-way, the Board considered alternates which required new right-of-way but attempted to reduce impacts associated with the Applicant's route. In general the alternates sought to accomplish one or more of the following objectives:

- a. Reduce the visibility of the line from the Lake of the Woods subdivision.
- b. Provide a more favorable crossing of the Rapidan River.
- c. Reduce the impact on a cluster of four homes just south of the crossing of the Rappahannock.
- d. Reduce the impact on the RWMA.
- e. Cross Culpeper County and part of Fauquier County at locations such that the overall impact would be reduced and the Rappahannock would be crossed at a more favorable location.

20. All these alternates, except a computer-selected route which was developed by a consultant to the Virginia State Corporation Commission (SCC) and is favored by none of the parties, followed the Applicant's route north at least to the Lake of the Woods, a distance of about 18½ miles. From that point to within about a mile of the Rappahannock the various alternates departed from the Applicant's route, some only for a short distance and others all the way to the chosen terminus at Morrisville or Bristers.

21. Those alternates which sought primarily to reduce the impact on homes in or adjacent to the Lake of the Woods subdivision and the four homes just south of the crossing of the Rappahannock involved only small deviations from the Applicant's route. Any increase in length of line or in acreage devoted to right-of-way resulting from the small changes is considered by the Board to be negligible. However, in the vicinity of the Lake of the Woods a small deviation would raise the line to higher ground and while reducing the visibility in some locations would likely increase the visibility in others. Small deviations of the Applicant's route to avoid the cluster of homes near the Rappahannock River were found to impact on property that is shared by a larger number of people or to produce a less favorable river crossing or both. None of the residents who might benefit most appeared before the Board to urge the adoption of such changes in routing. We note that the Applicant's route has received all required local approvals from Orange and Culpeper counties where these areas of concern are located. Under these circumstances the Board finds that it would be inappropriate to require changes in routing whose principal effect would be a reduction in impact on a small area at the likely expense of an increase in impact on another small area.

22. Three alternative crossings of the Rapidan River were considered. Only one crossing, that on the Dump route, appeared to offer any advantage and the advantage is not great. According to the maps, the river crossing on this route is in a heavily forested area; the crossing on the Applicant's route is in a largely cleared area. The crossing on the Dump route appeared to involve a shorter span than that on the Applicant's route but to require the use of angle towers. The crossing on the Applicant's route could be made from the tangent towers which, being less massive, are less expensive and somewhat less visible. After viewing a variety of transmission line towers in a rural setting, the Board finds the assessment of the relative impact of the tangent towers and the angle towers to be highly subjective and dependent on the setting. In this particular case, it does not appear that the presence of angle towers would detract from the advantage of the crossing on the Dump route.

23. Because of the restriction imposed by the government communications center, mentioned in Paragraph 15; all the routes that are intended to reduce the impact on the RWMA, provide a more favorable crossing of the Rappahannock, or generally reduce the visual impact of the line in Culpeper and Fauquier counties pass east of the Applicant's route. It is the Board's view that, of the

many possible routes, the only ones that merit serious consideration are those referred to in the record as the Border route, the East-of-Nature Conservancy route, and the Dump route or variations of that route.

24. The Border Route would depart from the Applicant's route near the Culpeper Lookout Tower, which is about $1\frac{1}{4}$ miles south of the Rappahannock, and, trending east-northeast, would cross the Rappahannock about a mile downstream of the Applicant's crossing. After crossing the river the line would be routed to pass along the eastern border of the RWMA and rejoin the Applicant's route where it intersects the eastern edge of the property. The East-of-Nature Conservancy route would be similar to the Border route except that after crossing the river it would be routed well east of the RWMA to rejoin the Applicant's route near Morrisville.

25. Although the Border and East-of-Nature Conservancy routes reduce the impact of the transmission line on RWMA, as it is presently constituted, they do so at the expense of a less favorable river crossing and greater impact on homes and private property. The river crossing on those routes occurs in an area where the land is relatively clear for distances of about 2000 feet on the south side of the river and 3000 to 4000 feet on the north side of the river. Moreover, the line would be highly visible from the Leary property, which consists of about 300 acres of largely cleared land along the river and the southeastern border of the RWMA that the Game Commission would like to add to the RWMA. Study of the maps indicates to the Board that a line along either of those alternate routes would be substantially more visible from most of the homes and roads in the vicinity of the RWMA and Sumerduck than would a line along the Applicant's route.

26. The Dump route would depart from the Applicant's route near the southwest end of the Lake of the Woods and pass by that area about 2000 feet west of the proposed route. Then, turning east-northeast, it would cross the Rapidan and continue to a point about midway across Culpeper County and $1\frac{1}{2}$ miles east of Richardsville. There, it would turn northeast and, running parallel to the Applicant's route but about 3 miles to the east, would cross the Rappahannock River. In Fauquier County the Dump route would intersect an existing Burdis-Morrisville 34.5 kV right-of-way where one version would turn west and terminate at Morrisville. A second version of the route, continuing northeastward, would terminate at its intersection with the Morrisville-Bristers line. A line from North Anna to Morrisville via the Dump route would be 36.65 miles long and would require 657 acres of right-of-way. A line terminating at the intersection with the Morrisville-Bristers line would be 36.06 miles long and require 656 acres of right-of-way but would make necessary an extension of 3.78 miles to a 230 kV line that is planned to run from Morrisville to Remington.

27. The Dump route, like the Applicant's route, passes over land shown on the maps, and observed by the Board, to be largely forested. There has, however,

been considerable cutting of trees in recent years, so much formerly forested land is now covered with brush. Although the general elevation of the part of Culpeper County through which the Dump route passes is about 50 feet less than that of the Applicant's route, it appears to the Board that the overall visual impact of a 500 kV line on either route would be the same. The Applicant considers the crossing of the Rappahannock River on the Dump route to be inferior to the crossing on its route because the former would have a longer span and would require the use of angle towers. It appears to the Board that the Dump route could be altered to provide a crossing span of about the same length as that on the Applicant's route. The crossing on the Dump route is on a very scenic section of the river but it appears to the Board that persons on the river and river bank would be so screened by vegetation that the transmission line would have no greater impact and possibly less impact than at the Applicant's crossing.

28. The cost of a 500 kV line along the various routes was calculated by the Applicant and those numbers were accepted by the Board as providing a reasonable basis for comparing the costs of the routes. The cost of the right-of-way was not included but, on the basis of testimony in the record, was assumed to be \$2000 per acre. During the proceeding the Intervenor contended that the cost, economic and environmental, of a transmission line and right-of-way from Morrisville to Bristers should be added to the cost of lines between North Anna and Morrisville because Bristers is the point from which power would flow to northern Virginia. The Applicant disagrees because, regardless of the route taken to the North Anna Power Station, it will soon build a line from Bristers to Morrisville to connect initially to a 230 kV line to supply power to Remington and Warrenton and to become a part of the line to West Virginia. The Board agrees that the section of line from Morrisville to Bristers should not be considered as part of the line from North Anna.

29. The cost data show the Applicant's route to be less expensive than any of the alternates, the difference varying from about \$100,000 to about \$4 million. Selection of the preferable route cannot, however, be based solely or even primarily on dollar cost. The RWMA was purchased by the Commonwealth for a stated cost of about \$3,444,000. Developing the area could, depending on the facilities provided and whether a lake is created, add several million dollars to that investment. Selection of a route that is substantially more costly than the Applicant's route could be justified if the presence of a transmission line would have a substantial adverse effect on the intended use of the RWMA.

30. In reaching its decision on the choice of route, the Board has placed substantial weight on the positions of the various governmental agencies involved. The Virginia State Corporation Commission has held extensive proceedings, with the parties including the present Intervenor, and has issued the required certification for the Applicant's North Anna-Morrisville route and the Morrisville substation (as well as the line to West Virginia and others).

Among the findings of the SCC was that the Applicant's route "...will reasonably minimize adverse impact on the scenic and environmental assets of the area concerned." The Commonwealth has set forth its position in a "Statement of Position of the Commonwealth of Virginia" served on the Board on October 14, 1975, which is accepted by the Board as Commonwealth advice to the Commission pursuant to §2.715(c). According to the statement, "The Commonwealth believes that all environmental issues were given ample consideration, and that the (SCC) approved route is the least damaging to the environment." We also note that neither the Game Commission nor COR objected to the Applicant's route and the Land Coordinator of the Game Commission and the Executive Director of COR considered the Applicant's route through the RWMA to be a reasonable choice; that the U. S. Department of the Interior indicated, in response to inquiries by the NRC Staff, that it would defer to the Game Commission; that all necessary local approvals have been obtained for the Applicant's route; and that the U. S. Corps of Engineers has approved the river crossings. We have also put weight on the recommendation of COR that the transmission line be kept out of the area east of Richardsville, the weight decreasing with increasing distance from the confluence of the rivers toward Richardsville.

31. The Applicant's consultant on land use and the NRC Staff compared all the principal alternates, except the North Anna-Ladysmith-Bristers route, on the basis of numbers or magnitudes of specific impacts. These impacts included acres of forest plantation and orchard cleared, number of stream crossings, number of road crossings, etc. The comparisons, although indicating that the Applicant's route would have the least impact, were at best qualitative because the various impacts were not weighted and served primarily to show that none of the routes would have a severe adverse effect on the environment.

32. We have put no weight on the possibility that the Applicant might, in the future, construct a 230 kV line along its proposed route and have included a condition that clearing for such a line not be included in the present project. Although the record shows that construction of such a line north about 17 miles to the Locust Grove area and then west to Mitchell on the Charlottesville-Remington line is likely in the near future, when the increase in demand would require that the line be extended farther and whether it should terminate at Morrisville are highly uncertain. Also, the Board gave no weight to the fact that the Applicant has already purchased much of the right-of-way along its proposed route and that rejecting the route would result in increased right-of-way costs and delays. The Board does not believe that business judgments by the Applicant should be used as levers to influence a decision on environmental matters. With regard to delays, the record shows that the Applicant can construct the Midlothian line, for which it already has approval, to provide a second line to North Anna without delaying the loading of fuel into Unit 1. Although considerations of reliability and flexibility give reason to prefer to construct the

line to the north first, the record shows that the lines to the north and to the south will both be needed at about the same time, 1979 or 1980, to meet the projected load demands.

33. Before reaching its decision in this case, the Board carefully considered the proposed findings of fact and conclusions of law submitted by each of the parties. All of those proposed findings and conclusions that are not incorporated in this decision, explicitly or by implication, are rejected as unsupported by the facts, unsound in law, or unnecessary to our decision.

CONCLUSIONS OF LAW

34. This proceeding is contested within the meaning of 10 CFR 2.4(n).

35. The requirements of §102(2)(c) and (d) of NEPA and Appendix D to 10 CFR Part 50 of the NRC regulations have been complied with in this proceeding.

36. The Board has considered independently the final balance among conflicting factors set forth in the record of this proceeding with a goal of determining the appropriate action to be taken.

37. The Board has authority to impose license conclusions designed to ameliorate the environmental effect of transmission lines. In the Matter of Detroit Edison Company (Greenwood Energy Center Units 2 & 3) ALAB-247, RAI-74-12, 936, 943.

38. On the basis of the information set out above and the entire record, the Board finds that, after balancing the environmental, economic, technical, and other benefits and costs, the route proposed by the Applicant for the North Anna to Morrisville transmission line is the appropriate route. The Board further finds that to minimize the environmental impact the following conditions should be included in the construction permit:

1. The Applicant's clearance of right-of-way shall be limited to 150 feet, which is the width necessary for construction of a 500 kV line, until such time as construction of the projected 230 kV line has received the necessary State approvals.

2. The Applicant shall maintain the right-of-way through the Rappahannock Wildlife Management Area in such a manner as to optimize the "edge effect", minimize the visual impact of the line, and be satisfactory to the Virginia Commission of Game and Inland Fisheries.

3. The Applicant shall, in traversing the Rapidan and Rappahannock Rivers, do a minimum of clearing of the right-of-way and utilize such other measures as are practical to minimize the visual impact of the line.

ORDER

Based on the Board's determination of ultimate issues pursuant to the National Environmental Policy Act of 1969, as amended, and the Commission's regulations, it is ORDERED that the Director of Nuclear Reactor Regulation is authorized to continue in effect Construction Permit Nos. CPPR-77 and CPPR-78, which permit the Virginia Electric and Power Company to construct North Anna Units 1 and 2, subject to modification of such permits by inclusion of the conditions set out in paragraph 38 in this Initial Decision;

IT IS FURTHER ORDERED, that the Director of Nuclear Reactor Regulation is authorized to rescind the Order of February 4, 1972 suspending work on the Applicant's North Anna-to-Morrisville line;

IT IS FURTHER ORDERED, in accordance with 10 CFR 2.760, 2.762, 2.764, 2.785 and 2.786 of the Commission's Rules of Practice, that this Initial Decision shall constitute the final decision of the Commission with respect to the issues dealt with herein forty-five (45) days after the date of issuance hereof, subject to any review pursuant to the Rules of Practice. Exceptions to this Initial Decision may be filed by a party within seven (7) days after service of this Initial Decision and a supporting brief may be filed by any party within fifteen (15) days thereafter. Within fifteen (15) days of service of the Appellant's brief, briefs may be filed by any other party in support of or in opposition to such exceptions. The Staff may file exceptions and briefs within twenty (20) days after the service of such exceptions.

It is so ORDERED.

BY ORDER OF THE ATOMIC SAFETY
AND LICENSING BOARD

R. B. Briggs, Member

Lester Kornblith, Jr., Member

Frederic J. Coufal, Member

Dated at Bethesda, Maryland
this 5th day of December 1975.

[Attachments A, B, and C are omitted from this publication but are available at the NRC's Public Document Room, Washington, D. C.]

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

LBP-75-71

ATOMIC SAFETY AND LICENSING BOARD

Elizabeth S. Bowers, Chairman
Frederick J. Shon, Member
Cadet H. Hand, Jr., Member

In the Matter of
**HOUSTON LIGHTING & POWER
COMPANY, ET AL.**

(South Texas Project,
Units 1 and 2)

Docket Nos. STN 50-498
STN 50-499
December 17, 1975

Upon application for construction permits for South Texas Project, Units 1 and 2, Licensing Board issues its Initial Decision, making determinations of fact and law, and authorizing the issuance of construction permits for both units.

Appearances

Melbert D. Schwarz, Esq., Charles G. Thrash, Jr., Esq., Rufus S. Scott, Esq., and Gregory Copeland, Esq., Baker and Botts, 3000 One Shell Plaza, Houston, Texas and Jack R. Newman, Esq., Maurice Axelrad, Esq., and J. A. Bouknight, Esq., Lowenstein, Newman, Reis and Axelrad, 1025 Connecticut Avenue, N.W., Washington, D. C., for the Applicant.

Robert L. Pendergraft, Esq., Rod Gorman, Esq., and Paul G. Gosselink, Esq., Assistant Attorney Generals, Environmental Division, Supreme Court Building, Austin, Texas, for the State of Texas.

Lawrence J. Chandler, Esq., Iver Stridiron, Esq., and Albert V. Case, Esq., Office of the Executive Legal Director, Nuclear Regulatory Commission, Washington, D. C., for the Nuclear Regulatory Commission.

INITIAL DECISION

(Construction Permit)

I. INTRODUCTION

1. This Initial Decision, which addresses primarily the issues pertaining to radiological health and safety, financial qualifications and the common defense and security,¹ involves an application filed with the Commission² on July 1, 1974, by Houston Lighting & Power Company (Applicant) as Project Manager acting pursuant to a Participation Agreement, executed as of July 1, 1973, as amended, on behalf of itself and the City Public Service Board of San Antonio, Texas, Central Power and Light Company and the City of Austin, Texas (collectively, the Project Participants). The application, filed in accordance with the Atomic Energy Act of 1954, as amended (the Act), requests issuance of Construction Permits authorizing the construction of two pressurized water reactors, each having a design capacity of 3817 MWt or approximately 1312 MWe (App. Exh. 7, p. 1)³, and core thermal power of 3800 MWt (Staff Exh. 5, Appendix A, p. 4-1).

2. The application was docketed on July 5, 1974. The proposed facility, to be named the South Texas Project, Units 1 and 2 (the facility), will be located in Matagorda County, Texas, approximately 12 miles southwest of Bay City, Texas, and approximately 12 miles northeast of Palacios, Texas (Partial Initial Decision-Environmental and Site Suitability dated August 8, 1975, NRCI-75/8 271 at p. 272). The earliest construction completion dates for Units 1 and 2 are

¹This Board issued its Partial Initial Decision—Environmental and Site Suitability under date of August 8, 1975, dealing with environmental issues, site suitability and the need for power (NRCI-75/8 271).

²The application was originally filed with the Atomic Energy Commission. Since the date of filing the Atomic Energy Commission has been abolished and its regulatory responsibilities have been transferred to the Nuclear Regulatory Commission in accordance with the Energy Reorganization Act of 1974, 88 Stat. 1233. All references in this Decision to the "Commission" shall mean the Nuclear Regulatory Commission, unless otherwise stated.

³References to the record of this proceeding shall be as follows:

(1) References to the transcript of the prehearing conference and evidentiary hearings are cited as "Tr.—".

(2) References to Applicant's exhibits introduced into evidence are cited as "App. Exh.—, p.—".

(3) References to Regulatory Staff's exhibits introduced into evidence are cited as "Staff Exh.—, p.—".

(4) References to prepared testimony incorporated in the transcript, but not numbered sequentially with the pages of the transcript are cited to the transcript page immediately preceding the testimony as follows: "Testimony of ———, p.— [fol. Tr.—]".

estimated to be May 1, 1980, and October 1, 1981, respectively. The latest completion dates, estimated for purposes of construction permit duration, are May 31, 1982, and October 31, 1983, respectively. Commercial operation for Units 1 and 2 is scheduled for October 1980, and March 1982, respectively (App. Exh. 7, p. 15).

3. On July 19, 1974, in accordance with the requirements of the Act and 10 CFR Parts 2 and 50, the Commission published in the *Federal Register* (39 *F.R.* 26472) a "Notice of Hearing on Application for Construction Permits." The Notice of Hearing specified that any person wishing to participate as a party in the proceeding must file a written petition, under oath or affirmation, for leave to intervene in accordance with the provisions of 10 CFR §2.714. The Notice of Hearing also made provisions for filing of requests by interested persons to make limited appearances pursuant to the provisions of 10 CFR §2.715.

4. On September 5, 1974, the State of Texas filed motion for leave to intervene as a participating State pursuant to 10 CFR §2.715(c). The Parties responded favorably, and the Board admitted the State of Texas as a participant by its order of September 24, 1974.

5. On February 6, 1975, a prehearing conference was held in Bay City, Texas, to identify the key issues in the proceeding, and to establish a schedule for further actions in the proceeding.

6. The evidentiary hearing on environmental issues and site suitability was held on April 22-23, 1975, in Bay City, Texas. On August 8, 1975, this Atomic Safety and Licensing Board (Board) issued a Partial Initial Decision addressing the issues specified in 10 CFR §50.10(e) and 10 CFR Part 51 of the Commission's Regulations (NRCI-75/8 271). Further background regarding this proceeding, and particularly the evidentiary hearing of April 22-23, 1975, is set forth in detail in that Partial Initial Decision, which is incorporated herein by reference.

7. In the Partial Initial Decision, Environmental and Site Suitability this Board recognized that the issuance of that decision would permit the Director, Division of Reactor Licensing, to issue a Limited Work Authorization as requested by the Applicant (NRCI-75/8 271 at p. 318). On August 12, 1975, the Director, Division of Reactor Licensing, authorized the Applicant to engage in certain limited work activities at the site of the proposed South Texas Project, Units 1 and 2.

8. The evidentiary hearing on radiological health and safety issues was held on November 12, 1975, in Bay City, Texas, pursuant to the notice issued October 24, 1975, and published in the *Federal Register* on October 31, 1975 (40 *F.R.* 50754). On November 4, 1975, this Board issued eight questions, advising that the Parties would be expected to present witnesses responsive to those questions. Both the Applicant and the Staff responded to these questions (Tr. pp. 501-505, 517-519, 530-537; Testimony of Dromerick [fol. Tr. 556]).

This Board has considered these responses as well as the responses of the Staff and the Applicant to additional questions by the Board during the course of the hearing (Tr. pp. 559-572), and is satisfied that such responses adequately address the issues raised.

9. The record in this proceeding consists of: (i) a 462-page transcript of the evidentiary hearing of April 22-23, 1975, containing, *inter alia*, the testimony of twelve witnesses presented by the Applicant and nine witnesses presented by the Staff, and the following exhibits which were received in evidence:

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| Joint Ex. 1 | Stipulation |
| Applicant's Ex. 1 | Application |
| Applicant's Ex. 2 | Environmental Report |
| Applicant's Ex. 3 | 401 Certificate |
| Applicant's Ex. 4 | Agricultural Impact Study |
| Applicant's Ex. 5 | Chapter 2 of Preliminary Safety Analysis Report (PSAR) and Appendices D and E thereto insofar as the responses therein relate to Chapter 2 |
| Applicant's Ex. 6 | Errata |
| Staff's Ex. 1 | Final Environmental Statement for South Texas Project Units 1 and 2 |
| Staff's Ex. 2 | Staff Responses to Late Comments Received on Draft Environmental Statement |
| Staff's Ex. 3 | Final Environmental Statement, Summary and Conclusion Changes |
| Staff's Ex. 4 | South Texas Project, Units 1 and 2, Docket Nos. 50-498, 499 Errata to Final Environmental Statement; |

(ii) two submittals by the Applicant: an affidavit by Michael P. Noel dated June 17, 1975, and Amendment No.6 to the Environmental Report, both received in evidence by Order of the Board dated July 14, 1975; (iii) five submittals by the Staff: two affidavits by J. S. Boegli dated July 17, 1975 and July 29, 1975; two affidavits by Dr. Jacob Kastner dated July 17, 1975 and July 29, 1975; and an affidavit by James A. Long, III, dated July 17, 1975, all received in evidence by Order of this Board embodied in the Partial Initial Decision of August 8, 1975 (NRCI-75/8 271 at p. 274); and (iv) a 113-page transcript of the evidentiary hearing of November 12, 1975, containing, *inter alia*, the testimony of 10 witnesses presented by the Applicant and 7 witnesses presented by the Staff, and the following exhibits which were received in evidence:

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| Applicant's Ex. 7 | Application, as amended to incorporate Amendments 1 through 3 |
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Applicant's Ex. 8	Preliminary Safety Analysis Report (PSAR), as amended to incorporate Amendments 1 through 34, and including the Appendices thereto
Applicant's Ex. 9	RESAR-41 Reference Safety Analysis Report (RSAR), as amended to incorporate Amendments 1 through 19
Staff's Ex. 5	Safety Evaluation Report related to construction of South Texas Project, Units 1 and 2
Staff's Ex. 6	Supplement No. 1 to the Safety Evaluation Report related to construction of South Texas Project, Units 1 and 2
Staff's Ex. 7	Affidavit of Arnold H. Meltz, dated November 26, 1975*
Joint Ex. 2	Affidavit of Carl H. Berlinger, dated December 5, 1975 with statement of qualifications and letter dated December 4, 1975 from G. W. Oprea, Jr. to Benard C. Rusche**

II. FINDINGS ON RADIOLOGICAL HEALTH AND SAFETY MATTERS

10. The Initial Decision which we issue today involves Commission review of the radiological health and safety considerations specified in the July 19, 1974 "Notice of Hearing on Application for Construction Permits."⁴

11. The Application (App. Exh. 7), the Preliminary Safety Analysis Report (App. Exh. 8) and the RESAR-41 Reference Safety Analysis Report (App. Exh. 9) contain in-depth technical information relative to radiological health and safety matters. This information includes a description of the plant design, including the general design criteria by which compliance with Appendix A of 10 CFR Part 50 would be achieved; an analysis of the safety related structures, systems and components; an analysis of postulated accidents and the engineered safety features provided to limit their potential effect; a summary of the Applicant's quality assurance program; the technical qualifications of the Applicant; the financial qualifications of each participant in the South Texas Project; and considerations relating to the common defense and security of the United States. The Board finds that the application, consisting of the formal Application (App. Exh. 7) and the Preliminary Safety Analysis Report (App.

*Record is herewith reopened by the Board to receive Staff Exhibit No. 7 in evidence. This was requested by Staff's motion of November 26, 1975. Staff reported verbal agreement of Applicant and this is reflected in the joint proposed findings of fact.

**Joint motion of December 5, 1975 to reopen record to receive Joint Exhibit No. 2. The Board herewith reopens the record and receives same in evidence.

⁴See finding 3, *supra*.

Exh. 8), including those portions of the RESAR-41 Reference Safety Analysis Report (App. Exh. 9) incorporated therein by reference properly describes the facility in accordance with the Commission's regulations and the Notice of Hearing.

12. The Staff extensively reviewed this material and on August 1, 1975, issued its Safety Evaluation Report (SER) related to construction of the South Texas Project, Units 1 and 2 (Staff Exh. 5). The SER was supplemented by the Staff's Supplement No. 1 to the Safety Evaluation Report (SSER), issued on October 29, 1975 (Staff Exh. 6). The SER, as supplemented by the SSER, summarized the results and delineated the scope of the technical evaluation relative to the radiological health and safety aspects of the proposed facility, including site characteristics, reactor design, safety systems, quality assurance matters, conformance to general design criteria and Commission regulatory guides, financial qualifications and matters concerning the common defense and security of the United States. Based upon its evaluation the Staff concluded that the South Texas Project, Units 1 and 2, facility can be constructed and operated at the proposed location without undue risk to the health and safety of the public (Staff Exh. 5, p. 21-1; Staff Exh. 6, p. 21-1).

13. Independent of Staff action the Advisory Committee on Reactor Safeguards (ACRS) reviewed the material submitted by the Applicant concerning radiological health and safety matters in accordance with the directive of the Atomic Energy Act, as amended, 42 USC §2232. As a result of this review, the ACRS concluded that "the South Texas Project, Units 1 and 2, can be constructed with reasonable assurance that they can be operated without undue risk to the health and safety of the public." (Staff Exh. 6, p. C-3).

14. This Board finds that the Applicant has provided sufficient information relative to the radiological health and safety of the proposed facility, and that the Staff's consideration, review and evaluation of that information has been satisfactorily performed.

A. THE PLANT SITE

15. This Board has made detailed findings of fact describing and evaluating the South Texas Project site in its Partial Initial Decision—Environmental and Site Suitability dated August 8, 1975 (NRCI-75/8 271 at pp. 303-316). In summary, the site for the proposed facility, comprised of a nominal 12,300 acres of land, is located in Matagorda County, Texas, approximately 59 miles east of Victoria, Texas, and 12 miles south southwest of Bay City, Texas. Given a literal interpretation of 10 CFR Part 100, Victoria, Texas, for which the reported population in 1970 was 41,349 persons, would be the nearest population center; however, the Staff and the Applicant agreed that Bay City, Texas, which is projected to have a population of about 24,000 persons in 2020, should be

designated as the population center for the South Texas Project. We concur that this is an appropriate designation. The distance to either Bay City or Victoria is well in excess of the minimum distance of one and one-third times the low population zone radius of three miles as required by 10 CFR Part 100 and requires no special considerations. The 1970 residential population within the low population zone is estimated at 55 persons, and the low population zone contains no significant transient population. The exclusion area has a minimum boundary distance of 4692 feet (1430 meters) and is completely within the site property limits (NRCI-75/8 271 at pp. 304, 305; App. Exh. 8, pp. 2.1-1 through 2.1-7; Staff Exh. 5, pp. 2-1, 2-5). The Project Participants have exclusive control over the exclusion area (NRCI-75/8 271 at p. 304).

16. The site will contain a main cooling reservoir having a surface area of 7000 acres. This reservoir will be used both for storage and cooling purposes. The site also will contain an emergency cooling pond having a capacity of 342 acre-feet to provide emergency cooling water. The portion of the dike protecting the intake, discharge and pumping structures of the emergency cooling pond from design basis flood damage as well as an internal dike designed to prevent possible thermal short circuiting between the intake and discharge will be designed to seismic Category I requirements, and all pumping equipment for the pond will be protected behind waterproof doors in seismic Category I buildings. Make-up water for the main cooling reservoir will be provided from the Colorado River. Make-up water for the emergency cooling pond will be provided from the main cooling reservoir. (NRCI-75/8 271 at pp. 308, 309; App. Exh. 8, pp. 2.4-4, 3.8-79, Fig. 9.2-10; Staff Exh. 5, pp. 2-13, 2-14; Staff Exh. 6, p. F-1).

17. The closest highway to the site will be FM 521 which will be relocated outside the northern boundary of the exclusion area. The closest major highway is State Highway 60 which is about seven miles east of the site. The Colorado River which is used for barge transportation from the intracoastal waterway, located about ten miles south of the site, approaches to within about three miles of the site. The largest industrial facility in the vicinity of the site is located 4.8 miles to the north-northeast. A gasoline and fuel oil terminal is located about the same distance. The nearest transmission pipeline is about two miles to the northwest. Producing oil and gas (primarily gas) fields lie within five miles of the site; however, the Applicant has demonstrated, and the Staff concurs, that further development of oil and gas fields in the vicinity of the site is remote. The Applicant has postulated accidents in conjunction with the industrial, transportation and oil and gas facilities within the vicinity of the site. The Staff has evaluated these potential accidents in conjunction with its review of the design of the facility and concluded that the proposed facility design is acceptable. No significant military, transportation or industrial facilities have been identified which have the potential for affecting safe operation of the plant (NRCI-75/8 271 at pp. 305-308; App. Exh. 8, Sec. 2.2; Staff Exh. 5, pp. 2-7 through 2-9).

18. The site for the South Texas Project is located in a region where atmospheric conditions are more favorable than in most other areas of the country, and this Board concludes that with regard to the expected atmospheric dispersion conditions and the occurrence of severe weather conditions, including tornadoes, the site is acceptable for the reactors proposed by the Applicant. (See Partial Initial Decision, dated August 8, 1975.)

19. The Applicant and the Staff have studied, and this Board has made inquiry as to, the potential for flooding at the site. These studies have analyzed postulated failures of upstream dams on the Colorado River and the storm surge from a probable maximum hurricane coupled with the 100-year flood on the Colorado River. Analysis of the results of such flooding has included the postulated embankment failure of the main cooling reservoir along with the resulting hydraulic loading and runup on safety related structures. Further, this Board has made inquiries, and the Applicant and Staff have studied, the effects of low water conditions in the Colorado River on safe operation and shutdown of the facility and the impact which the construction and operation of the facility would have on the regional ground and surface waters. On the basis of these studies and our own evaluation this Board finds that, with regard to hydrological conditions, the proposed site is acceptable for the reactors proposed for the South Texas Project (App. Exh. 8, pp. 2.4-1 through 2.4-105; Staff Exh. 5, pp. 2-13 through 2-19).

20. The proposed site is located within the essentially featureless West Gulf Coast plain section of the Coastal Plain physiographic province. The Applicant conducted and the Staff reviewed extensive subsurface investigations in the site area and pursued in-depth studies of the geologic and seismologic records with respect to the Coastal Plain. In terms of historical earthquakes, the Gulf Coast Plain is one of the least active areas of the United States, and the South Texas region, in which the proposed site is located, is even less active than most areas of the Gulf Coast Plain. There are no known tectonic faults within the site vicinity, the closest mapped faults being approximately 85 miles northwest of the South Texas Project site. The reported earthquake activity nearest the site was of intensity IV, Modified Mercalli (MM), and occurred a distance of over 80 miles from the proposed South Texas Project site. The largest earthquakes in the Gulf Coast Plain, excluding the northern Mississippi embayment, occurred more than 180 miles from the site at Rusk, Texas, in 1881 (VII MM); near Wortham, Texas, in 1932 (V to VII MM); and at Donaldsonville, Louisiana, in 1930 (V to VI MM). Growth "faults" have been interpreted beneath the site area below the 6200 foot depth; however, seismic reflection confirms that this faulting does not project above a depth of 6200 feet. The Staff concludes that due to the lithostatic stress at this depth these growth "faults" do not indicate a potential for surface faulting. The Staff has concluded that a typical intensity VI MM earthquake is an appropriate safe shutdown earthquake for the South Texas Project site and concurs with Applicant's conclusion that peak horizontal ground

acceleration of 0.1g is the appropriate seismic design for the South Texas Project site. The Board finds these conclusions are conservative and acceptable (NRCI-75/8 271 at pp. 313, 314; App. Exh. 8, pp. 2.5-1 through 2.5-156a, 3.7-1; Staff Exh. 5, pp. 2-19 through 2-27).

21. In its Partial Initial Decision—Environmental and Site Suitability dated August 8, 1975, this Board identified the following areas of continuing investigation: (i) shale sequences below the 6000-foot seismic reflector (NRCI-75/8 271 at p. 311); (ii) assessment of post earthquake stability of safety related earth work associated with the emergency cooling pond (NRCI-75/8 271 at p. 315); and (iii) development of explicit and conservative criteria for piping and conduits in light of the potential for settlement at the South Texas Project site (NRCI-75/8 271 at p. 315). Each of these matters has been resolved to the satisfaction of the Staff and is addressed in the SER (Staff Exh. 5, pp. 2-23, 2-28) or in the SSER (Staff Exh. 6, p. 2-1). While we found in our earlier decision that there is little likelihood of intolerable differential subsidence at the South Texas Project site, a monitoring program, conducted at regular intervals, was required. (NRCI-75/8 271 at p. 312). The Applicant has developed and agreed to conduct such a program (App. Exh. 8, p. 2.5-157 through 2.5-157f; Testimony of Betterton [fol. Tr. 528]) which is acceptable to the Staff (Staff Exh. 5, pp. 2-21, 2-22, Staff Exh. 6, pp. 2-1). This Board finds that the monitoring program developed and proposed by the Applicant is acceptable.

22. On the basis of our detailed site related findings (NRCI-75/8 271 at pp. 303-316), as supplemented by the evidence now presented to us, and with particular regard to the criteria set forth in 10 CFR Part 100 concerning population and land use considerations and the physical characteristics of the site, including seismology, meteorology, geology and hydrology, the Board finds that the site proposed for the South Texas Project is a suitable location for the South Texas Project facility from the standpoint of radiological health and safety considerations under the Atomic Energy Act of 1954, as amended, and the rules and regulations promulgated by the Commission pursuant thereto.⁵

B. Design of the Plant

23. Applicant, in its PSAR, has described in detail the proposed design of the South Texas Project. The detailed description of design of nuclear steam supply systems, which are identical for both reactors, is provided by reference to appropriate sections of a document entitled Westinghouse Reference Safety Analysis Report, RESAR-41, which is an application by Westinghouse Electric

⁵In the Partial Initial Decision—Environmental and Site Suitability dated August 8, 1975, the Board found that, "Based upon available information and review to date, there is reasonable assurance that the STP site is a suitable location for nuclear power reactors of the general size and type proposed from the standpoint of radiological health and safety considerations under the Atomic Energy Act of 1954, as amended, and the rules and regulations promulgated by the Commission pursuant thereto." (NRCI-75/8 271 at p. 318).

Corporation for a Preliminary Design Approval for a standardized nuclear steam supply system pursuant to 10 CFR Part 50, Appendix O. The RESAR-41 RSAR, as amended by amendments 1 through 19 thereto, was received into evidence as Applicant's Exhibit No. 9 (Tr. 501).

24. The RESAR-41 nuclear steam supply system incorporates a pressurized water reactor with four-loop reactor coolant system. While this system is designed to operate at a maximum core thermal power level of 4100 Mwt, the instant application involves operation at a maximum core thermal power level of 3800 Mwt. The reactor core will consist of fuel pellets contained in Zircaloy tubes which will be plugged and sealed and welded at the ends to encapsulate the fuel. The height of the fuel pellets within each rod will be 164 inches, with the fuel rods themselves being 173.3 inches long. The fuel rods will be combined in a 17 x 17 array to form fuel assemblies, with the core consisting of 193 such fuel assemblies. Water circulating through the core will serve as a neutron moderator, radiation shield and coolant. The water heated in the reactor will flow through four U-tube steam generators, where heat will be transferred to the secondary system to form steam for the generation of electricity (App. Exh. 9, pp. 1.2-1, 1.3-1; Staff Exh. 5, pp. 1-2 through 1-5). The excess heat will be discharged through the circulating water system to a 7,000 acre main cooling reservoir (App. Exh. 8, pp. 1.2-14).

25. In most respects the RESAR-41 reactor is similar to other recent plants designed by Westinghouse, including the Catawba (Docket Nos. 50-413 and 414), Millstone 3 (Docket No. 50-423) and Comanche Peak (Docket Nos. 50-445 and 50-446) plants, all of which conform basically to Westinghouse's "RESAR-3" design format (Staff Exh. 5, p. 1-8; Testimony of Peacock, p. 3 [fol Tr. 4981]). Table 1-1 of Appendix A to the Staff's Exhibit 5 compares the RESAR-41 design with a composite of the RESAR-3 plants listed above. The primary difference is that the RESAR-41 plant will operate at 3800 Mwt in comparison with 3411 Mwt for the RESAR-3 plant. In order to transfer this additional heat, the RESAR-41 steam generator will contain more tubes, and the tubes will be longer, than in the RESAR-3 steam generator. The active fuel length is longer—164 inches versus 144 inches—in the RESAR-41 design than in previous Westinghouse designs. Likewise, the fission product inventory is different, including higher core activities, which have been taken into account in the Applicant's and the Staff's analysis of postulated accidents (App. Exh. 8, Chapter 15; App. Exh. 9, Chapter 15; Staff Exh. 5, pp. 15-1 through 15-7).

26. The design also incorporates a "rapid refueling system" which is a new feature developed for the RESAR-41 reactor. The Staff has analyzed the proposed rapid refueling system and has found the proposed design acceptable (Staff Exh. 5, Appendix A, pp. 5-20 through 5-26), although a modification of the overhead reactor vessel head assembly handling system may be required depending on the completion of Staff review of the consequences of an accident involving the dropping of the reactor vessel head assembly (Staff Exh. 6, p. A-5).

We noted that the rapid refueling system provides for fuel to be loaded with a shutdown margin of 5%, and we asked the Applicant and the Staff to compare this margin with that generally allowed for fuel handling in reactor and critical facilities at present. Both the Applicant (Tr. 504) and the Staff (Testimony of Dromerick [fol. Tr. 556]) provided responses indicating that the 5% is adequate and is consistent with that generally allowed today. In particular, the Staff pointed out that fuel is handled routinely at boiling water reactors with a shutdown margin of 5% (Testimony of Dromerick, [fol. Tr. 556]). We find that the Staff's review of the rapid refueling system has been adequate and that satisfactory responses to the Board's questions have been provided by the parties.

27. Certain modifications have also been made in the design of engineered safety features, in connection with the emergency core cooling system and the emergency boration system. The Applicant's testimony demonstrates that both of these designs are grounded on proven technology (Testimony of Peacock, pp. 3-6 [fol. Tr. 498]). The Staff has reviewed the proposed systems and found them acceptable. We find that, in most respects, the RESAR-41 nuclear steam supply systems are similar to previous Westinghouse reactors reviewed and found acceptable by the Commission. We have taken particular care in our review of these systems and features of the RESAR-41 reactor which are different from previous Westinghouse plants. We find that the Staff's review of these new systems and features has been comprehensive, and that its conclusions that the systems and features are acceptable are well-founded.

28. As noted previously, the RESAR-41 design includes a 14 foot core, as compared with a 12 foot core in previous Westinghouse designs. This increased length appears to render the core slightly less stable to axial-xenon oscillations, especially late in the fuel cycle. Initially, it was proposed (Applicant's Exh. 9, p. 4.3-9) that part length control rods would be utilized in the RESAR-41 reactor. However, the Staff, in its review, did not approve the use of part length rods for the South Texas Project facility, pending the results of an ongoing generic review (Staff Exh. 5, App. A, pp. 4-13). The Board required the parties to provide responses to questions concerning whether, in the absence of part length control rods, any problems are associated with control of the reactor by axial offset observations only. The responses indicate that the full length control rods are sufficient to provide control of axial-xenon transients without difficulty and that, in fact, additional margins are available to control peaking where part length rods are not used (Tr. 501-504; Testimony of Dromerick, [fol. Tr. 556]). We are satisfied that operation without part length control rods will have no adverse impact on the safe operation of the South Texas Project reactors.

29. The nuclear steam supply system for each unit will be housed in a steel-lined, prestressed concrete containment structure which will be designed to safely confine any leakage to the containment and to assure that a design basis accident will not result in doses in excess of the guidelines set forth in 10 CFR

Part 100 (App. Exh. 8, pp. 1.2-5 through 1.2-7; Staff Exh. 5, p. 1-5).

30. The plant design also contains various engineered safety features, the purpose of which is to provide a complete and constant means of preventing and/or ameliorating the consequences of a major accident. These systems and components will be designed to be capable of assuring safe shutdown of the reactor under the adverse conditions of the various postulated design basis accidents analyzed by the Applicant and the Staff. Accordingly, they will be designed to seismic Category I requirements and so as to function even with complete loss of offsite power. Such components and systems will be provided in sufficient redundancy so that a single failure of any component or system will not result in the loss of the capability to achieve safe shutdown of the reactor. These design requirements are in accordance with the General Design Criteria, 10 CFR Part 50, Appendix A (Staff Exh. 5, p. 6-1).

31. The proposed South Texas Project facilities include the following engineered design features: (a) containment systems, including containment heat removal system, a containment isolation system and provision for containment leakage testing; (b) a combustible gas control system to control the concentration of hydrogen within the containment vessel following a loss-of-coolant accident; (c) an emergency core cooling system to provide emergency core cooling during accident conditions; and (d) an emergency boration system. In addition, the plant will be equipped with instrumentation and control systems which will monitor all important plant operating parameters to assure that prescribed operating ranges are not exceeded (App. Exh. 8, Chapters 6 and 7; Staff Exh. 5, Chapters 6 and 7).

32. Recent occurrences at operating reactors prompted the Board to focus upon the measures proposed by the Applicant to prevent similar problems with the South Texas Project facility. In response to a Board question, the Applicant and the Staff indicated that both an improved design and maintenance of all volatile treatment secondary water chemistry will be applied to assure that steam generator tubing integrity is maintained under all conditions of operation (Testimony of Dromerick, [fol. Tr. 556]; Tr. 530-534). We also inquired as to status of measures proposed to preclude water hammer in the steam generator feedwater system. The Staff indicated that it was reviewing this matter on a generic basis (Testimony of Dromerick, [fol. Tr. 556]). The Applicant pointed out that improvements in the design of the South Texas Project steam generators, as compared with earlier steam generator designs, together with redundant safety class instrumentation to assure that proper water level is maintained in the steam generator should prevent a water hammer incident at the South Texas Project, and that, if further requirements, applicable to the South Texas Project, are established as a result of the generic review, they will be considered in the final design of the facility (Tr. 534-535). Finally, we inquired regarding the design measures that are being taken here to prevent and limit the consequences of fires. The Applicant responded that use of non-combustible

materials or flame retardant cable penetration sealing material should prevent an incident similar to that which occurred recently at the Browns Ferry facility, and that the physical separation and independence of systems inherent in the South Texas Project design together with the fire protection system incorporated in the design and the detailed procedures developed for response to a fire will assure that the consequences of a fire would be limited (Tr. 535-537). The Staff responded that it is currently conducting a comprehensive review of this matter, leading to preparation of a Regulatory Guide to be issued at some future date (Testimony of Dromerick, [fol. Tr. 556]), and the Applicant stated that any additional information developed by the Staff and applicable to the South Texas Project will be taken into account in the development of the final design (Tr. 537). We find that the parties have provided satisfactory responses to all of our questions, and that the measures taken by the Applicant in each of these areas are adequate.

33. Based on the Board's review of the documentation related to the design of the South Texas Project facility, the Board finds that the facility is designed to conform to the General Design Criteria set forth in 10 CFR Part 50, Appendix A.

34. An important consideration where, as here, a standard design document is referenced in the Applicant's PSAR is assurance of compatibility between the referenced nuclear steam supply system and the balance of plant described in the PSAR. It is necessary that safety-related design interfaces be identified and that the PSAR contain, by reference or otherwise, sufficient information to assure that safety-related systems will be designed, constructed and operated in an appropriate and compatible fashion. Accordingly, the Staff has undertaken, in the course of its review of the South Texas Project application, a comprehensive review of the interface requirements applicable to the South Texas Project facility, which references the RESAR-41 nuclear steam supply system design (Testimony of Klapper [fol. Tr. 524]; Staff Exh. 6, p. 1-2). Independently from its review related to Westinghouse's application for a Preliminary Design Approval for the RESAR-41 design, the Staff has specifically identified and reviewed all interface requirements related to the safety of the South Texas Project facility. On the basis of its review the Staff has found that the application, as amended, contains information which confirms that the South Texas Project design is compatible with RESAR-41. Also on the basis of its review the Staff concluded that the South Texas Project balance of plant is compatible with the RESAR-41 nuclear steam supply system (Staff Exh. 6, p. 1-2). We find that the Staff's review has been comprehensive in this respect and that its conclusions are well founded.

35. We noted in our Partial Initial Decision, issued August 8, 1975, that, prior to issuance of a construction permit, it would be necessary for more explicit and conservative criteria to be developed with respect to long-term settlement of structures and the ability of buried piping to withstand soil strain

(NRCI-75/8, 271 at p. 315). These criteria have now been developed (App. Exh. 8, pp. 2.5-151 through 2.5-157a, 3.7-24, 3.7-24a), and the Staff has determined that these criteria are acceptable (Staff Exh. 6, p. 2-1). The Board concurs in the Staff's conclusions.

36. It is also a design objective of the South Texas Project to assure that radiation exposure to operating personnel will be within the required limits of 10 CFR Part 20. The Applicant has estimated that exposures to plant personnel from routine plant operation, including refueling, control room operations and routine tests, patrols and operations will be 104.4 man-rem per unit per year (Testimony of Gauny, pp. 2,8 [fol. Tr. 520], App. Exh. 8, pp. 12.1-31, 12.3-1; Staff Exh. 5, p. 12-2). The Staff has estimated occupational exposures based on actual experience in operating light water reactors which currently average roughly 400-500 man-rem per unit annually. It appears that the difference between the numbers reflects the additional doses attributable to unanticipated maintenance in operating reactors (Staff Exh. 5, p. 12-3). The Applicant has provided testimony indicating that its objective is to reduce occupational exposures to a level as low as reasonably achievable, and that it intends to do so by combining appropriate design features with work practices aimed at minimizing these doses. In particular, the Applicant is committed to compliance with Regulatory Guide 8.8 in the design of the facilities. In addition, such features as the rapid refueling system incorporated in the RESAR-41 design are expected to contribute to a reduction in dose levels (Testimony of Gauny [fol. Tr. 520]; App. Exh. 8, §12.1.6). We find that the Applicant has described an appropriate program for minimizing doses to its operating personnel.

37. In paragraph 57 of our Partial Initial Decision (NRCI-75/8, 271 at pp. 288-9), we questioned whether an estimated dose to operating personnel of 900 man-rem (450 for each reactor) is consistent with the requirements of 10 CFR Part 20, particularly in the context of an expected operating staff of about 100 people. The Applicant responded to our concern by pointing out that the 450 man-rem (which is based on past experience at facilities with different designs and operating procedures) includes exposure to support maintenance personnel as well as to regular plant employees. In addition, the Applicant stated that steps would be taken to assure occupational exposures of individuals fully comply with the requirements of 10 CFR Part 20 (Testimony of Gauny, pp. 1, 7-8 [fol. Tr. 520]). This resolves the matters referred to in paragraph 57 of our Partial Initial Decision.

C. Radioactive Waste Treatment Systems

38. The proposed radioactive waste treatment systems will be designed to collect and process the liquid, gaseous and solid wastes which are by-products of station operation and which might contain radioactive materials. Reactor grade liquid wastes will be treated and returned for plant use or routed to the non-reactor grade waste subsystem. The liquid waste system will utilize

evaporation, demineralization and filtration for removal of radioactive material, chemical impurities and particulates. Non-reactor grade wastes will be monitored prior to release to the cooling reservoir. The gaseous waste system will treat gaseous streams for radioactive material removal by filtration, absorption and holdup for radioactivity decay. The treated gases will be monitored prior to release to the environment. Treatment of solid wastes will consist of solidification, packaging and shipment to a licensed burial site (Staff Exh. 5, pp. 11-1 through 11-10; App. Exh. 8, §§11.1, 11.2, 11.3, 11.5).

39. The Commission's regulations require that discharges of radioactive effluents during normal operation of a facility be maintained "as low as practicable" (10 CFR §50.34a). On May 5, 1975, the Commission, following a lengthy rulemaking proceeding, adopted Appendix I to 10 CFR Part 50. Appendix I prescribes certain design objectives, compliance with which is deemed to be a conclusive showing of compliance with the "as low as practicable" requirement of 10 CFR §50.34a. These design objectives are set forth in paragraphs A, B, C and D of Section II of Appendix I. On September 4, 1975, the Commission amended Appendix I to provide that, where the application for construction permits was filed prior to June 4, 1976, the cost-benefit analysis required by paragraph II D of Appendix I need not be performed if the radwaste systems are demonstrated to satisfy the Guide on Design Objective for Light-Water-Cooled Nuclear Power Reactors proposed in the Concluding Statement of Position of the Regulatory Staff in Docket RM-50-2 ("Staff's Concluding Statement") (40 *F.R.* 40818).

40. Both the Applicant and the Staff presented testimony demonstrating that the design objectives of the South Texas Project facility meet, with very substantial margins, design objectives set forth in paragraphs II A, B and C of Appendix I and in the Staff's Concluding Statement. The Staff supplemented the discussion in its Supplemental Safety Evaluation Report (Staff Exh. 6, pp. 11-1, 11-2) with testimony by Messrs. Boegli and Waterfield (fol. Tr. pp. 550 and 552, respectively). The Staff presented an analysis of the expected quantity of radioactive materials to be released in liquid and gaseous effluents during normal operation of the South Texas Project facility (Testimony of Boegli, pp. 2-4, Attachments 1, 2 [fol. Tr. 550]), as well as a detailed assessment of the doses which could result from the expected radioactive releases (Testimony of Waterfield, pp. 2-5 [fol. Tr. 552]). As a result of its analysis and assessments the Staff was able to conclude that the proposed radwaste systems are acceptable since the doses associated with normal operation of the South Texas Project facility meet the design objective of paragraphs II A, B and C of Appendix I, and the expected quantity of radioactive materials released in liquid and gaseous effluents and the doses associated therewith meet the design objectives of the Staff's Concluding Statement and thus satisfy the requirements of paragraph II D of Appendix I (Staff Exh. 6, p. 11-12; Testimony of Boegli, pp. 4-5, Attachment 3 [fol. Tr. 550]); Testimony of Waterfield, pp. 4-5, Tables 1-2 [fol. Tr. 552]).

41. The Applicant presented an independent analysis by its consultant Dr. Rodger (fol. Tr. 514). Although Dr. Rodger's calculated doses are not identical to those calculated by the Staff, his testimony, like that of the Staff, indicates that in no instance will the quantities of radioactive materials released or any doses resulting from such releases exceed a very small fraction of the design objectives prescribed in paragraphs II A, B and C of Appendix I and the Staff's Concluding Statement (Testimony of Rodger, pp. 11-14, Table 6 [fol. Tr. 514]). Thus, he concludes that the radioactive waste treatment systems proposed for the South Texas Project meet all of the requirements of Appendix I.

42. The Board inquired as to whether Carbon 14, tritium and particulates are included in the calculation of air doses performed under Appendix I. Both the Staff and Dr. Rodger testified that the air dose assessment is based on the noble gas emissions; that the dose contributions of Carbon 14, tritium and particulates are presented in other portions of the Appendix I analyses; and that these radioactive releases at the South Texas Project would increase the calculated noble gas immersion doses to individuals by very small amounts, if included in such calculations (Testimony of Dromerick, [fol. Tr. 556]; Tr. 517-519 and 559-563).

43. This Board concurs in the conclusions of the Staff that the proposed liquid and gaseous radioactive management systems for South Texas Project Units 1 and 2 will satisfy the requirements of Appendix I to 10 CFR Part 50 and therefore are acceptable.

D. Technical Qualifications and Quality Assurance

44. The record in this proceeding demonstrates that Houston Lighting & Power Company is technically qualified to design and construct the proposed South Texas Project facility. Houston Lighting & Power Company's technical staff has extensive experience in the nuclear, and conventional utility engineering fields; moreover, its staff has participated in, and will continue to attend, various training programs designed to add even further experience in nuclear technology (App. Exh. 8, §§13.1, 13.2; Testimony of Sumpter, pp. 1-5, 8, 9 [fol. Tr. 507]). Houston Lighting & Power Company is aided in the design and construction of the facility by other organizations which are technically qualified, including Westinghouse Electric Corporation, Brown & Root, Inc. and NUS Corporation (App. Exh. 8, pp. 13.1-54 through 13.1-60). Houston Lighting & Power Company is responsible for coordinating the overall design and construction program for the facility, including design review of the balance of plant and auxiliary systems; the design review of the Nuclear Steam Supply System ("NSSS"); and cost and schedule control. This coordination is done directly with Brown & Root and Westinghouse (Testimony of Sumpter, pp. 2-3

[fol. Tr. 507]). Likewise, Houston Lighting & Power Company is responsible for conformance with all of the Commission's regulatory requirements.

45. The Applicant's organizational responsibilities will be implemented through the General Manager, Power Plant Engineering and Construction, with additional technical support for the project provided by the Applicant's Environmental Protection, Energy Production, Engineering and Quality Assurance Departments. Within the Power Plant Engineering and Construction Department, the Nuclear Division is responsible for design of the nuclear system and related engineering, nuclear fuel management, licensing, safety analysis and radiation protection for the South Texas Project. The Applicant's testimony indicates that responsible personnel within the Nuclear Division have both the educational qualifications and engineering experience necessary to perform these functions satisfactorily (Testimony of Sumpter [fol. Tr. 507]).

46. Applicant's Energy Production Department will be responsible for the operation and maintenance of the South Texas Project (App. Exh. 8, Sec. 13.1; Staff Exh. 5, p. 13-1). During operation of the South Texas Project, the station staff will include approximately 70 persons for one unit operation and 107 persons for two unit operation. This staff will be under the direction of a plant superintendent and an assistant plant superintendent. The qualification requirements of all plant supervisory, operating, technical, and maintenance support personnel will meet or exceed the minimum requirements set forth in ANSI N18.1 (Staff Exh. 5, p. 13-1; App. Exh. 8, p. 13.1-69).

47. In light of the Applicant's own in-depth staff, and the strong support that staff will receive from organizations such as Westinghouse and Brown & Root, we conclude, as did the Staff, that the Applicant is technically qualified to design and construct the proposed facility (Staff Exh. 5, p. 13-2).

48. The Applicant is responsible for the design, construction and operation of the proposed facility, and in this capacity it has overall responsibility for quality assurance ("QA") activities related thereto. HL&P's Manager of Quality Assurance reports directly to the Executive Vice President, who in turn has direct access to the President (Testimony of Oprea, pp. 8,9 [fol. Tr. 486]; App. Exh. 8, Fig. 17.1.1A-2). The President of Houston Lighting & Power Company has delegated, through the Executive Vice President to the QA Manager, authority and responsibility for establishing and implementing a QA program. The QA Manager has established, well-defined responsibilities and authorities for implementing the QA program in documented procedures and instructions (Staff Exh. 5, p. 17-1).

49. The Applicant implements its QA functions by means of a staff QA group, a site QA group, and two corporate level committees. The QA Department is responsible for the development, review, implementation and surveillance of the HL&P QA Program and the South Texas Project QA Plan. This responsibility extends to all activities related to the South Texas Project, including engineering, design, procurement, construction and operation. The two

corporate level committees are the Design Review Committee and the QA Program Evaluation Committee. The Manager of QA is a member of the Design Review Committee and is Chairman of the QA Program Evaluation Committee. The Design Review Committee is composed of manager level personnel who meet at least quarterly to assure the technical adequacy of plant design by means of design reviews. The QA Program Evaluation Committee is composed of executive level management personnel who meet semi-annually to assess the status and adequacy of the overall QA program (App. Exh. 8, Secs. 17.0 and 17.1; Staff Exh. 5, pp. 17-2, 17-3).

50. The Manager of QA and the South Texas Project QA supervisory personnel in the home office and at the Site have stop work authority. Stop work authority can be exercised during construction by personnel of the Applicant's Site QA group (App. Exh. 8, pp. 17-4, 17-6). Moreover, the Applicant's QA organization is independent of the organizations whose activities it verifies; it has clearly defined authorities and responsibilities; it has adequately defined qualification and training requirements for its staff; it is organized in a manner that facilitates identification of quality problems in the other organizations performing quality related work; it can initiate, recommend or provide solutions; and it can verify implementation of solutions (Staff Exh. 5, p. 17-3).

51. The policies and procedures used to administer the Applicant's QA Program are provided in the Houston Lighting & Power Company QA Program and the South Texas Project QA Plan (App. Exh. 8, pp. 17-13 through 17-19). The QA Program specifies the QA objectives and policies with which the South Texas Project will comply. The South Texas Project QA Plan provides general methods, responsibilities and interface relationships relative to implementation of the QA Program. Detailed departmental procedures provide instructions necessary for full implementation of the QA Program. Both the QA Program and the Project QA Plan are prepared by the QA organization and are approved by the Manager of QA and the Executive Vice President. The PSAR includes a listing of the QA Program requirements, and the South Texas Project QA Plan defines procedures plus a matrix of these requirements and procedures cross-referenced to the criterion of Appendix B to 10 CFR Part 50 (App. Exh. 8, pp. 17-2, 17-3a, 17-19). The QA Program and QA Plan for the South Texas Project are structured in accordance with the Regulatory Guides and industrial standards that are addressed by the Nuclear Regulatory Commission in "Guidance on QA Requirements During Design and Procurement Phase of Nuclear Power Plants" (Revision 1), May 24, 1974 (WASH 1283) and "Guidance on QA Requirements During the Construction Phase of Nuclear Power Plants," May 10, 1974 (WASH 1309) (App. Exh. 8, p. 17-16; Staff Exh. 5, p. 17-4).

52. The Applicant has delegated certain QA functions to Brown & Root, its Architect-Engineer, and to Westinghouse Electric Corporation. The Applicant will, by surveillance, assure that its principal contractors and subcontractors have and maintain adequate QA programs (App. Exh. 8, pp. 17-18, 17-19). The

Applicant has established program requirements applicable to itself and its contractors which assure there will be a documented system of records attesting to quality. A system of planned and documented audits will be used by the Applicant to verify compliance with all aspects of the QA Program and to assess its effectiveness. In this regard, the Applicant is committed to ensuring that the auditing system used by itself and its contractors, subcontractors, and vendors will meet the Applicant's QA Program requirements. This commitment includes manpower, funding, and facilities to implement the system of audits. The Applicant's audit results will be reviewed and corrective action taken by responsible management (App. Exh. 8, pp. 17-51 through 17-54a; Staff Exh. 5, p. 17-4).

53. Brown & Root, Inc., the Architect-Engineer, is responsible for the design, engineering, equipment and materials procurement, and construction of the South Texas Project. This includes all plant structures, systems, and components except those provided by Westinghouse. Under the Brown & Root organizational arrangement, a Project QA Manager has been appointed to supervise the site QA activities. He reports to the Brown & Root Manager of QA who is located at Brown & Root's Houston office. The Manager of QA also has direct supervision over the Project QA Engineer, and the Vendor Surveillance Coordinator. The Manager of QA reports to the Senior Group Vice President of the Power Division (Testimony of Barker, p. 4 [fol. Tr. 510]). The Brown & Root QA Manager issues the quality assurance/quality control (QA/QC) procedures for the South Texas Project (App. Exh. 8, p. 17-20).

54. Brown & Root, Inc. has a system of planned and documented audits with provision for corrective and follow-up actions. Brown & Root has provided three levels of regular reviews and audits: (a) surveillance is performed and documented by site QA personnel on QC functions; (b) audit teams from Houston under the direction of the QA Manager perform audits and reviews both internal of site QA/QC functions and external of subcontractors; and (c) a QA Review Board directed by the Executive Vice President of Brown & Root will review and discuss the administrative activities of the QA Department to determine and evaluate the effectiveness of the Corporate QA Program. The implementation of all aspects of this program as applied to the South Texas Project will be monitored continuously by Houston Lighting & Power Company Quality Assurance personnel (Staff Exh. 6, pp. 17-1 through 17-3; App. Exh. 8, pp. 17-51 through 17-54).

55. Westinghouse is responsible for developing quality control requirements and procedures for the nuclear steam supply system and for assuring that these requirements and procedures are followed. Nuclear Energy Systems ("NES") is a group of Westinghouse Divisions which provides nuclear power plant services and equipment. NES operates under an Executive Vice President who reports to the President, Westinghouse Power Systems. This Executive Vice President establishes NES quality assurance policy which each Nuclear Energy Systems Division

implements. The quality assurance aspects of NES activities are overseen and coordinated by the NES Quality Assurance Committee (App. Exh. 9, Sec. 17.1). This results in uniform implementation of Appendix B to 10 CFR Part 50 (Staff Exh. 5, p. 17-1). The Pressurized Water Reactor Systems Division is the lead NES division with respect to design and procurement of NSSS equipment (App. Exh. 9, p. 17.1-2). Each Division has an organization specifically responsible for quality assurance and for quality control which reports at a level to assure independence consistent with Criterion I of Appendix B. Quality management in each Division is free of responsibility for schedule or cost, has the authority to stop work pending resolution of quality matters, and has the freedom to (1) identify quality problems, (2) initiate, recommend, or provide solutions through designated channels, (3) verify implementation of solutions and (4) control further processing, delivery, or installation of nonconforming items. In each Division, persons performing Quality Assurance functions have access to higher management for arbitration of unresolved issues (App. Exh. 9, p. 17.1-1; Staff Exh. 5, App. A, p. 17-1).

56. The Executive Vice President of NES has established a Quality Assurance Committee which includes the Quality Assurance and Reliability Managers of each Division. The Manager of the Systems Division Product Assurance is Chairman of the Quality Assurance Committee. This committee is responsible for auditing activities throughout Nuclear Energy Systems to assess whether the requirements of Appendix B to 10 CFR Part 50 are effectively met. The Quality Assurance Committee has the authority to identify problems, recommend solutions, and verify effective implementation of actions and policies. Through the activities of the Quality Assurance Committee and various auditing processes, there is regular and independent management assessment of the scope, implementation, and effectiveness of the total ongoing QA program (App. Exh. 9, p. 17.1-11; Staff Exh. 5, p. 17.1).

57. The quality assurance program applies to all safety related systems and components of the Westinghouse NSSS. The Staff has determined that this program complies with the requirements of Appendix B to 10 CFR Part 50 and the NRC's guidelines provided in: (1) "Guidance on Quality Assurance Requirements During Design and Procurement Phase of Nuclear Power Plants-Revision 1" (WASH 1283), May 1974, and (2) "Guidance on Quality Assurance Requirements During the Construction Phase of Nuclear Power Plants" Revision O (WASH 1309), May 10, 1974. Moreover, Westinghouse follows the NRC's "Guidance on Quality Assurance Requirements During the Operations Phase of Nuclear Power Plants" (WASH 1284), October 26, 1973, when applicable (Staff Exh. 5, Appendix A, p. 17-4).

58. The Staff, based on its review of the Applicant's Quality Assurance program, including the programs of its principal contractors, concluded that the program provides sufficiently detailed procedures, requirements, and elements of control to assure that all safety-related structures, systems and components will

be designed, constructed, installed, inspected and tested in accordance with the requirements of 10 CFR Part 50, and is therefore acceptable. Moreover, the Staff has determined that the QA personnel of the Applicant and of each of its principal contractors have sufficient authority, organizational freedom and independence to perform their QA functions effectively (Staff Exhs. 5 and 6, Chapter 17). The Board finds that the Staff's review of the Applicant's QA Program has been adequate and that it has been demonstrated that the QA Program will meet the requirements of the Commission's regulations, including the requirements of 10 CFR Part 50, Appendix B.

E. Financial Qualifications

59. The estimated cost of the facility, including both Unit 1 and Unit 2, the land for the plant site and the initial reactor core for each unit is approximately \$1,478,785,000.⁶ These costs will be borne by the Project Participants in proportion to their ownership interests. The Project Participants will own the South Texas Project site, Units 1 and 2, and the common station facilities as tenants in common in the following proportions:

Houston Lighting & Power Company will own an undivided 30.8%;

City Public Service Board of San Antonio will own an undivided 28.0%;

Central Power and Light Company will own an undivided 25.2%; and

City of Austin will own an undivided 16.0%.

Sources of funds which will be provided by each Participant include funds on hand, funds available from internal sources (primarily retained revenues and provisions for depreciation), short-term bank loans and commercial paper, and the sale of securities as required (App. Exh. 7, pp. 12, 13 and Ex. III-C).

60. Information presented in Houston Lighting & Power Company's annual report for 1974 reflects that operating revenues totaled \$486.8 million. Operating expenses were stated at \$377.8 million, of which \$45 million represented depreciation. Net income totaled \$69.4 million, of which \$5.8 million was distributed as dividends on preferred stock and \$32.6 million was distributed as dividends on common stock, with the balance of net income (or about \$31.0 million) retained for use in the business. As of December 31, 1974,

⁶The numbers shown in Staff Exhibit 6, page 20-1, differ from this figure by \$10,000,000. This results from use therein of a "Nuclear Fuel—Initial Load" cost of \$136,085,000, instead of the correct figure, \$126,085,000, as shown in Applicant's Exhibit 7, pages 13-14. As a result of this error, the estimated costs shown on page 20-2 of Staff Exhibit 6 are also overstated by a total of \$10,000,000. However, the effect on the estimated cost to be borne by each participant, as shown on page 20-2, is insignificant and does not affect the conclusions reached in the Supplement to the Safety Evaluation Report. (See affidavit of Arnold H. Meltz filed November 26, 1975, along with the NRC Staff's motion to reopen the record for receipt of said affidavit.)

Houston Lighting & Power Company's assets had a book value of \$1.69 billion, most of which (about \$1.55 billion) was invested in utility plant (App. Exh. 7, Ex. II). Moody's Investor Service, Inc. and Standard & Poor's Corporation rate the Company's bonds AA (App. Exh. 7, p. 13; Testimony of Oprea, p. 4 [fol. Tr. 486]).

61. Information presented in the annual report of the City Public Service Board of San Antonio for the fiscal year ended January 31, 1975, reflects that revenues of electric sales totaled \$137 million, while revenues from gas sales and other sources totaled an additional \$41 million. Operating expenses for the entire system, both electricity and gas, were \$112.5 million. Revenues available for additions to the utility plant for this 12 month period were in excess of \$31.6 million. As of January 31, 1975, the City Public Service Board of San Antonio had assets of \$659.4 million (App. Exh. 7, Ex. II). Moody's Investor Service, Inc. and Standard & Poor's Corporation rate the systems' current subordinated bonds AA (App. Exh. 7, p. 13; Testimony of Oprea, p. 5 [fol. Tr. 486]). Both services continue to rate the systems' existing first lien bonds AAA (Tr. 493).

62. Information presented in Central Power and Light Company's annual report for 1974 reflects that operating revenues totaled \$223.6 million, Operating expenses and taxes were stated at \$183.8 million, of which \$19.8 million represented depreciation. Net income totaled \$28.9 million of which \$2.6 million was distributed as dividends on preferred stock and \$16.8 million was distributed as dividends on common stock with in excess of \$9.5 million retained for use in the business. As of December 31, 1974, Central Power and Light Company's assets were \$603.9 million, most of which (about \$559.8 million) was invested in utility plant (App. Exh. 7, Ex. II). Moody's Investor Service, Inc. and Standard & Poor's Corporation rate the Company's bonds AA (App. Exh. 7, p. 13). Central Power and Light Company is a wholly owned subsidiary of Central and South West Corporation. As of December 31, 1974, the consolidated balance sheet of Central and South West Corporation and its subsidiaries reflected assets of almost \$1.8 billion. (Testimony of Oprea, pp. 4,5 [fol. Tr. 486]).

63. Information presented in the annual report of the Electric Utility Department of the City of Austin for the fiscal year ending September 30, 1974, reflects operating revenues of \$58.9 million. Operating expenses for the same period were \$21.6 million and depreciation and amortization were \$6 million. Net electric utility income was \$26.5 million. As of September 30, 1974, the Electric Utility Department of the City of Austin had assets of \$169.2 million (App. Exh. 7, Ex. II). Moody's Investor Service, Inc. and Standard & Poor's Corporation rate the city's revenue bonds AA (App. Exh. 7, p. 13; Testimony of Oprea, p. 5 [fol. Tr. 486]).

64. Based upon its review of the financial information presented in the Application, as amended (App. Exh. 7), the Staff concluded that each of the

Project Participants is financially qualified to design and construct the proposed South Texas Project facility (Staff Exh. 6, p. 20-2, App. E).

65. The record shows that the Applicant has supplied information regarding financial qualifications in accordance with the Commission's Regulations, 10 CFR §50.33(f) and Appendix C of 10 CFR Part 50. The Board finds, in view of the above facts, that the Applicant and the other Project Participants are financially qualified to design and construct the proposed facility.

F. Common Defense and Security

66. The activities to be conducted under the construction permits will be within the jurisdiction of the United States. All of the directors and principal officers of Houston Lighting & Power Company and Central Power and Light Company are citizens of the United States, and neither of those two companies is owned, dominated or controlled by an alien, a foreign corporation or a foreign government. The cities of San Antonio and Austin are municipal corporations and political subdivisions of the State of Texas. The Trustees and Management Staff of the City Public Service Board of San Antonio and the members of the City Council of Austin, and the City Manager, the Finance Administrator, the City Attorney, the Director of the Electric Utility Department and the principal members of the Electric Utility Department of the City of Austin are all citizens of the United States. The activities to be conducted do not involve any restricted data, but Applicant has agreed to safeguard any such data which might become involved in accordance with the Commission's Regulations (App. Exh. 7, pp. 4-11, 20). The Staff concluded (Staff Exh. 5, p. 19-1), and the Board finds, that the issuance of construction permits for the South Texas Project, Units 1 and 2, will not be inimical to the common defense and security.

G. Emergency Plans

67. The Applicant has described the preliminary plans for coping with emergencies in accordance with applicable regulations, including 10 CFR Part 50, Appendix E. These preliminary plans describe the Applicant's protective measures for accidents affecting both onsite and offsite areas, and identify local and state agencies and organizations which may be required to assist in coping with emergencies occurring at the South Texas Project site (App. Exh. 8, pp. 13.3-1 through 13.3-35). As prescribed in the regulations, a final emergency plan will be presented in the Final Safety Analysis Report for review during the operating license phase of this application, and detailed emergency procedures will be developed to implement the final plan.

68. The Staff made an independent assessment of the population distribution and evacuation routes in the area of the proposed site and determined that it is feasible and practicable to take protective measures, including evacuation on a timely basis within and beyond the site boundary during the expected lifetime

of the plant. The Staff further determined that appropriate criteria had been identified for the design of an acceptable emergency plan. The Staff concluded, and the Board so finds, that the Applicant's preliminary plans for coping for emergencies meet the requirements of 10 CFR Part 50, Appendix E, and are acceptable (Staff Exh. 5, pp. 13-2, 13-3).

H. Development of Final Design

69. The Applicant, the ACRS and the Staff have identified certain ongoing investigations aimed at verifying the nuclear steam supply design and confirming the design margins applicable to the South Texas Project facility (App. Exh. 8, §1.5, referencing App. Exh. 9, §1.5). These investigations involve both generic features of large water reactors and particular features of the RESAR-41 reactor, including residual heat removal system, anticipated transients without scram, verification of the design of reactor vessel supports in light of possible asymmetric forces, and verification of certain aspects of the 17 x 17 fuel design (Staff Exh. 5, Appendix A, p. 4-5; Staff Exh. 6, pp. 7-5, A-4 through A-6). Both the Applicant and the Staff agree that the scope and schedule of the various efforts are adequately designed to accomplish their various objectives on a timely basis for the South Texas Project facility, and that, should any of the investigations provide unexpected results, appropriate restrictions on operations can be used and/or modifications in design can be made to protect the health and safety of the public (Staff Exh. 5, p. 1-10).

I. Emergency Core Cooling System

70. The Applicant's PSAR references the RESAR-41 RSAR for a description of the Emergency Core Cooling System (ECCS) for each reactor, which is designed to cool the reactor core during those postulated accident conditions where it is assumed that mechanical failures occur which result in loss of coolant for the reactor vessel greater than the coolant available from normal operating equipment (App. Exh. 8, p. 6.3-1; App. Exh. 9, §6.3). The ECCS to be provided will have the required number, diversity, reliability and redundancy of components such that no single failure of ECCS equipment occurring during a loss of coolant accident will result in inadequate cooling of the reactor core (Staff Exh. 5, Appendix A, §6.3).

71. The Commission's regulations, 10 CFR §50.46, set forth certain criteria to which the ECCS is required to conform, including standards with regard to: (1) peak cladding temperature, (2) maximum cladding oxidation, (3) maximum hydrogen generation, (4) coolable geometry, and (5) long-term cooling. In order to demonstrate compliance with these criteria, Westinghouse submitted an ECCS Evaluation Model, pursuant to 10 CFR Part 50, Appendix K (App. Exh. 9, pp. 15.4-3, 15.4-4, 15.4-103, 15.4-106). The Staff reviewed the Model in detail and, as a result of its review, concluded that the Model is acceptable and

complies in every respect with the requirements of 10 CFR Part 50, Appendix K (Staff Exh. 6, p. 6-11, Appendix G).

72. The Applicant's PSAR and RESAR-41 RSAR describe the application of the ECCS Evaluation Model described above to the proposed South Texas Project facility, taking into account the minimum containment pressure determined to be applicable (App. Exh. 8, §15.4.1, p. 6.2-139; App. Exh. 9, §§15.3.1, 15.4.1). The Staff has reviewed this description and has concluded that: (1) the loss-of-coolant analyses that were performed conservatively represent the South Texas Project design and are wholly in conformance with 10 CFR Part 50, Appendix K; (2) the ECCS performance conforms to the peak clad temperature and maximum oxidation and hydrogen generation criteria of 10 CFR §50.46; (3) the ECCS performance will be adequate in the event of any postulated failure of a single component; and (4) adequate systems are available to provide long-term cooling (Staff Exh. 6, pp. 6-1 through 6-5).

72A. Subsequent to the completion of the Staff review, however, it was determined that the ECCS analyses submitted by the Applicant were performed for an assumed peak linear heat generation rate corresponding to a core average active fuel design length of 168 inches, which differed from the proposed RESAR-41 design core average active fuel height of 164 inches (App. Exh. 9). As a result of this inconsistency, the Applicant submitted a reanalysis of the most limiting break, utilizing the proper peak linear heat generation rate, to determine the calculated peak clad temperature for the proposed design core average active fuel height of 164 inches. The reanalysis resulted in an increase in the calculated peak clad temperature of 103°F; from 1912°F to 2015°F. The Staff reviewed this reanalysis and determined that the conclusions set forth in Staff Exh. 6, page 6-5 (see paragraph 72, *supra*) are not affected because even taking into account such a change, the South Texas Project design meets the requirements of 10 CFR Part 50, Appendix K and 10 CFR §50.46. (See affidavit of Carl H. Berlinger and letter from G. W. Oprea, Jr. filed December 9, 1975, along with the NRC Staff and Applicant's Joint Motion to Reopen the Record for Receipt of Evidence Supplementing the Record in this proceeding.) The Board agrees with the conclusions reached by the Staff.

73. On the basis of this record, the Board finds that the application contains an adequate description of the ECCS and an adequate analysis demonstrating compliance of the ECCS with 10 CFR §50.46, in accordance with the requirements of 10 CFR Part 50, Appendix K; and, the Staff's review of the proposed ECCS has been adequate.

J. Industrial Security

74. The Applicant has provided a general description of its program for protecting the plant against industrial sabotage. The program will include employee investigations, provisions for controlling access to the plant site,

liaison and provisions for instantaneous communication with local law enforcement authorities, monitoring of vital areas and equipment of the plant and control of personnel, materials and vehicles within the plant site (App. Exh. 8, §13.7). The Staff has reviewed the program and has concluded that the Applicant's arrangements for protection of the plant against acts of industrial sabotage are acceptable for the construction permit stage of review. In particular, the Staff has found that provisions for screening of employees at the plant and for design review of plant layout and protection of vital equipment described by the Applicant conform to NRC Regulatory Guide 1.17 (Staff Exh. 5, §13.7). The Board finds that an acceptable security program for the South Texas Project facility can and will be implemented by the Applicant. As required by the Commission's regulations, a detailed security plan will be submitted for review in the operating license application (10 CFR 50.34(c)).

III. CONCLUSIONS OF LAW

75. The Board has given careful consideration to all of the documentary and oral evidence presented by the parties. Based upon our review of the entire record in this proceeding and the foregoing findings, the Board concludes as follows:

A. The application and the record of the proceeding contain sufficient information, and the review of the application by the Staff has been adequate, to support the foregoing findings and the following conclusions and Order;

B. In accordance with the provisions of 10 CFR §50.35(a):

(1) The Applicant has described the proposed design of the facility, including, but not limited to, the principal architectural and engineering criteria for the design, and has identified the major features or components incorporated therein for the protection of the health and safety of the public;

(b) Such further technical or design information as may be required to complete the safety analysis, and which can reasonably be left for later consideration, will be supplied in the Final Safety Analysis Report;

(c) Safety features or components, if any, which require research and development have been described by the Applicant, and the Applicant has identified, and there will be conducted, a research and development program reasonably designed to resolve any safety questions associated with such features or components; and

(d) On the basis of the foregoing, there is reasonable assurance that: (i) such safety questions will be satisfactorily resolved at or before the latest date stated in the application for completion of the proposed facility; and (ii) taking into consideration the site criteria contained in 10 CFR Part 100,

the proposed facility can be constructed and operated at the proposed location without undue risk to the health and safety of the public;

C. The Applicant is technically qualified to design and construct the proposed facility;

D. The Applicant, the City of Austin, Texas, the City Public Service Board of San Antonio, Texas, and Central Power and Light Company are financially qualified to design and construct the proposed facility;

E. The issuance of permits for construction of the facility will not be inimical to the common defense and security or to the health and safety of the public;

F. As concluded in our Partial Initial Decision-Environmental and Site Suitability Matters dated August 8, 1975, the requirements of Sections 102(2)(C) and 102(2)(D) of the National Environmental Policy Act of 1969 and 10 CFR Part 51 of the Commission's Regulations have been complied with in this proceeding; and

G. In sum, the Board concludes that the appropriate action to be taken at this time is the issuance of construction permits, conditioned upon this Initial Decision.

IV. ORDER

76. Based on the Board's findings and conclusions, and pursuant to the Atomic Energy Act of 1954, as amended, and the Commission's Regulations, IT IS ORDERED that the Director, Division of Reactor Licensing, is authorized to issue to Houston Lighting & Power Company, as Project Manager, on behalf of itself and the City Public Service Board of San Antonio, Texas, Central Power and Light Company, and the City of Austin, Texas, permits to construct South Texas Project, Units 1 and 2, consistent with the terms of this Initial Decision and substantially in the form of Attachments A and B thereto. [Attachments A and B are omitted from this publication but are available at the NRC's Public Document Room, Washington, D. C.]

IT IS FURTHER ORDERED, in accordance with Sections 2.754, 2.760, 2.762, 2.764(a), 2.785 and 2.786 of the Commission's Rules of Practice, 10 CFR Part 2, that this Initial Decision shall be effective immediately and shall constitute the final action of the Commission forty-five (45) days after its issuance, subject to any review pursuant to the Rules of Practice. Exceptions to this Initial Decision and supporting briefs may be filed by any party within seven (7) days after the service of this Initial Decision. Within fifteen (15) days

thereafter (twenty (20) days in case of the Staff) any other Party may file a brief in support of, or in opposition to, the exception.

**FOR THE ATOMIC SAFETY AND
LICENSING BOARD**

Cadet H. Hand, Jr., Member

Frederick J. Shon, Member

Elizabeth S. Bowers, Chairman

Issued this 17th day of December,
1975 at Bethesda, Maryland.

[Attachments A and B and the list of transcript corrections are omitted from this publication but are available at the NRC's Public Document Room, Washington, D. C.]

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

LBP-75-72

ATOMIC SAFETY AND LICENSING BOARD

Robert M. Lazo, Chairman
Marvin M. Mann, Member
Donald P. deSylva, Member

In the Matter of
WASHINGTON PUBLIC POWER
SUPPLY SYSTEM
(WPPSS Nuclear Projects
No. 1 and No. 4)

Docket Nos. 50-460
50-513
December 22, 1975

Upon application in uncontested proceeding for construction permits for WPPSS Nuclear Projects Nos. 1 and 4, Licensing Board issues its Initial Decision, authorizing the issuance of a construction permit for Project No. 1. Licensing Board defers resolution of financial qualifications issue with respect to Project No. 4 and, therefore, does not authorize the issuance of a permit for that project.

Messrs. Joseph B. Knotts, Jr., and Nicholas S. Reynolds, Washington, D. C., and Mr. Richard Q. Quigley, Richland, Washington, for the applicant, Washington Public Power Supply System.

Mr. Edward G. Ketchen, for the United States Nuclear Regulatory Commission.

INITIAL DECISION
(Construction Permit)

I. BACKGROUND

This Initial Decision concerns the application to the United States Nuclear Regulatory Commission ("NRC" or "Commission") by the Washington Public

Power Supply System ("WPPSS" or "Applicant") for construction permits for WPPSS Nuclear Projects No. 1 and No. 4 ("WNP-1" and "WNP-4"). In particular, this decision involves NRC review of the radiological health and safety considerations specified in the notice of hearing entitled "Applications for Construction Permits and Facility Licenses; Hearing: Time for Submission of Views on Antitrust Matters", published in the *Federal Register* (39 *Fed. Reg.* 33588) on September 18, 1974.

The general background of this proceeding is set forth in detail in the Partial Initial Decision (NEPA and Site Suitability Issues) issued by this Atomic Safety and Licensing Board ("Board")¹ on July 30, 1975. *Washington Public Power Supply System* (WPPSS Nuclear Projects 1 and 4), LBP-75-41, NRCI-75/7 131 (July 30, 1975). In that Decision the Board held that the appropriate action to be taken is the issuance of construction permits for the facility subject to certain conditions for the protection of the environment and contingent upon the outcome of the evidentiary hearing on health and safety issues. The Board also retained jurisdiction over the environmental issues in this proceeding to the extent that any findings in the Partial Initial Decision might require modification due to information or data presented prior to completion of the radiological health and safety phase of the case. *Id.* at p. 150. The Partial Initial Decision is incorporated herein by reference.

Subsequent to the issuance of the Partial Initial Decision, and based upon the Board's favorable findings and determinations therein regarding environmental matters, site suitability, and certain safety matters, the Commission's Director of Nuclear Reactor Regulation by letter dated August 1, 1975, authorized the Applicant to conduct certain limited work activities at the site pursuant to 10 CFR §§50.10(e) (1) and (3). Notice of the issuance of this Limited Work Authorization ("LWA") was published in the *Federal Register* (40 *Fed. Reg.* 33740) on August 11, 1975.

Thereafter, the Board issued a "Notice and Order Setting Evidentiary Hearing On Further Limited Work Authorization Activities" on September 16, 1975, which was published in the *Federal Register* (40 *Fed. Reg.* 43776) on September 23, 1975. On September 29, 1975, in Washington, D. C., another evidentiary hearing was held to consider whether there were any unresolved safety issues which would preclude the extension of the LWA to additional limited work activities for which the Applicant had requested authorization.

On September 30, 1975, the Board issued its "Memorandum and Order Making Findings Pursuant to 10 CFR §50.10(e) (3) Under Expedited Decisional Procedure Provided For In 10 CFR §2.761" in which it determined that there were no unresolved safety issues relating to the additional LWA activities which

¹ On November 3, 1975, the Chairman of the Atomic Safety and Licensing Board Panel issued a "Notice of Reconstitution of Board" in which the present Board Chairman was appointed, 40 *Fed. Reg.* 52444 (November 10, 1975).

would constitute a good cause for withholding authorization to proceed with those activities. *Washington Public Power Supply System* (Nuclear Projects No. 1 and No. 4) Memorandum and Order, LBP-75-9, NRCI-75/9 573, September 1975. Based upon this determination by the Board, the Commission's director of Nuclear Reactor Regulation by letter dated October 3, 1975, authorized the Applicant to conduct certain limited work activities at the site pursuant to 10 CFR §50.10(e)(3). Notice of the issuance of this supplemental LWA was published in the *Federal Register* (40 *Fed. Reg.* 47545) on October 9, 1975.

The evidentiary hearing on radiological health and safety issues was conducted by the Board on November 11-13, 1975, in Richland, Washington. The parties presenting evidence at the hearing were the Applicant and the NRC Regulatory Staff.²

The decisional record in this proceeding is set forth in Appendix A to this Initial Decision. The documents received into the record as exhibits either will be cited herein by exhibit number or will be referred to by abbreviations of the titles, such as PSAR, ER, SER and FES. The transcript will be cited as "Tr."

To fulfill its responsibilities in this uncontested proceeding, the Board will make findings of fact relating to the health and safety issues specified in the Notice of Hearing, and will make appropriate conclusions of law. Finally, the Board will set forth an order ruling on issuance of the construction permits.

II. FINDINGS OF FACT—HEALTH & SAFETY

A. APPLICANT'S FINANCIAL QUALIFICATIONS FOR WNP-1

1. WPPSS is a municipal corporation and joint operating agency of the State of Washington. Its membership consists of 18 operating public utility districts and the cities of Richland, Seattle, and Tacoma, each of which operates an electrical distribution system within the State of Washington, WPPSS is empowered to acquire, construct, and operate facilities for the generation and transmission of electric power and energy, but does not engage in the sale or distribution of electric power or energy at retail.

2. WPPSS does not have rates and is not subject to the jurisdiction of any regulatory agency having control over rates. Rather, WPPSS is reimbursed for the

²By letter to the Board dated November 6, 1975, the Thermal Power Plant Site Evaluation Council ("TPPSEC") of the State of Washington notified the Board that TPPSEC had no concerns relating to WNP-1 and WNP-4, and that it would not participate further in the NRC proceeding. (TR. 653-55) TPPSEC had participated in the environmental hearing as an interested state pursuant to 10 CFR §2.715(c). NRCI-75/7 at p. 133.

cost of each project, including debt service, by the participants in that project. In this regard, the entire electrical capability of WNP-1³ has been purchased by 104 publicly and cooperatively owned utilities ("Participants"), all of which are statutory preference customers of the Bonneville Power Administration ("BPA"), and five investor-owned utilities ("Companies"). (Applicant's Exhibit 1, Staff Exhibit 8c, §20; Perko, Tr. following p. 670)⁴

3. The Applicant estimates the total cost of WNP-1 to be \$1.147 billion. This estimate includes nuclear production plant costs (\$1,042,509,000), transmission and general plant costs (\$15,426,000), and nuclear fuel inventory cost for the first core (\$89,065,000).

4. The Participants have executed "Net Billing Agreements" with WPPSS and BPA which provide that the Participants' portion of the capability of WNP-1 will be sold to the Participants, which in turn will assign the capability to BPA.⁵ The Net Billing Agreements provide that each Participant will receive a credit on its BPA power and service billings to the same extent that it makes payments to WPPSS for its share of the annual costs (including debt service) of WNP-1. The Net Billing Agreements provide that the Participants are obligated to pay WPPSS whether or not WNP-1 is completed, operable or operating, and notwithstanding the suspension, interruption, interference, reduction or curtailment of the output of WNP-1. Since, as noted, BPA gives credit to Participants for payments of costs made irrespective of energy actually received, there is assurance that the Participants will have funds to bear their share of costs of WNP-1 irrespective of operation of the project. In the event of default of a Participant, the remaining Participants are obligated to automatic step-ups in their billings by as much as 25% to satisfy the total obligations of the Participants.⁶ (Perko, Tr. following p. 670; Tr. 801-15; Staff's Exhibit 8c, §20)

³ A discussion of WNP-4, which is financed independently of WNP-1, in the context of the Applicant's financial qualifications is contained herein, *infra*, in paragraphs 11 and 12.

⁴ A detailed discussion of the Hydro-Thermal Program developed jointly by utilities of the Pacific Northwest and the BPA, and of the high degree of coordination and cooperation between utilities involved in the generation and transmission of electric power in the Pacific Northwest is presented in the Partial Initial Decision issued on July 30, 1975 (NRCI-75/7, at pp. 140-42).

⁵ During the period of operation from 1980 to 1996, 32.47% of the capability of WNP-1 will be purchased in equal portions by the five Companies (*i.e.*, Portland General Electric Company, The Montana Power Company, The Washington Water Power Company, Puget Sound Power and Light Company, and Pacific Power and Light Company). During this same period of operation, the remaining 67.53% of the capability of WNP-1 will be purchased by the Participants. After 1996, the entire (100%) capability of WNP-1 will be purchased by the Participants (Applicant's Exhibit 1; Perko, Tr. following p. 670).

⁶ A form of Net Billing Agreement is contained in the Official Statement of WPPSS prepared in connection with the sale in May of 1974 of WNP-1 Revenue Notes in the amount of \$77,000,000 (Applicant's Exhibit 1, Official Statement, at p. 43).

5. The Companies have executed "Exchange Agreements" with WPPSS and BPA, which provide that the Companies' portion of the capability of WNP-1 (32.47% for the period 1980-1996 only) will be sold to the Companies, which in turn will assign the capability to BPA. The Exchange Agreements provide that each Company will pay WPPSS for its respective share of the capability of WNP-1 during the period 1980-1990 an amount to be determined by applying BPA wholesale rates then in effect to the capacity and energy made available to each Company. For the period 1990-1996, each Company will pay WPPSS for its respective share based upon estimates by WPPSS of costs associated with the project. In turn, BPA will make available to each Company during the period 1980-1996 some 80,000 kilowatts of capacity and 68,000 average kilowatts (595,680,000 kilowatt hours annually). As is the case with the Participants, the Companies also are obligated to make payments whether or not WNP-1 is completed, operable or operating, and notwithstanding the suspension, interruption, interference, reduction or curtailment of the output of WNP-1.⁷ In the event of default of a Company, the nondefaulting Companies are obligated to satisfy the total commitments of the Companies. (Perko, Tr. following p. 670; Staff Exhibit 8c, §20.)

6. The sources of construction funds for WNP-1 are advances or guarantees from purchasers or prospective purchasers of the output of the project as an interim measure followed by the issuance of tax exempt short term debt securities. Permanent financing is effected by the issuance of tax exempt long term debt securities. WPPSS debt securities are of the revenue note (short-term) and revenue bond (long-term) variety. State of Washington law provides that WPPSS may issue revenue bonds or warrants payable from the revenues of the utility properties operated by it. R.C.W. (§43.52.3411).

7. The Board of Directors of WPPSS has adopted plan and system resolutions in connection with WNP-1 which authorize the issuance of securities. Specifically, resolutions were adopted both for revenue notes of \$25 million bearing an effective interest rate of 4.27%, issued on February 13, 1973, and for revenue notes of \$77 million bearing an effective interest rate of 6.05%, issued on May 15, 1974.⁸ Likewise, such a resolution was adopted for revenue bonds of \$175 million issued on September 1, 1975. These revenue bonds bear an effective interest rate of 7.73%. The long-term securities have been rated Aaa by Moody's Investor Service, Inc., and AAA by Standard and Poor. The resolutions adopted by the Board of Directors serve as the indentures to the buyers of

⁷A form of Exchange Agreement is contained in the record (Applicant's Exhibit 1, Official Statement, at p. 69).

⁸A summary of the Resolution authorizing the issuance of revenue notes in the amount of \$77 million is contained in the record (Applicant's Exhibit 1, Official Statement, at pp. 21-24).

WPPSS securities. However, there are three levels of underlying security for repayment of the bonds.⁹ The first level of security is the revenues to be derived from operation of WNP-1. The second level of security is the Net Billing Agreements executed by the Participants and the Exchange Agreements executed by the Companies, under which WPPSS receives a promise from the Participants and Companies that each will pay its respective portion of the costs of acquiring, constructing and operating the facility, whether or not the project is completed, operated, or curtailed. The aggregate of these obligations must equal the total costs of the facility. The third level of security is the obligation of the United States Government (through the Bonneville Power Administration) ultimately to pay the debt securities issued by WPPSS for WNP-1.

8. WPPSS has a record of successful financing of generation projects. For example, construction of the Packwood Lake Hydroelectric Project (27,000 kw) commencing in 1962 was financed by the sale of revenue bonds of \$13,700,000. The Packwood revenue bonds bear an effective interest rate of 3.66%, and are payable solely out of revenues from that project. The Packwood project output is sold to 12 public utility districts. Operating revenues for fiscal year 1975 were \$749,460.

9. Further, WPPSS successfully financed and is now operating the Hanford Generating Project (860,000 kw), which utilizes by-product steam produced in the dual purpose N-Reactor of the Energy Research and Development Administration on the Hanford Reservation. Construction costs were financed by the sale in 1963 of revenue bonds of \$122 million. These bonds bear an effective interest rate of 3.26%. The output of this project is sold to 76 publicly-owned and privately-owned utilities in the Pacific Northwest. Operating revenues for fiscal year 1975 were \$30,210,421.

10. Based on the information contained in paragraphs 1-9, *supra*, the Board finds that the Applicant possesses or has reasonable assurance of obtaining the funds necessary to cover estimated construction costs of WNP-1 and related fuel cycle costs.

11. With regard to WNP-4, the Applicant has requested that consideration of its financial qualifications to design and construct WNP-4 be deferred to a later time (Applicant's Exhibit 17). The Applicant's present plans are that the entire capability of WNP-4 will be purchased by publicly and cooperatively owned utilities through the execution of Participants' Agreements.¹⁰ However, execu-

⁹ Revenues from the sale of bonds are applied to the retirement of outstanding notes. Thus, the total net funding available for WNP-1 to date is \$175 million (Tr. 849).

¹⁰ Participants' Agreements are the second of a two-step procedure under which Participants commit to purchase a portion of the capability of WNP-4. The first step is the execution of Option Agreements under which potential participants obtain an option to purchase capability. The second step is the execution of Participants' Agreements under which Participants commit to purchase capability. Option Agreements for WNP-4 have been executed, but execution of Participants' Agreements is being delayed pending completion of secondary SEPA statements. (Tr. 825-29).

tion of the Participants' Agreements for WNP-4 has been delayed pending completion of secondary environmental impact statements pursuant to the Washington State Environmental Policy Act ("SEPA"), R.C.W. §43.21C. The Applicant estimates that the secondary SEPA statements should be completed in approximately four to six months, and that execution of the Participants' Agreements will follow thereafter in due course.

12. The Board need not determine at this time when the Applicant will be in a position to demonstrate that it has reasonable assurance of obtaining financing for WNP-4. The Board will be kept informed as this matter develops, and will receive additional evidence from the Applicant and the Staff with a view toward supplementing this Initial Decision at a suitable time with appropriate findings of fact relating to the Applicant's financial qualifications in the context of WNP-4.

B. DESCRIPTION AND SAFETY EVALUATION OF THE FACILITY

13. The facility is to be located on a 972-acre site on the Hanford Reservation in Benton County, Washington, approximately 8 miles north of the city of Richland. The exclusion area consists of two overlapping circles each having a radius of 1.2 miles and a center located on each containment structure.

14. The Applicant has leased the site from the United States Energy Research and Development Administration (ERDA).¹¹ Since a portion of the exclusion area lies outside the area under lease, the Applicant and the ERDA have executed a "Supplemental Agreement" to the lease and a "Memorandum of Understanding." These documents provide the Applicant with the authority necessary under 10 CFR 100.3a to determine activities within the designated exclusion area.¹² The Board finds that the Applicant will have control over the exclusion area as required by 10 CFR 100.3a.

15. WNP-1 and WNP-4 are identical facilities. Each incorporates a nuclear steam supply system consisting of a Babcock & Wilcox pressurized water reactor with a two-loop reactor coolant system. Each unit will be designed for a core power level of approximately 3600 megawatts thermal.¹³ Water will serve as both moderator and coolant, and will be circulated through the reactor by four coolant pumps.

16. Each reactor has 205 fuel assemblies and each assembly is arranged in a 17 x 17 (Mark C) fuel rod array. The initial reactor fuel loading will be arranged in four regions, each containing a different enrichment of U-235. The fuel elements will consist of Zircaloy-clad uranium dioxide fuel pellets. All fuel rods

¹¹ Partial Initial Decision, NRC-75/7 at p. 145.

¹² Applicant's Exhibits 32, 33

¹³ In the Partial Initial Decision the thermal power level was erroneously given as 3619 Mw, NRCI 75/7 at p. 145; this figure includes about 19 Mw of primary pump heat.

will be internally pressurized with helium during final welding to minimize cladding compressive stresses during service.

17. Each unit will have a containment building which will be a steel-lined reinforced concrete structure, and will house the reactor, steam generators, reactor coolant pumps, and pressurizer, and certain components of the plant engineered safety feature systems. The containment buildings are designed for an internal pressure of 52.0 psig, or about 23% above the peak of 42.3 psig calculated for the most severe design basis accident.

18. A General Services Building located next to the containment houses auxiliary systems, control equipment, certain components of the engineered safety systems, storage areas, emergency diesel generators, plant support systems and office space. Other major structures are the Turbine Generator Building, the spray pond (the ultimate heat sink) and the makeup water pumphouse located near the river. The steam and power conversion system for each unit will be designed to remove heat energy from the nuclear steam supply system and convert it into electrical energy by means of a steam turbine-generator. Waste heat rejected to steam condensers will be discharged from the closed-cycle circulating water system to the atmosphere through mechanical draft evaporative cooling towers.

19. The facility will have a number of engineered safety features designed for limiting the consequences of postulated accidents. The principal engineered safety features are the emergency core cooling systems, reactor containment systems, the containment spray system, the control room filtration system, the ultimate heat sink, the hydrogen control system, and the redundant onsite power system. These systems and components will be designed to be capable of assuring safe shutdown of the reactor under the adverse conditions of the various design basis accidents. They will be designed to seismic Category I requirements and must function even with complete loss of offsite power. Redundant engineered safety feature components and systems will be provided so that a single failure of any of these components or systems will not result in loss of the capability to achieve safe shutdown of the reactor.

20. On October 18, 1973, the Applicant submitted its preliminary Safety Analysis Report ("PSAR") pursuant to 10 CFR Part 50.¹⁴ The PSAR contains a description and safety assessment of the site and of the preliminary design of the facility, a description of the quality assurance program to be applied to the design, fabrication, construction and testing of the facility, a preliminary plan for the Applicant's organization, training of personnel and conduct of operations, a statement of the Applicant's technical and financial qualifications,

¹⁴The PSAR (with amendments one through seventeen thereto) was received into the evidentiary record in this proceeding at the hearing held on May 13-15, 1975, as Applicant's Exhibit 2. Subsequently, Amendments 18 and 19 to the PSAR were filed by the Applicant. These amendments were received into evidence at the hearing held on November 11-13, 1975, as Applicant's Exhibits 37 and 38 respectively.

and other pertinent information. The Applicant has submitted all information required by the Commission's Regulations for issuance of a construction permit for WNP-1.¹⁵

21. The Staff performed a technical review and independent evaluation of the information and data submitted by the Applicant in the PSAR and amendments thereto. As a result of this review and analysis, the Staff prepared a Safety Evaluation Report ("SER"), issued in May of 1975. Two supplements to the SER were issued on June 2 and August 8, 1975.¹⁶ The Staff concluded in the SER that, assuming favorable resolution of the then outstanding matters discussed therein, the facility can be constructed and operated at the proposed site without undue risk to the health and safety of the public. In SER Supp. 1 the Staff addressed and resolved certain of these outstanding matters, and noted that favorable resolution of the remaining outstanding matters would be required before construction permits would be issued. In SER Supp. 2 the Staff addressed and resolved all remaining outstanding matters except for the following: (1) evaluation of the Applicant's analysis to demonstrate compliance with 10 CFR §50.46 and Appendix K of 10 CFR Part 50 (involving acceptance criteria for emergency core cooling systems ("ECCS")); (2) the adequacy of the Applicant's authority to control the exclusion area pursuant to 10 CFR §100.3(a);¹⁷ (3) compliance with Appendix I of 10 CFR Part 50.

22. At the hearing held on November 11-13, 1975, the Staff introduced testimony which set forth its conclusion regarding Applicant's compliance with the ECCS matter, *viz.*, that with certain modifications to which the Applicant has committed, the Applicant's preliminary ECCS design will be in conformance with NRC Regulations (Cox, Tr. following p. 714). The Board received into evidence five letters from the Applicant to the Staff which set forth commitments and provided analyses made by the Applicant regarding ECCS (Applicant's Exhibits 27 through 31). With regard to the Applicant's compliance with Appendix I of 10 CFR Part 50, the Staff introduced testimony which set forth its conclusion that WNP-1 and WNP-4 meet the design objectives presented in Appendix I (Kornasiewicz, Tr. following p. 720; Stoddart, Tr. following p. 724; Essig, Tr. following p. 727).

23. In the SER the Staff analyzed and evaluated the distribution of population and land use offsite, and the physical characteristics of the site including seismology, geology, hydrology, and meteorology. It analyzed and

¹⁵All information required by the Commission's Regulations for issuance of a construction permit for WNP-4 has been submitted with the exception of that information which will demonstrate the Applicant's financial qualifications to design and construct WNP-4. See discussion, *supra*, in paragraphs 11 and 12.

¹⁶The SER was admitted into evidence at the evidentiary hearing of November 11-13, 1975, as Staff Exhibit 8a, SER Supplement No. 1 ("SER Suppl. 1") as Staff Exhibit 8b, and SER Supplement No. 2 ("SER Supp. 2") as Staff Exhibit 8c.

¹⁷See discussion, *supra*, in paragraph 14.

evaluated the design, fabrication, construction, testing and expected performance of the plant structures, systems and components important to safety, and the response of the facility to various operating transients and to a broad spectrum of postulated accidents, including design basis accidents. The Staff analyzed and evaluated the Applicant's plans for the conduct of plant operations and plans for actions to be taken in the event of an accident which might affect the general public, Applicant's organizational structure and the technical qualifications of operating and technical support personnel, and measures to be taken for industrial security. The SER also contains an analysis and evaluation of the design of the several systems provided for control of radioactive effluents from the plant, and the financial qualifications of the Applicant to design and construct the facility.

24. The Board has considered the Application, the PSAR and amendments thereto, and the SER and supplements thereto, and finds that the Staff's technical review and safety evaluation is adequate and comprehensive. Accordingly, the Board hereby incorporates by reference the conclusions reached by the Staff in the SER and Supplements 1 and 2 thereto, and the Staff's conclusions regarding compliance by the Applicant with 10 CFR 50.46, Appendix K of 10 CFR 50, and Appendix I of 10 CFR 50, except insofar as they may be modified by the findings made by the Board in this Initial Decision.

25. The Advisory Committee on Reactor Safeguards ("ACRS") has reviewed the application for WNP-1 and WNP-4 and has stated in its letter dated June 11, 1975, that the ACRS believes that if due consideration is given to items noted in the letter, "WNP-1 and 4, can be constructed with reasonable assurance that they can be operated without undue risk to the health and safety of the public" (Staff Exhibit 8c, Appendix D). The Applicant and the Staff have duly considered and are taking appropriate action to implement recommendations of the ACRS (Staff Exhibit 8c, §18; Cox, Tr. following p. 714; PSAR Amendment 18, Applicant's Exhibit 37, p. Q7-17; Applicant's Exhibits 25 and 26; Noonan, Tr. following p. 740).

C. QUALITY ASSURANCE

26. The Applicant has formulated a comprehensive quality assurance program. The Staff conducted a review of the program and presented testimony at the evidentiary hearing that the program embodies sufficient policies, procedures, and instructions to fully implement Appendix B of 10 CFR Part 50. The program is being implemented and is functioning satisfactorily.¹⁸ The Board finds that the Applicant's quality assurance program complies with the requirements of Appendix B to 10 CFR 50.

¹⁸ Tr. 919-25, 927-42.

27. At the evidentiary hearing held on November 11-13, 1975, the Applicant informed the Board that it intended to amend Section 17.3 of the PSAR which contains the QA program of Babcock & Wilcox ("B&W") for design and construction of WNP-1 and WNP-4.¹⁹ The amendment substitutes for Section 17.3 the B&W QA Topical Report²⁰ which has been approved by the Commission. (Applicant's Exhibit 40.) The B&W QA Topical Report was received into evidence as Applicant's Exhibit 40. The Board has considered the B&W QA Topical Report, and we confirm our previous finding that the Applicant's QA program including the B&W QA Topical Report, complies with Appendix B.

D. APPLICANT'S TECHNICAL QUALIFICATIONS

28. The Washington Public Power Supply System is a municipal corporation of the State of Washington. Currently it operates one hydroelectric project and the Hanford Generating Project, which utilizes byproduct steam energy produced by the New Production Reactor which is owned and operated by the Energy Research and Development Administration. WPPSS also has under construction WNP-2, a nuclear power plant on a site contiguous to the WNP-1, WNP-4 sites. WPPSS has a staff of approximately 340 full-time employees. About 50 professional employees, nuclear, electrical, mechanical and other engineers and operations personnel now have substantial direct involvement in the WNP-1 and WNP-4 projects. United Engineers and Constructors, Inc., has been retained by the Applicant to provide engineering, quality assurance, and construction management services for WNP-1 and WNP-4. The Babcock and Wilcox Company, which has substantial experience in nuclear power plants, will furnish the nuclear steam supply system.

29. Appropriate training programs for WPPSS personnel will be provided at existing reactors, on the site, and during preoperational testing of WNP-1 and WNP-4.

30. Based on the collective experience of WPPSS and its principal contractors, United Engineers and Constructors, Inc., and the Babcock and Wilcox Company, on the WPPSS organization and personnel, and on the WPPSS Quality Assurance Program, the Board finds that the Applicant is technically qualified to design and construct the WNP-1 and WNP-4 facility.

¹⁹ Subsequent to the evidentiary hearing held on November 11-13, 1975, the Applicant submitted Amendment 20 to the PSAR. The Staff was aware prior to the November 11-13, 1975 hearing of the changes to be made by Amendment 20 (Tr. pp. 703-704), and with one exception had already formally received the material to be included in Amendment 20. (Applicant's Exhibit 39; Tr. 999-1002). As agreed at the hearing, (Tr. 1017) PSAR Amendment 20, now designated as Applicant's Exhibit 41, is received in evidence.

²⁰ "B&W NPGD Quality Assurance Program for Nuclear Equipment, BAW-10096A, Rev. 1, Topical Report (March 1975).

E. RESEARCH AND DEVELOPMENT REQUIRED

31. The 17 x 17 (Mark C) fuel assembly to be supplied by Babcock & Wilcox will be identical in design to those previously reviewed and approved by the Staff for use in the Bellefonte Nuclear Plant, Units 1 and 2²¹ now under construction. While no new research and development programs are necessary to support the issuance of construction permits for WNP-1 and WNP-4, the Applicant has identified the ongoing research and development programs being conducted by B&W which may have an effect on the design for these facilities. These programs are intended to verify the 17 x 17 (Mark C) fuel assembly design and confirm the design margins of the nuclear steam supply system. Principal elements of the B&W research and development programs are fuel assembly flow tests, fuel assembly mechanical tests, critical heat flux tests, reactor vessel flow tests, component mechanical tests, control rod tests, and fuel densification tests. (PSAR §1.5.) The Staff has concluded that the test program outlined in the PSAR will provide the information necessary for the design and safe operation of WNP-1 and WNP-4 (SER §1.7). The Board finds that the Applicant has complied with the requirements of 10 CFR §50.35(a) with respect to required research and development programs.

F. COMMON DEFENSE AND SECURITY

32. The activities to be conducted under the construction permits will be within the jurisdiction of the United States. All of Applicant's directors and principal staff members are citizens of the United States, and the Applicant is not owned, dominated, or controlled by an alien, foreign corporation, or a foreign government. The activities to be conducted do not involve any restricted data, but the Applicant has agreed to safeguard any such data which might become involved in accordance with the Commission's Regulations. The Applicant will rely on obtaining fuel from sources of supply available for civilian purposes. Thus, no diversion of special nuclear material from military purposes is involved. The Board finds that the issuance of construction permits for WNP-1 and WNP-4 will not be inimical to the common defense and security.

G. COMPLIANCE WITH APPENDIX I TO 10 CFR 50

33. The Applicant has elected to exercise the option provided in paragraph II.D of Appendix I, as amended. 40 *Federal Register* 19439, May 5, 1975; 40 *Federal Register* 40818, September 4, 1975.

²¹ *Tennessee Valley Authority* (Bellefonte Nuclear Plant, Units 1 and 2) NRC Docket Nos. 50-438 and 50-439.

34. At the evidentiary hearing held on November 11-13, 1975, the Staff presented a detailed assessment of maximum individual doses to be expected offsite.²² To determine compliance with Paragraphs II.A, II.B, and II.C of Appendix I, doses from WNP-1 and WNP-4 were calculated on a per reactor basis. To determine compliance with the Annex in the September 4, 1975 amendment to Appendix I (and in lieu of Paragraph II.D of Appendix I), doses were calculated on a per site basis, combining doses from WNP-1, WNP-4, and WNP-2.

35. For liquid effluents, the annual total body dose was calculated to be 2.6 millirems per reactor, and the annual dose to any organ was calculated to be 3.4 millirems per reactor. These doses are within the Appendix I design objectives set forth in Paragraph II.A (3 millirems and 10 millirems, respectively). For noble gas effluents, the annual air doses for gamma radiation and beta radiation were calculated to be 0.21 millirad per reactor and 0.57 millirad per reactor, respectively. These doses are well below the design objectives set forth in Paragraph II.B.1 of Appendix I (10 millirads and 20 millirads, respectively). In addition, for noble gas effluents, the annual total body dose was calculated to be 0.087 millirem per reactor, and the annual skin dose was calculated to be 0.24 millirem per reactor. These doses are well below the design objectives set forth in Paragraph II.B.2 of Appendix I (5 millirems and 15 millirems, respectively). For radioiodines and other radionuclides released to the atmosphere, the annual dose to any organ was calculated to be 0.55 millirem per reactor, which is well below the design objectives set forth in Paragraph II.C of Appendix I (15 millirems). (Essig, Table 2, Tr. following p. 727.)

36. Since the Applicant elected to exercise the option of satisfying the Annex to Appendix I, the calculated doses from WNP-1, WNP-4, and WNP-2 (on a per site basis) were compared with the Annex to Appendix I. For liquid effluents, the Staff calculated the annual dose to the total body or to any organ to be 2.3 millirems, well below the design objective set forth in Paragraph A.1 of the Annex to Appendix I (5 millirems). For gaseous effluents, the annual air dose from gamma radiation and beta radiation was calculated to be 1.2 millirads and 1.7 millirads, respectively. These doses are well below the design objectives set forth in Paragraphs B.1 and B.2 of the Annex to Appendix I (10 millirads and 20 millirads, respectively). For gaseous effluents, the annual total body dose was calculated to be 0.45 millirem and the annual skin dose was calculated to be 1.0 millirem. These doses are well below the design objectives set forth in Paragraph B.3 of the Annex to Appendix I (5 millirems and 15 millirems, respectively). For radioiodine and other radionuclides released to the atmosphere, the annual dose to any organ was calculated to be 5.2 millirems, which is

²²Certain Staff dose models were revised to reflect the mandate contained in the opinion of the Commission (April 30, 1975) in the Appendix I rulemaking proceeding prescribing realism wherever possible in the definition of input parameters for the dose models (Essig, Tr. following p. 727).

well below the design objective set forth in Paragraph C.1 of the Annex to Appendix I (15 millirems). (Essig, Table 1, Tr. following p. 727.)

37. Based upon the foregoing, the Board finds that the proposed radwaste system for WNP-1 and WNP-4 is capable of meeting the criteria presented in Appendix I, as amended, and that levels of radioactive material in effluents to unrestricted areas will be "as low as practicable."²³

H. BORON RECOVERY SYSTEM

38. At the evidentiary hearing held on May 13-15, 1975, the Board indicated that it wished to explore the basis for the Staff's assumption (FES §3.5.1.1) that approximately ten percent (one million gallons per year) of the evaporator condensate stream in the Boron Recovery System ("BRS") for each plant would be discharged to the Columbia River (Tr. 490). At the evidentiary hearing held on November 11-13, 1975, the Staff testified that the BRS is defined as a liquid radwaste system, and that the Staff's Standard Review Plan for evaluation of liquid radwaste systems assumes ten percent discharge to the environment after treatment. The Staff indicated that this assumption is based on experience at similar operating plants. Further, the Staff testified that current Staff evaluation practice is to use a minimum of ten percent discharge even though the liquid radwaste system is designed for maximum waste recycle and the system capacity is sufficient to process wastes for reuse during equipment downtime and anticipated operational occurrences. (Stoddart, Tr. following p. 729.)

39. It is anticipated that the annual liquid waste to be processed through the liquid radwaste system will be approximately one million gallons (PSAR §11.2.2). Thus, the Staff's annual discharge assumption of one million gallons per plant from the BRS to the environment represents 100% of the *total* anticipated liquid radwaste *input* for each plant. The Applicant believes that this assumption is unrealistic for WNP-1 and WNP-4 and notes that the BRS is designed for total recycle (PSAR §9.3.4.2; Tr. 980), and that leakage from the BRS can only reach the liquid radwaste system through floor drains. There is no other direct connection between the BRS and the liquid radwaste system, and there are no other means by which BRS water could be released to the environment. (PSAR Figures 9.3-12 through 9.3-7; Tr. 985).

40. The Board believes that experience with this type of Boron Recovery System is not yet sufficient to provide a sound basis for judgment as to whether the Applicant's BRS assumptions or those of the Staff are the more realistic. In

²³The Staff has proposed that the term "as low as is reasonably achievable" to be substituted for the term "as low as practicable" in 10 CFR § 20.1, 50.34a, and 50.36a, and 10 CFR Part 50, Appendix I, 40 *Fed. Reg.* 33029 (August 6, 1975). This change is proposed pursuant to the direction of the Commission in its decision in the Appendix I rulemaking proceeding. See 40 *Fed. Reg.* 19440 (May 5, 1975).

any event, since it appears that the proposed radwaste system for WNP-1 and WNP-4 is capable of meeting with comfortable margin the criteria presented in Appendix I, as amended, of 10 CFR Part 50, on the basis of either assumptions, the Board believes that further inquiry into the matter is unnecessary at this time.

I. REACTOR PRESSURE VESSEL SUPPORTS

41. In its letter to the Commission dated June 11, 1975, regarding WNP-1 and WNP-4, the Advisory Committee on Reactor Safeguards ("ACRS") indicated that a question had arisen on a generic basis concerning loads on reactor pressure vessel ("RPV") support structures during certain postulated loss-of-coolant accidents in pressurized water reactors. The ACRS recommended that the RPV supports matter be resolved for WNP-1 and WNP-4 in a manner satisfactory to the Staff. (Staff Exhibit 8c, Appendix D) At the evidentiary hearing held on September 29, 1975, the Board indicated that it would inquire at the later hearing into the matter of RPV support design and analysis (Tr. 635-36). At the evidentiary hearing held on November 11-13, 1975, the Applicant and Staff presented documentary evidence and testimony concerning the RPV support matter.

42. The Staff testified that it has initiated a systematic generic review of the RPV support matter for pressurized water reactors. It also testified that a preliminary review of Applicant's calculations indicates satisfactory results. The Staff anticipates that the generic review will be completed in approximately one year, and that should any modification of design be necessary ample time is available to provide an acceptable solution.

43. The Board finds that the preliminary design for the reactor pressure vessel supports, and design criteria, have been adequately described, that this is a generic matter, and that the final design and analysis will be resolved during the construction stage.

III. FINDINGS OF FACT—ENVIRONMENTAL

A. COMPLIANCE WITH WATER QUALITY STANDARDS

44. On August 8, 1975, the Thermal Power Plant Site Evaluation Council of the State of Washington issued a final National Pollutant Discharge Elimination System Waste Discharge Permit ("NPDES Permit") to the Applicant for WNP-1 and WNP-4. The final NPDES Permit was received into evidence as Applicant's Exhibit 34. A draft NPDES Permit has been received into evidence at the environmental hearings as Applicant's Exhibit 16. The final NPDES Permit, *inter*

alia, establishes boundaries for the mixing zone and prohibits the discharge of any effluent which will cause a violation outside the prescribed mixing zone of any applicable State of Washington Water Quality Criteria or Standards contained in Washington Administrative Code ("WAC") §173-201, as they now exist or are hereafter amended. The mixing zone established in the final NPDES Permit is identical to that proposed in the draft permit.

45. In the Partial Initial Decision, the Board noted that the mixing zone proposed in the draft NPDES Permit would, if adopted, bring the chlorine discharge for WNP-1 and WNP-4 into compliance with the EPA Blue Book criteria.²⁴ As noted, the mixing zone prescribed in the final NPDES Permit is identical to that proposed in the draft NPDES Permit. Accordingly, the Board confirms its conclusion in the Partial Initial Decision that there is reasonable assurance that the discharge from WNP-1 and WNP-4 will comply with the water quality standards adopted by the Washington Department of Ecology on July 19, 1973, which were approved by the United States Environmental Protection Agency on March 18, 1974, pursuant to Section 303 of the Federal Water Pollution Control Act Amendments ("FWPCA"), 33 U.S.C. §125, *et seq.* (FES §4.2.5.1).²⁵

B. ANTI-BIOFOULING MEASURES

46. With regard to anti-biofouling measures to be utilized for WNP-1 and WNP-4, the Board found in the Partial Initial Decision "[b]ased upon current information . . . that the proposed chlorine system is environmentally preferable to other biocides, and that no mechanical systems are adequate substitutes for

²⁴The EPA Blue Book is the current version of the "Report of the National Technical Advisory Committee on Water Quality Criteria, 1968", as revised in 1973. The 1968 Report on Water Quality Criteria is commonly known as the EPA Green Book. See NRCI-75/7 at p. 154. It should be noted that the Blue Book is not binding in a determination of the permissible levels of deleterious concentrations of toxic materials such as chlorine, since the State of Washington Water Quality Criteria merely provide that such a determination be made "in consideration of" the Blue Book. WAC §173-201-040(11).

²⁵As the Board noted in the Partial Initial Decision, the Section 401 Certification issued for WNP-1 and WNP-4 precludes the Board from determining compliance with effluent limitations. NRCI-75/7 at p. 155. The Board concluded in that decision that since the 401 Certification relating to WNP-1 and WNP-4 did not address compliance with pertinent water quality standards, the Board had the authority and responsibility to make such a determination. The Board notes that the issuance by TPPSEC of the final NPDES Permit (Applicant's Exhibit 34), which was duly reviewed by EPA (Applicant's Exhibit 35), establishes the effluent limitations, standards and other water-related requirements for WNP-1 and WNP-4. In finding that there is reasonable assurance that discharges from WNP-1 and WNP-4 will comply with current water quality standards, the Board does not reach the question presented by the parties in their respective appeals of August 8, 1975 from the Partial Initial Decision, *viz.*, that the Board's action in making an independent determination of water-related issues was improper.

chlorine." NRCI-75/7 at p. 139. At the evidentiary hearing held on May 13-15, 1975, the Board requested that the parties conduct certain studies concerning the effect of chlorine and other biocides on aquatic biota (Tr. 587-89). On June 16, 1975, the Applicant presented a proposed scope and schedule for submission of the studies. On June 26, 1975, the Staff responded to the Board's request by indicating that it would review and comment on the results of the Applicant's studies. The Staff maintained that a thorough and adequate evaluation had been conducted by the Staff in the Final Environmental Statement, and that the existing record supported its conclusion that no measurable adverse effects on fish due to chlorine are expected. By Memorandum and Order dated July 29, 1975, the Board confirmed that it approved the proposed scope and schedule for submission of the studies. See NRCI-75/7 at p. 152.

47. On September 29, 1975, the Applicant transmitted to the Board a report titled "Applicant's Critical Review and Study as Requested by the ASLB, Relative to WNP-1 and WNP-4 and the Columbia River". The Staff reviewed the Applicant's report and concurred in the conclusions set forth therein. The report was received into evidence as Applicant's Exhibit 36 at the evidentiary hearings held on November 11-13, 1975. Upon review of the report, the Board concluded that the Applicant's report was objective and comprehensive (Tr. 783). The Board finds that the report confirms the Board's findings in the Partial Initial Decision that the proposed chlorine system is environmentally preferable to other biocides, that no mechanical systems are adequate substitutes for chlorine, and that there is reasonable assurance that there will be no measurable effects on fish due to exposure to chlorine. NRCI-75/7 at p. 139.

C. SUPPLEMENTAL COST-BENEFIT ANALYSIS FOR WNP-1

48. On October 22, 1975, the Applicant requested that the Staff defer consideration of the issue of financial qualifications for WNP-4 and delay issuance of the construction permit for WNP-4 (Applicant's Exhibit 17). The Applicant indicated that the Washington State public utilities could not sign participation agreements for WNP-4 until certain secondary environmental impact statements required by State law are completed. The Staff reviewed the Final Environmental Statement and the Board's findings in the Partial Initial Decision in light of the Applicant's request to delay both consideration of the financial qualifications for WNP-4 and the issuance of a construction permit for WNP-4. The Staff addressed the effect of the requested delay by assuming, conservatively, an indefinite postponement of WNP-4. That assumption bounds an evaluation of any effects a limited delay (*e.g.*, for six months) might have on the environmental effects evaluated in the FES and the findings by the Board in the Partial Initial Decision. The Staff also conservatively assumed that the majority of the impacts resulting from construction and operation of the project are assigned to WNP-1. The environmental effects due to construction and

operation of WNP-1 alone are set out in Supplemental Table A to the FES (Sharma and Conner, Tr. following p. 734). The Staff concluded, and the Board so finds, that in view of the generally small environmental costs from construction and operation for either WNP-1 and WNP-4 together, or WNP-1 alone, the cost-benefit balance is favorable for both cases.

49. The Staff also concluded, and the Board so finds, that the environmental analysis for WNP-1 and WNP-4 reflected in the FES, as supplemented by the further assessment with respect to the environmental impacts and the cost-benefit analysis for WNP-1, complies with the requirements of the National Environmental Policy Act of 1969 ("NEPA") and 10 CFR Part 51. Accordingly, the Board, after balancing the environmental, economic, technical and other benefits against environmental and other costs, and considering available alternatives, confirms its NEPA and site suitability findings made in the Partial Initial Decision. The Board finds that the review conducted by the Staff has been adequate and that the action called for under NEPA and 10 CFR Part 51 is the issuance of a construction permit for WNP-1 subject to the limitations for the protection of the environment listed in Paragraph 7 of the Summary and Conclusions on page ii of the FES. (Norris, Tr. following p. 732; Sharma and Connor, Tr. following p. 734.)

IV. SUPPORTING OPINION

A. APPENDIX I CONSIDERATIONS

At the evidentiary hearing held on May 13-15, 1975, the Board received into evidence as Applicant's Exhibit 12 certain information by which the Applicant sought to demonstrate that the numerical guides of Appendix I of 10 CFR Part 50 are met by WNP-1 and WNP-4. The information was submitted by the Applicant in anticipation of the effective date (June 4, 1975) of Appendix I.²⁶ The Applicant also presented in Applicant's Exhibit 12 a preliminary cost-benefit analysis, required at that time by Paragraph II.D of Appendix I, which was intended to show that there are no items of reasonably demonstrated technology which should be added to the radwaste systems sequentially and in order of diminishing cost-benefit return, and to show that further cost-effective reductions in population doses cannot be accomplished.

On July 29, 1975, the Board received into evidence the interim Appendix I calculations of the Staff which result in "upper-bound" estimates of doses to the general public. The Board also received the Staff's revised NEPA evaluation and

²⁶ The Commission issued its decision regarding Appendix I on April 30, 1975, and the decision was announced in the *Federal Register* on May 5, 1975 (40 *Fed. Reg.* 19439), and new Appendix I became effective on June 4, 1975.

cost-benefit analysis of radiological impacts from normal operation of WNP-1 and WNP-4. (Staff Exhibits 5, 6, and 7.) In its Partial Initial Decision the Board noted that the question of compliance with Appendix I would be addressed at the radiological health and safety phase of the proceeding. (NRCI-75/7 at p. 154)

On September 2, 1975, the Commission issued an amendment to Appendix I which became effective on September 4, 1975. The amendment provided the Applicant with the option of dispensing with the cost-benefit analysis required by Paragraph II.D of Appendix I if the proposed radwaste systems for WNP-1 and WNP-4 satisfy the Design Objectives for Light-Water-Cooled Nuclear Power Reactors contained in the Concluding Statement of Position of the Regulatory Staff (dated February 20, 1974) in the Appendix I rulemaking proceeding (NRC Docket RM-50-2). These design objectives are set forth in the Annex to the September 4, 1975 Amendment. (See *Fed. Reg.* 40818.)

On September 2, 1975, the Staff requested that the Applicant inform the Staff as to whether the Applicant would comply with Paragraph II.D of Appendix I or whether the Applicant would elect to dispense with the cost-benefit analysis required by Paragraph II.D and demonstrate compliance with the Annex to the September 4, 1975 amendment (Staff Exhibit 10). By letter dated September 19, 1975, the Applicant replied that it would exercise the option of demonstrating compliance with the Annex. Attached to the letter was certain information requested by the Staff relating to compliance with the Annex. (Applicant's Exhibit 22).

The Staff evaluated the radwaste systems proposed for WNP-1 and WNP-4 for the reduction of radioactive materials released to the environment in liquid and gaseous effluents. Based upon the information provided in Applicant's letter dated September 19, 1975, and based upon more recent operating data applicable to WNP-1 and WNP-4 and upon changes in the Staff's calculational model, the Staff generated new liquid and gaseous source terms in order to calculate releases from the site by WNP-1, WNP-4, and WNP-2 (Stoddart, Attachments 1-4, Tr. Following p. 724). The source terms for WNP-2 (a BWR) were calculated using the Staff's current models and methodology to assure consistency in the Staff's determinations of the new source terms for site-related criteria. These source terms were utilized by the Staff to calculate the individual doses presented in its testimony. (Stoddart, Tr. following p. 724.)

Included in the Staff's assessment are dose calculations of pathways associated with liquid effluents released to the Columbia River with noble gases released to the atmosphere, and with radioiodines and other radionuclides released to the atmosphere. Based upon meteorological data collected at the site and upon atmospheric transport and dispersion models, the Staff calculated relative atmospheric dispersion values (X/Q) for noble gases and X/Q and deposition values (D/Q) for radioiodines and radionuclides for locations where dose calculations were required. (Kornasiewicz, Tr. following p. 720.)

Answers to Board questions concerning the nature of the underlying assumptions, on which the Staff's calculations were based, indicate that by and large the dose estimates are reasonably realistic. The Staff witnesses explained the concept of "maximum exposed individual" as one who, by virtue of his living and dietary habits, exceeds what might be called the average individual in a given population. It would then appear unlikely that the dose received by the individual would be exceeded by any individual; indeed, it seems likely that the average individual would receive a rather smaller dose.

The Staff witnesses agreed that there is some conservatism in assumptions relative to source terms in that they are more likely to be in error on the conservative side. Such assumptions though appear to be based on actual experience in operating reactors insofar as is practicable. (Tr. 959-70.)

Recognizing that data concerning radioactive effluents are being collected continuously at operating plants, and that environmental monitoring programs are being implemented, this Board would urge maximum use of this information to gain even better knowledge and perspective with respect to the impact of radioactive effluents on the populations in the vicinity of nuclear power plants.

B. ORGANIZATION AND MANAGEMENT

In the interest of obtaining some understanding of the WPPSS organization and of administrative systems, both existing and planned, the Board questioned members of WPPSS management to determine the views and plans of top management relative to the design, construction, and operation of a complex nuclear facility. It appears that WPPSS management is committed to the further development and maintenance of a strong, affirmative program to assure responsible design and construction and safety of operation, and is committed to considered and appropriate allocation of authority and responsibility. It further appears that WPPSS management is conscious of necessary interactions among organizational units, involving established checks and balances, in both headquarters and plant organizations. WPPSS management has adopted the concept of "management by assurance" which calls for full understanding of administrative systems required and full administrative attention to the functioning of those systems with regard to design, construction, and operation of WNP-1 and WNP-4. (Tr 854-83, 901-14, 918)

It appears to this Board that WPPSS management reasonably comprehends the organizational and managerial necessities regarding the design, construction, and operation of a nuclear power plant. It can only urge the continuing and unrelenting attention by management to these vitally important matters throughout the life of the facility.

The Board notes that Chapter 13.0 of the SER contains a description and evaluation of the proposed plant operating organization, and briefly mentions plans for technical support. There is, however, no explicit mention of evaluation

by the Staff of management's understanding of and role in the design, construction, and operation of the plant. That role is to organize, to allocate authority and responsibility, to develop administrative systems and procedures, including appropriate checks and balances, and to devote continual attention to making the total system work.

The Staff appears to place substantial reliance on the formulation and existence of a Quality Assurance program and organization. There is little doubt that a well organized and executed quality assurance program, such as is envisioned by Appendix B to 10 CFR 50, can help greatly to produce a high quality facility. But the success of any system depends on the ability of management to develop, and propagate, a responsible attitude toward safety, whether the subject involved is design, construction, or operation. The safety of operation of a plant depends, vitally, not only on the technical and operational groups at the plant, but also on the continual attention by management and headquarters technical and operational groups, all involving appropriate checks and balances.

Therefore, this Board would urge the Staff to review and evaluate the management and organization of each Applicant explicitly at the construction permit stage with the objective of determining, among other things, whether management is planning soundly and is properly preparing for the assumption of responsibility for safety of operation of its facility.²⁷

V. CONCLUSIONS OF LAW

1. The Board has reviewed the entire record of this proceeding, including the proposed findings of fact and conclusions of law submitted by the parties. All of the proposed findings and conclusions submitted which are not incorporated directly or inferentially in this Initial Decision are herewith rejected as being unnecessary to the rendering of this Initial Decision.

2. In the Partial Initial Decision issued on July 30, 1975, the Board made findings of fact and determinations and reached conclusions of law, regarding environmental and site suitability matters, and on certain safety issues. Thereafter in its Memorandum and Order issued on September 30, 1975, the Board made additional determinations regarding certain additional safety issues. The Board has considered these earlier findings, determinations, and conclusions, as well as all of the documentary and oral evidence of record in this proceeding. This consideration and a review of the entire record, including that portion of

²⁷See discussion of organization and management in Mississippi Power & Light Company and Middle South Energy, Inc. (Grand Gulf Nuclear Station Units 1 and 2) LBP-74-64, RAI-74-8, p. 348 (August 30, 1974), and Niagara Mohawk Power Corporation (Nine Mile Point, Unit 2), LBP-74-43, RAI-74-6, p. 1046 (June 14, 1973).

the record created since the issuance of the Partial Initial Decision, have led the Board to the foregoing discussion and findings of fact, and to the conclusions of law stated hereinafter.

3. The Board concludes that the review of the application by the Staff has been adequate, and that the application and the record of the proceeding contain sufficient information to support findings by the duly authorized official of the Regulatory Staff (and the issuance of a construction permit based thereon for WPPSS Nuclear Project No. 1) to the same effect as the conclusions of law of the Board, as follows:²⁸

A. In accordance with 10 CFR §50.35(a):

(1) The Applicant has described the proposed design of the facilities, including but not limited to the principal architectural and engineering criteria for the design, and has identified the major features or components incorporated therein for the protection of the health and safety of the public;

(2) Such further technical or design information as may be required to complete the safety analysis, and which can reasonably be left for later consideration, will be supplied in the Final Safety Analysis Report;

(3) Safety features and components, if any, which require research and development have been described by the Applicant and the Applicant has identified, and there will be conducted, a research and development program reasonably designed to resolve any safety questions associated with such features or components; and

(4) On the basis of the foregoing, there is reasonable assurance that (i) such safety questions will be satisfactorily resolved at or before the latest date stated in the application for completion of construction of the proposed facilities, and (ii) taking into consideration the site criteria contained in 10 CFR Part 100, the proposed facilities can be constructed and operated at the proposed location without undue risk to the health and safety of the public.

B. The Applicant is technically qualified to design and construct the proposed facilities.

C. The Applicant is financially qualified to design and construct the proposed WNP-1 facility.

D. The issuance of permits for construction of the facilities will not be inimical to the common defense and security or to the health and safety of the public.

²⁸With the exception of Conclusion of Law C, all conclusions of law herein apply to both WNP-1 and WNP-4. The Board has deferred consideration of the financial qualifications of the Applicant to design and construct WNP-4 and therefore makes no conclusion of law with respect to the financial qualifications issue for WNP-4. Thus, the Board will not authorize the issuance of a construction permit for WNP-4 at this time. Accordingly, Conclusion of Law C applies only to WNP-1.

4. As we concluded in our Partial Initial Decision dated July 30, 1975, in accordance with 10 CFR Part 51 of the Commission's Regulations, the Board concludes:

a. The environmental review conducted by the Staff pursuant to the National Environmental Policy Act of 1969 ("NEPA") as further augmented and modified herein is adequate.

b. The requirements of Sections 102(2)(C) and (D) of NEPA and 10 CFR Part 51 of the Commission's Regulations have been complied with in this proceeding.

c. The Board has independently considered the final balance among conflicting factors contained in the record of the proceeding, and has determined that appropriate action to be taken is issuance of construction permits for WNP-1 and WNP-4,²⁹ subject to the conditions for the protection of the environment recommended by the Staff (FES, p. ii), and set forth in the Partial Initial Decision.

VI. ORDER

Based upon the Board's findings and conclusions, and pursuant to the Atomic Energy Act of 1954, as amended, and the Commission's Regulations, IT IS ORDERED that the Director of the Division of Reactor Licensing, Office of Nuclear Reactor Regulation, is authorized to issue to the Washington Public Power Supply System a permit to construct WPPSS Nuclear Project No. 1, consistent with the terms of this Initial Decision, substantially in the form of Attachment A hereto. [Attachment A is omitted from this publication but is available at the NRC's Public Document Room, Washington, D. C.]

IT IS FURTHER ORDERED, in accordance with 10 CFR §2.760, §2.762, §2.764, §2.785 and §2.786 that this Initial Decision shall become effective immediately and shall constitute with respect to the matters covered therein the final action of the Commission forty-five (45) days after the date of issuance hereof, subject to any review pursuant to the Commission's Rules of Practice. Exceptions to this Initial Decision may be filed by any party within seven (7) days after service of this Initial Decision. Within fifteen (15) days thereafter [twenty (20) days in the case of the Staff] any party filing such exceptions shall

²⁹ See n. 28, at p. 50.

file a brief in support thereof. Within fifteen (15) days of the filing of the brief of the appellant [twenty (20) days in the case of the Staff], any other party may file a brief in support of, or in opposition to, the exceptions.

**THE ATOMIC SAFETY AND
LICENSING BOARD**

Marvin M. Mann, Member

Donald P. deSylva, Member

Robert M. Lazo, Chairman

Issued at Bethesda, Maryland
this 22nd day of December, 1975.

[Appendix A (Decisional Record) and Attachment A (Construction Permit CPPR-134) are omitted from this publication but are available at the NRC's Public Document Room, Washington, D. C.]

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

LBP-75-73

ATOMIC SAFETY AND LICENSING BOARD

John M. Frysiak, Chairman
Gustave A. Linenberger, Member
Frank F. Hooper, Member

In the Matter of

DUQUESNE LIGHT COMPANY,
OHIO EDISON COMPANY,
PENNSYLVANIA POWER COMPANY,
THE CLEVELAND ELECTRIC
ILLUMINATING COMPANY,
THE TOLEDO EDISON COMPANY

(Perry Nuclear Power Plant,
Units 1 and 2)

Docket Nos. 50-440
50-441

December 31, 1975

Upon remand in part by the Appeal Board of the Licensing Board's Supplemental Initial Decision and Order of September 9, 1975 (LBP-75-53) in construction permit proceeding, Licensing Board reinstates certain portions of LBP-75-53, makes findings of fact regarding safety issues relating to geological anomalies, and authorizes certain work activity.

Licensing Board also (1) grants intervenor's motion to correct its proposed amended petition for leave to intervene; (2) grants Staff's and applicant's motions to supplement the record, and (3) treats intervenor's argument on need for power as a motion to reopen the record and denies it as such.

**SUPPLEMENTAL PARTIAL INITIAL DECISION:
SITE SUITABILITY AND ENVIRONMENTAL
MATTERS**

The Licensing Board's Supplemental Partial Initial Decision and Order of September 9, 1975, was vacated in part by the Atomic Safety and Licensing Appeal Board Order of November 6, 1975, and the cause was remanded for a determination pursuant to 10 CFR §50.10(e)(3) whether the post hearing

discovered geological anomalies present any unresolved safety issues relating to the activities for which a LWA-2 is sought.

The Board has in this Supplemental Partial Initial Decision reinstated substantial portions of the September 9, 1975, Supplemental Partial Initial Decision. However, for the sake of clarity, the Board has repeated parts rather than incorporated them herein by reference. To facilitate review, the Board will indicate at the beginning of each finding of fact and conclusion of law whether it is reinstated, revised or entirely new.

I. BACKGROUND

1. Pursuant to an Atomic Safety and Licensing Board (Board) Partial Initial Decision¹ and Supplemental Partial Initial Decision,² the U. S. Atomic Energy Commission issued a Limited Work Authorization (LWA-1)³ to The Cleveland Electric Illuminating Company (CEI) as agent for Duquesne Light Company, Ohio Edison Company, Pennsylvania Power Company, The Cleveland Electric Illuminating Company and The Toledo Edison Company (Applicants) to conduct limited construction activities within the scope of 10 CFR 50.10(e) (1) at the site of the Perry Nuclear Power Plant (PNPP) located on Lake Erie in Lake County, Ohio.

2. Thereafter, on December 4, 1974, Applicants filed a Motion for Determination pursuant to 10 CFR 50.10(e) (3) for authorization to install structural foundations, including any necessary subsurface preparation for structures, systems and components that were subject to the provisions of Appendix B to 10 CFR Part 50 (LWA-2).⁴

3. On December 9, 1974, Applicants submitted Amendment No. 22 to the PNPP's Preliminary Safety Analysis Report (PSAR). The Amendment proposed

¹ Partial Initial Decision—Environmental and Site Suitability, LBP-74-69, RAI-74-9, 538 (September 18, 1974).

² Supplemental Partial Initial Decision—Site Suitability and Environmental Matters, LBP-74-76, RAI-74-10, 701 (October 20, 1974).

³ See letter dated October 21, 1974, from Roger Boyd of the Atomic Energy Commission's Directorate of Licensing to Mr. Harold L. Williams, Cleveland Illuminating Company. The LWA-1 scope of work was supplemented by Mr. Boyd's letter of November 8, 1974, to Mr. Williams. The authorized activities included preparation of the site, installation of temporary construction support and service facilities, and construction of certain structures, systems and components which were not subject to the provisions of Appendix B to 10 CFR Part 50. The complete scope of LWA-1 work is set forth in Appendix A to this decision. (Appendix A is omitted from this publication but is available at the NRC's Public Document Room, Washington, D. C.)

⁴ See Appendix B to this Decision. (Appendix B is omitted from this publication but is available at NRC's Public Document Room, Washington, D. C.)

a change to a prior design criterion to design safety-related buildings and structures to withstand the effects of the hydrostatic pressure resulting from a groundwater level of 618 feet, mean sea level (msl). Concurrent with changing this design value, the Applicants proposed the installation of a pressure relief underdrain system⁵ within the excavation of the plant structure to be used during the lifetime of the Perry Plant in order to maintain the groundwater level permanently below elevation 568.0 feet, msl.

4. On January 20, 1975, the Acting Director, Office of Nuclear Reactor Regulation of the Nuclear Regulatory Commission⁶ (NRC) issued an Order to Show Cause⁷ why all work activities under the LWA-1 should not be suspended pending completion of the NRC's review and evaluation of the environmental and site suitability considerations raised by Amendment No. 22 to the PSAR. The Order temporarily suspended all work activities under the LWA-1.

5. Subsequently, on January 24, 1975, the NRC Staff filed a Motion to Reopen the Record on Environmental and Site Suitability Matters, alleging that Amendment No. 22 proposed "novel hydrological and plant design features that might have affected the issuance of the LWA-1, if the change had been known at that time".⁸

6. Applicants replied to the NRC Staff's Motion to Reopen the Record on February 4, 1975, requesting that the Board deny the NRC Staff's motion. In a separate filing, Applicants answered the Order to Show Cause contending that inasmuch as the NRC Staff did not challenge the site suitability other than with respect to the permanent dewatering system, suspension of all LWA-1 work activities was unjustified; and because of the partial completion of some activities at the time of the Order, the suspension could cause environmental and safety hazards. Applicants filed a motion with the Board requesting that the Board issue an order directing the Acting Director to lift immediately the temporary suspension of all LWA-1 work, with the exception of the authority to excavate the lower till on the Perry site.

7. On February 4, 1975, the Coalition for Safe Electric Power (Coalition) filed a motion supporting the NRC's Staff Motion to Reopen the Record on

⁵ Also referred to herein as the "permanent dewatering system," "dewatering system," and "underdrain system."

⁶ In accordance with the Energy Reorganization Act of 1974, 88 Stat. 1233, the Atomic Energy Commission has been abolished and its regulatory responsibilities have been assumed by the Nuclear Regulatory Commission.

⁷ 40 *Fed. Reg.* 3807 (January 24, 1975). The Show Cause Order indicated that based on a preliminary review of Amendment No. 22 the NRC Staff had questions concerning the structural integrity and performance characteristics of the proposed dewatering system. The NRC Staff also advised that the use of the permanent dewatering system might give rise to a number of environmental considerations which had not been previously reviewed and evaluated by either the NRC Staff or the Licensees.

⁸ NRC Staff's Motion, page 4, para. 5.

Environmental and Site Suitability Matters and filed a counter-motion also to reopen the record with respect to the need for power. The Coalition contended that, in light of announced changes in construction schedules of CAPCO generating plants and lower short-term reported electricity sales, a reopening of the record was warranted on the need for additional generating capacity.

8. Pursuant to the Board's January 30, 1975 Notice and Order for Prehearing Conference,⁹ a meeting was held between representatives of the Applicants, the NRC Staff, and the Coalition on February 12, 1975, to determine the issues to be heard and proposed schedule with respect to: (a) the Order to Show Cause, (b) the NRC Staff's Motion to Reopen the Record on Environmental and Site Suitability Matters, and (c) Applicants' Motion for Determination Pursuant to 10 CFR 50.10(e) (3). Applicants agreed to withdraw their Motion to Lift Order of Acting Director, Office of Nuclear Reactor Regulation, Temporarily Suspending All LWA-1 Work. In addition, Applicants agreed to provide a witness to address the effect of schedule changes in CAPCO Units and 1974 sales of electricity on the need for the PNPP. Applicants agreed to provide informal discovery to the Coalition on the need for power matters.

9. On February 18, 1975, the Acting Director issued a Modification of Order to Show Cause which in part lifted the suspension of work activities. The Acting Director concluded, based on a worst case analysis, that none of the environmental impacts discussed in the Order to Show Cause would change the ultimate conclusion of the benefit-cost balance for PNPP, despite the information submitted in the affidavit of Lewis G. Hulman (attached to the Supplement to the NRC Staff's Motion to Reopen the Record on Environmental and Site Suitability Matters).¹⁰

10. Subsequently, on February 24, 1975, the Acting Director issued a Further Modification of Order to Show Cause reinstating authorization for site excavation for facility structures down to the lower till. The Acting Director noted that the NRC Staff had concluded that the design criteria and preliminary design of the Applicants' proposed underdrain system (a) may be considered to be generally acceptable; and, (b) would hydrologically limit any significant environmental impacts to the site itself.¹¹

11. On February 28, 1975, the Board issued a Prehearing Conference Order that approved the following specific issues stipulated to by the Parties on February 12, 1975, as reiterated at a prehearing conference on February 19, 1975:

⁹40 Fed. Reg. 5410 (1975).

¹⁰40 Fed. Reg. 8261 (1975).

¹¹40 Fed. Reg. 8607 (1975). In orders issued on February 18 and 24, 1975, the Acting Director reinstated all LWA-1 activities, except for the excavation for facility structures into the lower till.

(a) The environmental, site suitability, and safety issues associated with the Applicants' proposed permanent dewatering system;

(b) Whether, pursuant to 10 CFR 50.10(e) (3), there are any unresolved safety issues relating to the activities described in Attachment A to Applicants' December 4, 1974, Motion for Determination Pursuant to 10 CFR 50.10(e) (3), that would constitute good cause for withholding authorization to conduct such activities; and,

(c) The effect, if any, of schedule changes in CAPCO units and 1974 sales of electricity on the need for the Perry Units.

12. The Advisory Committee on Reactor Safeguards (ACRS) issued a letter report to the NRC on May 12, 1975, on its review of the PNPP's proposed underdrain system. The report stated that the ACRS believed that the proposed system is acceptable and can be constructed without undue risk to the health and safety of the public.

13. On June 19, 1975, the Director of the Office of Nuclear Reactor Regulation issued an Order Rescinding Order to Show Cause,¹² which reinstated the only outstanding LWA-1 work activity, excavation into the lower till. This decision was based on the NRC Staff's conclusion that the proposed dewatering system is acceptable and that its incorporation into the design of the Perry facility does not affect the suitability of the Perry site.

14. On June 2, 1975, the Board issued a Notice and Order for Evidentiary Hearing to be held on June 23, 1975.¹³ Pursuant to the published notice, the evidentiary hearing took place in Cleveland, Ohio, on June 23-24, 1975. During the course of the hearing, the Applicants amended their December 4, 1974 Motion for Determination Pursuant to 10 CFR 50.10(e) (3) by deleting the request for authority to carry out items C.1.b, C.1.c, C.1.d and C.1.e (listed at Appendix B) pertaining to the Reactor Building.¹⁴

15. The record of the hearing includes direct testimony of witnesses for Applicants and the Staff. The Coalition and the Ohio Power Siting Commission submitted no direct testimony, but did cross-examine the witnesses. Four limited appearance statements were made and responses to concerns raised therein were made part of the record.¹⁵ The following exhibits were received into evidence:

Applicants' Exhibits

Exh. 16—Letters from the Applicants to the Staff with the following dates: January 31, 1975, March 13, 1975, March 27, 1975, April 3, 1975, April 21,

¹²40 Fed. Reg. 27303 (June 27, 1975).

¹³40 Fed. Reg. 24377 (1975).

¹⁴Tr. 2562-2564.

¹⁵Tr. 2661-2663, 2693, 2704, 2793-2794.

1975, April 29, 1975, May 15, 1975, May 16, 1975, and May 29, 1975, 2 vols. (Tr. 2686-2687, 2705, 2804-2805).

Exh. 17—Pages of the PSAR and Amendment No. 23 to the PSAR referred to in Applicants' Direct Testimony on the Perry Nuclear Power Plant Units 1 and 2, Pressure Relief Underdrain System. (Tr. 2687-2688, 2804-2805).

16. On August 28, 1975, the Board was advised by letter from the NRC Staff Counsel that on August 25, 1975, the NRC Staff was informed by the Cleveland Electric Illuminating Company that in excavating the Perry facility under the LWA-1, two anomalous structures in the underlying bedrock were found: (1) a thrust fault in the shale that extends for an undetermined distance found under the proposed location for the reactor building, and (2) "folding" in the Chagrin shale under the proposed location of the Unit 2 reactor building. Counsel allowed that NRC Staff believes that these features may affect both the foundation design and the design of the dewatering system, although, at the time, there was not sufficient information available to determine the impact, if any, of these features.

17. On September 9, 1975, the Board entered a Supplemental Partial Initial Decision; Site Suitability and Environmental Matters wherein it authorized the Director of Nuclear Reactor Regulation (Director) to permit the Applicants to undertake further site excavations for the limited purpose of determining the extent, if any, to which recently discovered geological anomalies might invalidate this Board's prior determination of the suitability of the proposed PNPP site. The Board also ordered the Director, assuming a satisfactory resolution of the geological anomalies matter before the Board, not to terminate or suspend work previously authorized and also to permit a LWA-2 consistent with the provisions of attached Appendix B.

18. In an Order dated October 17, 1975, (ALAB-294) the Appeal Board interpreted the Board's Supplemental Partial Initial Decision and Order as: (1) authorizing the Director to permit the Applicants to undertake further site excavations only for the limited purpose of investigating the extent and consequences of the geological anomalies; (2) contemplating a further evidentiary hearing before the Board on the results of investigations into these matters; (3) precluding any further work under LWA-1 until a subsequent satisfactory resolution by the Board of the site suitability problems raised by the belated discovery of the anomalies; and (4) authorizing the Director to issue a LWA-2, but to permit work thereunder only to the extent it is consistent with the terms of the Decision. The Appeal Board directed the Applicant and the Staff to advise whether it correctly interpreted the Decision and Order of September 9, 1975.

19. By Order dated October 30, 1975, the Appeal Board ordered oral argument on the interpretations offered by the Applicants and Staff.

20. By Order dated November 6, 1975, the Appeal Board vacated the September 9, 1975, Supplemental Partial Initial Decision and Order to the extent that said Order authorizes the Director to issue a Limited Work Authorization to the Applicants pursuant to 10 CFR 50.10(e) (3) (LWA-2) and remanded to the Licensing Board for a Determination by it pursuant to 10 CFR 50.10(e) (3) whether the recently discovered geological anomalies now present any unresolved safety issues relating to the activities for which the LWA-2 is sought.

21. By its Order of November 6, 1975, the Appeal Board referred to the Licensing Board the Staff's motion to supplement the record made upon oral argument and stated that the Licensing Board's determination of the geological anomalies matter may be made pursuant to the Commission's summary disposition rule (10 CFR §2.749), if the requirements of that rule are satisfied.

22. By its motion to supplement the record, the Staff moved the receipt into evidence of a Supplement Number 3 to the Safety Evaluation By the Division of Reactor Licensing together with affidavits. The affidavits of William P. Gammill, Lewis G. Hulman, Harold E. Lefevre, and Lyman W. Heller each attested to the truth of the matters contained in said Supplement Number 3 which related to their respective fields.

23. The intervenor Coalition objected to Staff's motion and counter moved to reopen the record and to amend the petition for leave to intervene on the following grounds:

(a) There has been no evaluation by ACRS of the geological anomalies as required;

(b) Sec. 2.104(a) of the 10 CFR allows for hearings to be held in the public interest;

(c) The lack of opportunity to cross examine the witnesses who prepared the Supplement Number 3 would constitute a denial of due process;

(d) A summary disposition of the geological anomalies matter would not allow for proper consideration of the related issue of "need for power," and

(e) Applicants have not obtained proper consent and approval from the Public Utilities Commission of the State of Ohio as required by Section 4905.48 of the Ohio Revised Code and that any construction done under a LWA would be in violation of that law.

24. The Applicants by reply dated November 19, 1975, and the Staff by reply dated November 28, 1975, responded in opposition to Coalition's objections and counter-motion. In their respective responses they requested the Board to summarily dispose of the geological anomalies matter.

25. Following a conference call between the parties initiated by the Board, the Applicants by motion dated December 11, 1975, moved the receipt into evidence of a letter-affidavit dated September 19, 1975, from Dalwyn R. Davidson, Vice-President-Engineer to Benard C. Rusche, Director, transmitting a

report by Gilbert Associates, Inc. entitled "Geologic Investigation of a Portion of the PNPP", with appendices consisting of a report by Charles E. Herdendorf, Director, Center for Lake Erie Area Research, Ohio State University, entitled "Investigation of Structural Features of the Bedrock at the PNPP", a report by James L. Murphy, Department of Earth Sciences, Case Western Reserve University, entitled "Glacially Induced Deformation at the PNPP Site, Lake County, Ohio"; and a report by Woodward-Clyde Consultants, entitled "Foundation Design Analysis". The letter-affidavit and the report by Gilbert Associates with appendices are hereinafter referred to as the Gilbert Report.

26. By a reply dated December 18, 1975, the Staff stated it has no objection to Applicants' motion. By a reply dated December 19, 1975, the Coalition objects to Applicants' motion on the same grounds as stated in its November 17, 1975, reply and counter-motion. We reject Coalition's further objections which were based upon the grounds that Applicants' motion is not timely nor does it meet the procedural requirements of 10 CFR §2.749. Coalition also moves to correct its proposed amended petition for leave to intervene filed November 17, 1975. Said motion is granted.

27. We also hereby grant Staff's motion to supplement the record dated November 5, 1975, and Applicants' motion to supplement the record dated December 11, 1975. Coalition's objections are without merit. In its Order dated November 6, 1975, the Appeal Board directed that any response to Staff's motion shall include all substantive objections to the conclusions recited in the Staff's papers regarding the geological anomalies at the reactor site and appropriate affidavits or other evidence to support these objections. We treat Coalition's objections serially as follows:

(a) There is no general or specific requirement for ACRS review prior to the issuance of a LWA-2 as suggested by the Coalition;

(b) Section 2.749(d) of the 10 CFR authorizes summary disposition (without a hearing) for a determination of specific subordinate issues such as the instant geological anomalies matter. It provides that a decision may be rendered,

If the filing in the proceeding . . . together with the statements of the parties and the affidavits, if any, show that there is no genuine issue as to any material fact and that the moving party is entitled to a decision as a matter of law.

(c) Coalition is not denied due process because under Section 2.749 of 10 CFR it has had the opportunity to show that a genuine issue of material fact exists. It has failed to make such a showing. If it had, a hearing on the issues would have followed. Coalition chairman's observations as stated on page 2 of its amended petition for leave to intervene do not constitute substantive objections to the conclusions recited in Staff's papers. We express our opinion about these "observations" in paragraph 53 below.

(d) The "need for power" issue is not relevant to the subject of the summary disposition. We have treated this issue in our September 9, 1975, Supplemental Partial Initial Decision and we reinstate our ruling on this in paragraph 64 below. As will be seen below we have also considered the statistics on growth which appear on page 2 of Coalition's response.

(e) As pointed out by Staff in its response, Section 4905.48 of the Ohio Revised Code applies only to the operation of a generating plant or a transmission line. It does not have any bearing on the construction activities. Coalition's objection on this ground is premature.

28. We have treated Coalition's argument on the need for power as a motion to reopen the record. For reasons cited in paragraphs 63 and 64 below we deny said motion. And for reasons cited above we deny Coalition's motion to amend petition for leave to intervene.

II. FINDINGS OF FACT

A. IMPACT OF APPLICANTS' PROPOSED PRESSURE RELIEF UNDERDRAIN SYSTEM UPON ENVIRONMENTAL, SITE SUITABILITY, AND SAFETY CONSIDERATIONS

29. (Reinstated S.P.I.D. Finding of Fact Paragraph 23) Applicants' proposed pressure relief underdrain system (also referred to as the permanent dewatering system) is described in Amendment No. 22 to the Applicants' PSAR, submitted on December 9, 1974; in PSAR Amendment No. 23, an updated, more complete description, submitted on March 5, 1975; in Applicants' Underdrain Testimony following Tr. 2660; and in Staff's Supplement 2 to the PNPP SER (April 1975), following Tr. 2769.

1. Environmental Effects of the Permanent Dewatering System

30. (Reinstated S.P.I.D. Finding of Fact Paragraph 24) Four potential environmental concerns were identified by the Staff's review of the Applicants' proposal to use an underdrain system to permanently lower the groundwater table in the primary plant building area during construction and throughout the plant lifetime:

- (a) Groundwater drawdown influence could possibly extend offsite and affect nearby wells;
- (b) Vegetation could possibly be affected by a permanently lowered groundwater table;
- (c) Continual release of collected groundwater to the surface drainage system could possibly affect vegetation, biota, water quality, erosion, and sediments; and

(d) The rate of shoreline erosion along Lake Erie could possibly be affected by a permanently lowered groundwater table.¹⁶

31. (Reinstated S.P.I.D. Finding of Fact Paragraph 25) Relative to item (a) above, the Applicants performed pumping tests designed to determine the size of the area around the plant that would be affected by the dewatering system. The results of those tests indicated that the groundwater level will not be affected beyond 300 feet from the plant structures.¹⁷ In addition, the Staff independently analyzed the effect on groundwater flow at the hydrologic boundaries of the site (Lake Erie to the north, a major stream diversion to the southwest, and a minor stream diversion to the east). The groundwater flow field, drainage system, and therefore, the excavation will be influenced and essentially bounded by these hydrological features. The Staff's and Applicants' analyses also confirmed that there will be no significant effects at offsite wells or at the site boundaries.¹⁸ As additional protection, in order to detect effects in excess of those expected, the Applicants have made a commitment to install piezometer arrays to check the drawdown of the water table at distances up to 1000 feet (where possible) in four different directions from the perimeter of the plant.¹⁹ Subject to the condition of the above commitment, the Board finds that there will be negligible drawdown effects at offsite wells and at the site boundaries.

32. (Reinstated S.P.I.D. Finding of Fact Paragraph 26) Regarding item (b) above, the limited zone of influence of the underdrain system is likely to affect only vegetation in the immediate vicinity of the plant facilities. Most of the plant site vegetation in the plant construction area has been removed during site grading. A few trees along the bluff overlooking the lake may be exposed to a lowered water table. However, those trees are already exposed to a lowered water table due to the effects of the bluff.²⁰ In addition, the trees along the bluff are distant enough from the construction area such that they should be unaffected by drawdown. Applicants plan to revegetate the disturbed site area upon completion of construction. Any plantings for areas near the buildings can either be irrigated or selected with the lower groundwater table in mind.²¹ Therefore, the Board finds that dewatering will not adversely affect the vegetation onsite.

¹⁶ Staff Supplemental Testimony on Environmental Effects of the Permanent Dewatering System, by Lewis G. Hulman (hereafter Hulman Testimony) following Tr. 2752, p. 1.

¹⁷ Applicants' Underdrain Testimony, p. 19.

¹⁸ Testimony of Staff Witness Lewis G. Hulman, following Tr. 2752 (Hulman Testimony), p. 5.

¹⁹ Applicants' Underdrain Testimony, p. 21.

²⁰ Applicants' Underdrain Testimony, p. 21.

²¹ Hulman Testimony, p. 6.

33. (Reinstated S.P.I.D. Finding of Fact Paragraph 27) Because of subsequent design changes to the underdrain system, item (c) above has been mooted. Groundwater collected in the underground sumps is now destined to be discharged into the upper gravity flow system for ultimate discharge into Lake Erie.²²

34. (Reinstated S.P.I.D. Finding of Fact Paragraph 28) Turning to item (d) above, it is noted that the bluffs that form the shoreline at the plant site are currently being eroded, primarily by a process of undercutting due to wave action and ice scour followed by slumping of the overlying material due to shear failure.²³ The influence of the permanently lowered groundwater table at the plant should be insignificant at the present location of the shoreline.²⁴ The bluff is presently receding at an average estimated rate of less than two feet per year. Applicants propose to implement shore protection measures if and when the edge of the bluff recedes to within 250 feet of safety or other necessary structures²⁵ (presently the closest safety class structure is 430 feet from the bluff).²⁶ A lowered groundwater table at the bluff would result in a reduced seepage rate through the face of the bluff and so delay incipient failures.²⁷ Although the Staff's witness Hulman was uncertain whether the effect on shoreline erosion due to the drawdown of groundwater by the underdrain system would be harmful or beneficial, he did indicate that there would be no measurable change in shoreline erosion attributable to the drawdown of groundwater due to the underdrain system.²⁸ Thus, with regard to environmental concern (d), above, the Board finds that the effect of the permanently lowered groundwater table on the rate of shoreline erosion along Lake Erie should be negligible.

35. (Reinstated S.P.I.D. Finding of Fact Paragraph 29) Since the underdrain system was not specifically considered at the time of the environmental hearing, the Board has reconsidered the overall cost-benefit analysis for the PNPP with the dewatering system included. The overall environmental impact of the underdrain system is found by the Board to be insignificant, as noted in the foregoing. The additional cost of the PNPP due to the underdrain system will be \$37.2 million.²⁹ This is a small (approx. 3%) additional cost compared to the estimated cost for both units of \$1.234 billion.³⁰ This cost is balanced against

²² Hulman Testimony, p. 2.

²³ Applicants' Underdrain Testimony, p. 24.

²⁴ Hulman Testimony, p. 6.

²⁵ Partial Initial Decision, LBP-74-69, RAI-74-9, p. 574.

²⁶ Hulman Testimony, p. 6.

²⁷ *Id.*, p. 7; Applicants' Underdrain Testimony, p. 25.

²⁸ Tr. 2755.

²⁹ Exhibit 16, Letter of January 31, 1975 at Attachment 1, Table 2, Tr. 2803.

³⁰ Tr. 2802.

the principal direct benefit of 16.9 billion kilowatt hours of electricity per year.³¹ Based on the above facts, the Board finds that the addition of the permanent underdrain system does not significantly alter the conclusion that the benefits of the PNPP far exceed the expected environmental costs.³²

2. Site Suitability and Safety Issues Associated with the Underdrain System

36. (Reinstated S.P.I.D. Finding of Fact Paragraph 30) The Staff, in Supplement No. 2 to the PNPP SER, concluded that the underdrain system is acceptable assuming satisfactory resolution of five outstanding items pertaining to said system:

- (a) Adoption of a design basis groundwater level of 594 feet, msl;³³
- (b) Specifications limiting minimum permeability and minimum strength requirements for the porous concrete blanket;³⁴
- (c) Assurance of protection against potential explosions in the dewatering system;³⁵
- (d) Assurance of protection against clogging of the porous concrete blanket and degradation of the foundation materials;³⁶ and,
- (e) Radiation monitoring of the effluent from the permanent dewatering system.³⁷

37. (Reinstated S.P.I.D. Finding of Fact Paragraph 31) With respect to issue (a), it was necessary to select an appropriate design basis groundwater level in order to assure that a postulated seismic event would not produce dynamic instability. The most severe of the postulated accidents that could overload the capacity of the underdrain system occurs as a result of a massive spill caused by a circulating water pipe failure in the turbine pedestal area of the turbine building. During the spill or immediately after it, an earthquake is postulated to occur, fracturing the turbine building walls and floors and allowing the water to enter the underdrain system.³⁸ This accident would present a hazard if the water level exerted sufficient pressure on seismic Category I buildings, during a seismic event, to create dynamic instability. Such pressures will be prevented by limiting the total volume of water that can spill into the turbine building, thereby limiting the maximum possible height of water and the maximum hydrostatic head. Initially, the Staff conservatively determined that a design

³¹ *Ibid.*; FES, p. 10-8.

³² LBP-74-69, RAI-74-9, p. 570.

³³ Supplement No. 2 to the SER, following Tr. 2769, Section 2.4.5.2.

³⁴ *Ibid.*

³⁵ *Id.*, Section 2.4.5.5.

³⁶ *Id.*, Section 2.4.5.10.

³⁷ *Id.*, Section 11.5.2.

³⁸ *Id.*, Section 2.4.5.2.

basis groundwater level of 594 feet, msl, would be required.³⁹ Applicants subsequently proposed to limit in two ways the volume of water that could possibly spill in such an accident. First, Applicants propose to install two seismic Category I valves in series in the piping system that provides makeup water to both of the cooling tower basins. Each valve, powered from separate power supplies, is designed to close automatically in the event of a failure in the circulating water system.⁴⁰ In addition, the Applicants propose to limit, by design, the amount of water in the circulating water system to 5,712,000 gallons for each reactor unit. These two modifications will limit the volume of water that could flood into the turbine building, in the event of a massive failure, to an amount that would limit the maximum water level to Applicants' design elevation of 590 feet, msl.⁴¹ Additionally, by limiting the design basis groundwater level to 590 feet, msl, instead of 594 feet, msl, as originally proposed, the factors of safety against upsetting during a seismic event are increased.⁴² The Staff confirmed this estimate using a detailed analytical model, which also indicated that the maximum water level around the safety related structures would not exceed 590 feet, msl, for the postulated design basis accident.⁴³ Based on the considerations set forth above, the Board finds that the design basis groundwater level of 590 feet, msl, proposed by the Applicants, is appropriate and acceptable.

38. (Reinstated S.P.I.D. Finding of Fact Paragraph 32) With respect to issue (b), Applicants have specified that the porous concrete blanket will have a minimum permeability of 3 feet per minute, and a minimum compressive strength of 1000 psi. Applicants' testing program showed that these values could be obtained.⁴⁴ The minimum permeability value of 3 feet per minute would be sufficient to cope with the maximum amount of water expected in a design basis accident. Permeabilities as high as 12.8 feet per minute have been obtained as the results of laboratory testing. A minimum value of 3 feet per minute provides additional conservatism, since the actual average value will be higher.⁴⁵ The 1000 psi compressive strength value exceeds the maximum design loading by a safety factor on the order of 2 to 1.⁴⁶ Applicants have agreed to submit the results of field tests to the Staff, confirming that the above limiting design

³⁹ *Ibid.*

⁴⁰ Supplemental Testimony on LWA-2 Activities and Effects on Site Suitability of the Permanent Dewatering System of M. D. Lynch, following Tr. 2771 (hereafter Lynch Supplemental Testimony), pp. 18-19.

⁴¹ *Id.*, pp. 19-21.

⁴² Tr. 2791-2793; compare Supplement No. 2 to the SER, Table at 27 with Exhibit 16, letter of January 31, 1975, at Table 1.

⁴³ Lynch Supplemental Testimony, pp. 20-21.

⁴⁴ Applicants' Underdrain Testimony, p. 8.

⁴⁵ Lynch Supplemental Testimony, pp. 22-23.

⁴⁶ Tr. 2702-2703; see Exhibit 16, letter of January 31, 1975, S-19-20.

criteria for the concrete blanket will be equalled or exceeded.⁴⁷ Therefore, the Board finds that the minimum specifications of 3-feet per minute, permeability, and 1000 psi, compressive strength, for the porous concrete blanket are acceptable.

39. (Reinstated S.P.I.D. Finding of Fact Paragraph 33) Issue (c) considers the possible accumulation of volatile gases in the underdrain system. Methane gas is known to accumulate in poorly ventilated tunnels and restricted volumes in excavations into shale in the region of Ohio that includes the site of the PNPP.⁴⁸ An explosion from this potential source of volatile gas could possibly render the dewatering system inoperative.⁴⁹ Applicants have committed that the active pumping components within the underdrain manholes will be qualified to operate in the presence of volatile air/fuel mixtures, including methane. In addition, operating procedures will require that all manholes and gravity discharge pipes be monitored for methane prior to entry by personnel, and be ventilated by portable equipment, if necessary.⁵⁰ The Board finds that this commitment offers acceptable assurance of protection against potential explosions and protection to personnel in the underdrain system due to the accumulation of methane.

40. (Reinstated S.P.I.D. Finding of Fact Paragraph 34) As to issue (d), the underdrain system will be draining groundwater continuously through the various hydrogeological formations (i.e., the lacustrine soil, the glacial tills and the underlying Chagrin shale). Hence, the Staff, their consultants (the U. S. Corps of Engineers), and the Applicants reviewed the potential for clogging of the porous concrete by the movement of fine, dispersed material from the surrounding geological formations. These reviews also included the consideration of physiochemical alteration effects on the surrounding strata and the deterioration of the Chagrin shale, which could result in piping and void formations in these materials and cause a decrease in the foundation support capability of the lower till and the Chagrin shale.⁵¹ Applicants conducted extensive testing of the Chagrin shale to determine its dispersion potential. The testing generally indicated that the rock was nondispersive, although the results of one test were inclusive; and in a chemical test on shale that had been ground up into soil, some dispersive characteristics were indicated.⁵²

41. (Reinstated S.P.I.D. Finding of Fact Paragraph 35) Because of the Staff's concern with the dispersion potential of the Chagrin shale, Applicants have

⁴⁷ Lynch Supplemental Testimony, p. 23.

⁴⁸ Tr. 2714.

⁴⁹ Lynch Supplemental Testimony, p. 24.

⁵⁰ Applicants' Underdrain Testimony, p. 16.

⁵¹ Supplement No. 2 to the SER, Section 2.4.5.10; Lynch Supplemental Testimony, p. 25.

⁵² Tr. 2680-2682, 2724.

proposed to utilize special construction methods to assure that the shale does not become subject to dispersion.⁵³ The special construction methods will provide assurance that a minimum amount of Chagrin shale surface area will be exposed and disturbed and that any deterioration of the Chagrin shale will be minimized.⁵⁴ The special construction methods will thereby minimize the potential for clogging of the porous concrete.⁵⁵ In addition, Applicants have agreed to institute a long-term monitoring program of the Chagrin shale foundation to assure that the condition of the shale does not deteriorate over the life of the plant.⁵⁶ In the event that the inspections or testing should indicate that clogging of the porous concrete has occurred, it would be possible to remedy this situation by flushing the concrete blanket with water introduced into the blanket through the manholes.⁵⁷ The Board finds from the foregoing that, with the indicated precautions, there is acceptable assurance against clogging of the porous concrete blanket and degradation of the foundation materials.

42. (Reinstated S.P.I.D. Finding of Fact Paragraph 36) The final item, (e) above, which the Staff considered as outstanding in Supplement No. 2 of the SER, relates to radiation monitoring of the effluent from the dewatering system. Although there are no direct paths between radioactive liquids and the underdrain system, postulated multiple failures, such as a failure of a radioactive waste holdup tank coupled with through cracks in the concrete foundation of the Radwaste Building, could hypothetically release radioactive liquids into the lower dewatering subsystem.⁵⁸ Applicants will provide continuous radiation monitors in each of the two discharge headers of the pumped discharge system to monitor the effluent prior to discharge into the gravity discharge system. Additionally, the Applicants have committed to providing means for automatically stopping the nine pumps in the pumped discharge system, if the levels of activity at the monitoring points exceed a value to be specified in the PNPP Technical Specifications.⁵⁹ Stopping the pumps will provide time for location of the source of the radioactive leak, possible decontamination, and some radioactive decay.⁶⁰ Even with a worst case accident (the simultaneous failure of the largest tank in the Radwaste Building, a crack in the concrete foundation that releases the water to the underdrain system, and a failure of the circulating water system that raises the level of the water in the underdrain system such that

⁵³ Applicants' Underdrain Testimony, p. 15; Lynch Supplemental Testimony, p. 26.

⁵⁴ *Ibid.*

⁵⁵ Lynch Supplemental Testimony, p. 27.

⁵⁶ Applicants' Underdrain Testimony, p. 15; Lynch Supplemental Testimony, p. 26; Tr. 2723.

⁵⁷ Lynch Supplemental Testimony, p. 27; Tr. 2684.

⁵⁸ Applicants' Underdrain Testimony, p. 23; Supplement No. 2 to the SER, Section 11.5.2.

⁵⁹ Applicants' Underdrain Testimony, p. 23; Lynch Supplemental Testimony, p. 29.

⁶⁰ Applicants' Underdrain Testimony, p. 23.

it would flow through the gravity drain system), the resulting dilution factor would be such that the concentration of radioactivity released to Lake Erie would be a very small percentage of the allowable concentrations that are specified in 10 CFR Part 20.⁶¹ The consequences to humans or to the ecosystem of the lake would be insignificant. The Board, therefore, finds that, with the Applicants' commitments, there is an acceptable assurance that there will be adequate monitoring of potential radioactive releases; that remedial measures may be possible; but that any release of radioactivity from the discharge of the underdrain system into Lake Erie would be well within applicable NRC limits.

43. (Reinstated S.P.I.D. Finding of Fact Paragraph 37) Based on a careful review of all of the evidence of record, the Board finds that there are no unresolved environmental concerns or safety issues associated with the proposed pressure relief underdrain system. The Board, in Reply to the Staff's Motion to Reopen the Record, dated January 24, 1975, reconfirms its original finding that there are no hydrological factors that would preclude a finding of site suitability.⁶² The Board also finds that there is no reason for further suspension of the work on the underdrain system. The Board further finds that there are no unresolved environmental or safety issues associated with the underdrain system that affect the requested LWA-2 activities, as modified, and which would constitute good cause for withholding authorization of these activities. The Board made numerous technical inquiries into the design, operation and testing of the proposed underdrain system for PNPP.⁶³ Based upon this information and other detailed information on the underdrain system that is contained in the evidentiary record, the Board finds that the PNPP can be safely constructed and operated using the permanent dewatering system. The matter of certain anomalous features which have been found in the bedrock underlying the site of the proposed PNPP facility (see paragraph 16, *supra*), is addressed by the Board in ensuing paragraphs 47 to 53.

B. WHETHER, PURSUANT TO 10 CFR SECTION 50.10(e) (3), THERE ARE ANY UNRESOLVED SAFETY ISSUES RELATING TO ACTIVITIES DESCRIBED IN APPLICANT'S MOTION TO CONDUCT LWA ACTIVITIES

44. (Reinstated S.P.I.D. Finding of Fact Paragraph 38) By letter dated December 4, 1974, the Applicants requested a limited work authorization

⁶¹ *Ibid*; Tr. 2786-2789.

⁶² Partial Initial Decision, LBP-74-69, RAI-74-9, p. 574.

⁶³ See Tr. 2697, 2708-2709, 2779-2785 (design criteria); Tr. 2693-2697 (flow path of water); Tr. 2690-2693, 2703-2704 (possibility of clogging); Tr. 2700-2703 (strength of porous concrete); Tr. 2713-2714 (methane gas); Tr. 2698, 2713-2714, 2765-2766, 2785-2789 (possibility of radioactive release); Tr. 2755-2757 (environmental effect).

(LWA-2) to conduct certain activities including authorization to construct structural foundations and exterior walls to grade. [A complete list of requested activities is found at Appendix B] Some of the work activity proposed is subject to the provisions of Appendix B to 10 CFR Part 50, and thereby subject to the provisions of §50.10(e) (3). This section states that authorization shall be granted by the Director of Nuclear Reactor Regulation only after the Board has determined that there are no unresolved safety issues relating to these work activities that would constitute good cause for withholding authorization.

45. (Reinstated S.P.I.D. Finding of Fact Paragraph 39) Supplement No. 1 to the SER listed fourteen outstanding safety-related issues for which a satisfactory resolution was still required prior to a decision for issuance of construction permits for the proposed Perry facility.⁶⁴ The Staff presented testimony addressing each of these safety-related issues, indicating what effect, if any, the resolution of each issue would have on the requested work activities.⁶⁵ The Staff concluded that, with one exception,⁶⁶ there were no unresolved safety issues that would constitute good cause for withholding authorization for the presently outstanding requested LWA-2 activities.⁶⁷ The Board concurs with the Staff's uncontroverted testimony that these fourteen issues do not constitute good cause for withholding authorization of the presently requested LWA-2 activities, as modified.

46. (Reinstated S.P.I.D. Finding of Fact Paragraph 40) All safety-related activities will be subject to The Cleveland Electric Illuminating Company's quality assurance (hereafter "QA") program. Both the Staff and Applicants presented testimony describing Applicants' QA program.⁶⁸ The Board also inquired into numerous aspects of the Applicants' QA program.⁶⁹ NRC's Office of Inspection and Enforcement (OIE) has conducted several inspections of the Applicants' QA program development and implementation. The Staff concluded that the Applicants' QA program and organization are acceptable based on the favorable reports of the OIE field inspections.⁷⁰ The Board concurs with the

⁶⁴ Supplement No. 1 to the SER, following Tr. 2769.

⁶⁵ Lynch Supplemental Testimony, pp. 9-17.

⁶⁶ The Staff identified an unresolved safety issue with respect to the design dynamic loadings on the Mark III containment suppression pool and structures within the suppression pool. This is a generic problem that is the subject of extensive testing by the vendor. [Lynch Supplemental Testimony, p. 30] The loadings in the containment suppression pool could affect the design of the Reactor Building. The only LWA-2 activities that could be impacted by this problem are items C.1.b. through C.1.e. which are associated with the Reactor Building. As noted at paragraph 14, Applicants, for the time being, have withdrawn those items from the LWA-2 request. [Tr. 2562-2564]

⁶⁷ Lynch Supplemental Testimony, p. 36, as corrected at Tr. 2770.

⁶⁸ Testimony of Applicants' witness, John G. Marjenin, following Tr. 2729; Lynch Supplemental Testimony, p. 34-36.

⁶⁹ Tr. 2735-2749.

⁷⁰ Lynch Supplemental Testimony, pp. 35-36.

Staff and finds that there are no unresolved QA matters that would constitute good cause for withholding authorization of the requested LWA-2 activities, as modified.

C. WHETHER, PURSUANT TO 10 CFR SECTION 50.10(e) (3), THERE ARE ANY UNRESOLVED SAFETY ISSUES RELATING TO ACTIVITIES DESCRIBED IN APPLICANT'S MOTION TO CONDUCT LWA-2 ACTIVITIES DUE TO EXISTENCE OF RECENT DISCOVERED GEOLOGICAL ANOMALIES

47 (new). In view of the fact that certain anomalous geological features have been found in the bedrock underlying the site of the proposed PNPP facility, Applicants and Staff have both moved to supplement the record regarding this matter; and, as noted above, both motions have been granted. The Board has carefully reviewed this additional evidence before it, and addresses its findings in these "new" paragraphs as indicated.

48 (new). In the Board's view there are three subissues to be resolved:

(i) Whether the geological anomalies represent sufficiently serious faulting to alter the design basis (DBE) or safe shutdown (SSE) earthquake aspects of the PNPP design;

(ii) Whether said anomalies might compromise the functioning of the permanent underdrain system; and,

(iii) Whether the zones of altered foundation rock will have an adverse effect upon the PNPP structures or their design, independent of seismic considerations.

49 (new). Applicants' supplement to the record (Gilbert Report) describes the bedrock deformations in detail. Regarding item (i), above, the Gilbert Report attributes the origin of most of these anomalies or deformations to glacial activity (Wisconsin glaciation), i.e., they are not of crustal tectonic origin, and can be considered to be neither a product of nor a cause of earthquakes. In the case of the small but distinct thrust fault exposed near the center of the North Perry excavation, it is still possible, theoretically at least, that the faulting was caused by post-glacial rebound rather than the advance of the glacial ice. It is believed that whatever stresses were engendered by post-glacial rebound would have been removed along natural joint planes in the bedrock and would not have created folding or even small thrust faults of the magnitude of the one exposed in the middle of the North Perry site. In any case, however, since the overlying till has been entirely removed at this point and since the fault has not been traced into the side walls of the excavation, the post-glacial hypothesis must be entertained. Even allowing the possibility of this mechanism being responsible for this particular fault or for others in the Chagrin formation, the significance of such deformation for building construction is nil. Wilson (see Gilbert Report,

Appendix 3 References) has deduced, from a rather elaborate mathematical model, that glacial rebound "does not seem a likely cause of earthquakes." It is certainly clear by examination of the particular example exposed at the North Perry site, extending downward only a few feet as it does, that such local, superficial faulting cannot be considered a hazard to construction. There is no evidence that the faulting of the shale is post glacial. The bases for these conclusions are well documented^{70a} and uncontroverted, and the Board finds no basis for altering the seismic design of the PNPP.

50 (new). Regarding item (ii), above, this sub-issue relates to the question of whether the geological anomalies provide any groundwater pathways that would upset the proper functioning of the permanent foundation dewatering system. Supplemental testimony of the Applicants^{70b} and the Staff^{70c} provide evidence to negate this concern, the only seepage being that occurring from the perched water table lying in the upper till, which is within the removal capability of the dewatering system. Based upon this evidence and the commitment of the Applicants to monitor the shale foundation (Paragraph 41, *supra*), the Board finds that the geological anomalies do not constitute a hindrance to the normal and to the safety-related functions of the proposed dewatering system.

51 (new). Item (iii), above, relates to the competence of the Chagrin shale in serving as an acceptable foundation. The Gilbert Report reviews the general acceptability of such shale to support large structures.^{70d} Corrective measures are discussed that would be adequate for use where degraded material or geological features are encountered.^{70e} Supplement 3 to the SER presents a letter, submitted under affidavit, committing the Applicants to undertake corrective measures where anomalies or degraded shale are encountered.^{70f} Applicants have presented the analyses of an independent consulting firm (Woodward-Clyde Consultants) regarding the competence of the foundation design. The firm's report concluded that the limited zones of altered rock will have no influence on the PNPP structures.^{70g} The Staff and its consultants reach a similar conclusion.^{70h} The Board finds, based upon the foregoing, including the commitments of the Applicants, that the foundation materials underlying the PNPP structures will be adequate.

52 (new). The Board notes that the Gilbert Report and the SER Supplement 3 both address their conclusions about the geological anomalies upon the basis of investigations made no later than September 10, 1975. The Board is

^{70a} Gilbert Report, pp. 4-13; *Id.*, Appendices I and II.

^{70b} Gilbert Report, p. 6; *Id.*, Appendix III.

^{70c} Supplement 3 to the PNPP SER, pp. 4-5, 8; *Id.*, Appendix H.

^{70d} Gilbert Report, pp. 12-13.

^{70e} *Id.*, pp. 14-16.

^{70f} Supplement 3 to PNPP SER, Appendix J.

^{70g} Gilbert Report, Appendix III.

^{70h} Supplements to PNPP SER, p. 8.

unaware of whether more recent information exists; however, the Staff has imposed a requirement that Applicants continue investigating, interpreting, and reporting their findings in the balance of the foundation to be excavated. In addition, the Staff's motion to supplement the record with Supplement 3 to the SER is dated November 5, 1975 and reflects, as of that date, the Staff's conclusion that the geological anomalies did not constitute good cause for withholding the issuance of an LWA-2. In summary, then, the Board considers that its findings in paragraphs 49 through 51 above, are current; and the Board finds the Perry site to be suitable.

53 (new). The Intervenor Coalition's amended petition for leave to intervene (November 17, 1975) alleges that additional investigations of the geological anomalies must be made before a finding of site suitability can be made. No evidentiary support for that allegation is offered. Nor is any basis provided for controverting the conclusions of the Staff in SER Supplement 3. Applicants' motion of December 11, 1975, to supplement the record with the Gilbert Report was opposed by Intervenor Coalition's motion of December 19, 1975 with the technical allegation of the existence of a fault (on the south wall of the Off-Gas Building—presumably Unit 1) that was not considered in the Gilbert Report. No evidence is offered by said Intervenor to support the existence of such a fault, nor is any basis provided for believing that, if it does exist, the fault is of any greater significance than those analyzed in the Gilbert Report. Thus the Board finds that the Intervenor Coalition has failed to show the existence of any material issue of fact to overturn the findings above. The Board further finds that there are no unresolved safety issues arising from the recently discovered geological anomalies.

D. THE EFFECTS, IF ANY, OF SCHEDULE CHANGES IN CAPCO UNITS AND 1974-1975 SALES OF ELECTRICITY ON THE NEED FOR THE PERRY UNITS

54. (Reinstated S.P.I.D. Finding of Fact Paragraph 41) In its Partial Initial Decision, the Board found the load forecasts of the Applicants as projected by the Applicants' extrapolation models and confirmed by an econometric model sufficient to demonstrate a need for the electricity to be produced by PNPP.⁷¹ In its findings, the Board observed that a reserve margin of 17% to 21% was needed to meet original demand, including demand in Applicants' service area.⁷² In adopting Applicants' witness Guth's econometric projections, the Board noted that even the lowest rate of projected growth would only defer the need

⁷¹ LBP-74-69, RAI-74-9, p. 549.

⁷² *Id.*, p. 546.

for PNPP by one year relative to the Applicants' originally projected date of need for Perry Unit #1, i.e., April 1979, to meet acceptable reserve margins.⁷³

55. (Reinstated S.P.I.D. Finding of Fact Paragraph 42) The issue of the effect, if any, of schedule changes in CAPCO units and 1974 sales of electricity on the need for the Perry units was raised by the Coalition for Safe Electric Power in a counter motion filed on February 4, 1975, in support of the Staff's motions to reopen the hearing record. During the Hearings on June 23-24, this issue was addressed by the testimony of Applicant's witnesses Masters and Guth. The Staff and Intervenors did not present testimony on this subject and proposed findings on the issue were filed only by the Applicant and OPSC.

56. (Reinstated S.P.I.D. Finding of Fact Paragraph 43) In its proposed findings, the NRC moved that the Coalition, pursuant to 10 CFR §2.754(a), be held in default on this issue and that the record not be reopened on the need for power issue. The NRC Staff reasons that the Coalition has failed to identify the specific evidence and reasoning in support of its motion.

Though we sympathize with the NRC Staff's position, we note that the Coalition is a group of lay persons not skilled in court procedures. We deny the NRC Staff's motion and address ourselves to the issue.

57. (Reinstated S.P.I.D. Finding of Fact Paragraph 44) Witness Masters testified that late in 1974 and 1975, CAPCO companies announced a number of scheduling changes in plant construction arising from difficulties experienced in obtaining adequate financing. By delaying construction of certain coal fired and nuclear plants, CAPCO minimized its capital outlay during 1974-1975. In the revised schedule, Beaver Valley #2 was deferred rather than Perry #1 because capital requirements for Perry #1 were less than for Beaver Valley for 1974-1975, and Perry would eventually provide 349 MW more capacity. Rescheduled dates are: 1980 for Perry #1 and 1982 for Perry #2.⁷⁴

58. (Reinstated S.P.I.D. Finding of Fact Paragraph 45) The above deferrals together with unanticipated construction delays have eroded projected CAPCO reserves considerably below projections made at the Evidentiary Hearing in 1974.^{74a}

59. (Reinstated S.P.I.D. Finding of Fact Paragraph 46) Testimony of Applicants' witness Guth addressed the question of the influence of the reduced 1974 sales upon projected demand. It was Guth's opinion that the lower 1974 demand arose from a combination of (1) mild weather, (2) a 20 to 25 percent increase in residential electricity rates, and (3) a decline in real personal income.⁷⁵ Guth forecast a return to normal economic growth some time

⁷³ *Id.*, p. 549.

⁷⁴ Testimony of Applicant's Witness William D. Masters, following Tr. 2807.

^{74a} *Id.*, Tables on pp. 2, 8.

⁷⁵ Guth, Tr. 2593-2596.

between 1975-1977. He predicted that electric rates will increase through the forecast period but not as fast as in the recent past.⁷⁶ He also predicted that there will be a substitution of electrical energy for fossil fuels by commercial, industrial and residential users during the period of his forecast for the plant.⁷⁷ Guth concluded that the 1974 experience was not inconsistent with his econometric model presented in 1974 and that his predictions of an average growth rate of from 4.5 to 6.0 percent will hold despite a decline in peak load of 800 MW during 1974.⁷⁸

60. (Reinstated S.P.I.D. Finding of Fact Paragraph 47) Guth's predictions were questioned during cross-examination by the OPSC. This examination challenged the basis of Guth's predictions of a return to normal economic conditions and also the values for cross-elasticity (effect of competing fuels) and own price elasticity (effect of increased electric rates) used in his model for forecasting growth.⁷⁹ Although Guth testified that the 1974 experience would change some of the values used in his model,⁸⁰ he felt that his forecast range was reasonable for future planning.⁸¹

61. (Reinstated S.P.I.D. Finding of Fact Paragraph 48) In responding to questions by the Board, Guth indicated that he had not made a new forecast for CAPCO but that CAPCO's revised forecast of 5.5 percent growth per year fitted within his previously predicted range of 4.5 to 6.0 percent.⁸²

62. (Reinstated S.P.I.D. Finding of Fact Paragraph 49) In the opinion of the Board, many of the uncertainties in forecasting future power needs that were brought out in the examination of witness Guth will be taken into account if Guth's lower and more conservative projections are used; that is, by using a 4.5 percent average growth rate starting from the peak load of 1974. This projection would delay need for the plant for only one year (1981).⁸³ This seems to be a reasonable minimal projection and provides an adequate basis for starting construction under the Applicants' revised schedule. To project the need for the plant later than 1981 would require a combination of unfavorable future economic conditions and reduced demand which were not anticipated by testimony in this proceeding.

63 (new). The Coalition, by its above-cited Objection and Counter Motion of November 17, 1975, seeks to reopen the record for the purpose, among others, of reevaluating the need for the Perry Units. In support of that specific contention, the Coalition has cited the following:

⁷⁶Tr. 2596.

⁷⁷Tr. 2596-2597.

⁷⁸Tr. 2597-2598.

⁷⁹Tr. 2616-2632.

⁸⁰Tr. 2639.

⁸¹Tr. 2648.

⁸²Tr. 2645.

⁸³*Id.*, 2646.

(a) Statistics from "Electric World, October 15, 1975, p. 72-33, System Engineering" comparing the summer peak loads of 1974 with those of 1975 for Ohio Edison, Toledo Edison, and Duquesne Light; and,

(b) Statistics from "Cleveland Electric Illuminating Company Quarterly Report to Stockholders 9/30/75" showing the comparison of kilowatt-hour sales by said utility for the third quarters of 1974 and 1975, and a similar comparison of such sales for two consecutive, unspecified 12-month periods.

Normalizing (on the basis of peak load) the numbers presented by the Coalition in the comparison described in (a), above, the Board calculates that the cited comparisons for the three utilities translate into an aggregate increase of approximately 0.9% in summer peak load for 1975 compared with 1974. The comparisons referenced in (b), above, quote a 5.6% decrease of kilowatt-hours sold by Cleveland Electric in the third quarter of 1975 compared with 1974, and a 3.8% decrease of sales in the second of two consecutive 12-month periods, the earlier of which, the Board infers, began in calendar 1973. Based upon the total CAPCO system capacity (taken for this purpose as 12,000 Mw), the Board calculates that the above two percentage decreases in Cleveland Electric's Kwh sales would result in, respectively, a 1½% and a 1% decrease to the sales performance of the CAPCO system, assuming no changes attributable to sales by the other member utilities.

64. (Revised S.P.I.D. Finding of Fact Paragraph 50) The above, very restricted update of sales and load changes presented by the Coalition has been carefully considered in the light of the body of evidence upon which the Board had based its previous finding regarding the need for the Perry units. Looking at the CAPCO system in its entirety, the rescheduled in-service dates for its various fossil and nuclear units, and the consequent projection of system reserves, the Board finds that the new information offered by the Coalition provides no basis for either reopening the record or overturning the previous findings of the Board regarding this issue. Accordingly, the Board reinstates its affirmative finding of need for the PNPP on the proposed schedule.

III. CONCLUSIONS OF LAW AND DECISIONAL CONDITIONS

65. (Reinstated S.P.I.D. Conclusion of Law Paragraph 51) The Board has reviewed the entire record of this proceeding, including all of the proposed findings of fact and conclusions of law submitted by the Parties. All of the proposed findings and conclusions submitted by the Parties which are not incorporated directly or inferentially in this Supplemental Partial Initial Decision are herewith rejected as being unsupported in law or fact, or as being unnecessary to the rendering of this Initial Decision.

66. (Reinstated S.P.I.D. Conclusion of Law Paragraph 52) These Supplemental Conclusions are additions to the Conclusions of Law contained in the

Licensing Board's Partial Initial Decision dated September 18, 1974,⁸⁴ and Supplemental Partial Initial Decision dated October 20, 1974.⁸⁵ The Board concludes that based on the evidence of record and its review of the proposed permanent dewatering system, there is still reasonable assurance that, subject to the conditions set forth below, the proposed site is a suitable location for a nuclear power reactor of the general size and type proposed from the standpoint of radiological health and safety considerations under the Atomic Energy Act of 1954, as amended, and rules and regulations promulgated by the NRC thereto.

67. (Reinstated S.P.I.D. Conclusion of Law Paragraph 53) The Board concludes that the environmental review of the proposed dewatering system indicates that the environmental impact of the dewatering system would be negligible and that the dewatering system does not materially affect the results of the cost-benefit analysis in the Final Environmental Statement and the Partial Initial Decision. This conclusion is subject to Applicants' commitment to monitor the drawdown of the water table, as indicated in paragraph 31 *supra*.

68. (Reinstated S.P.I.D. Conclusion of Law Paragraph 54) The Board further concludes that the Applicants have shown good cause why the limited work activities authorized previously by the Acting Director should not be suspended. With respect to Applicants' Motion for Determination Pursuant to 10 CFR §50.10(e) (3), dated December 4, 1975, as amended by Applicants' withdrawal of the request to conduct certain activities related to the Reactor Building (paragraph 14 *supra*), the Licensing Board concludes that there are no unresolved safety issues relating to the activities described in Appendix B hereto (as amended), which would constitute good cause for withholding authorization to conduct such activities. These conclusions are subject to the following conditions:

- (a) Limitation of available water in the event of a major accident accompanied by a seismic event (paragraph 37 *supra*);
- (b) Satisfactory field tests confirming minimum values for the permeability and compressive strength of the porous concrete blanket (paragraph 38 *supra*);
- (c) Satisfactory design of pumping components and monitoring for methane to eliminate potential hazards (paragraph 39 *supra*);
- (d) Imposition of special construction methods and subsequent inspections to assure minimum deterioration of the Chagrin shale (paragraph 41 *supra*); and
- (e) Installation of radiation monitors in the underdrain system (paragraph 42 *supra*).

⁸⁴LBP-74-69; RAI-74-9, p. 538.

⁸⁵LBP-74-76, RAI-74-10, p. 701.

69 (new). The Board concludes that the geological anomalies investigated to date at the Perry site do not constitute an unresolved safety issue if conditioned by the following commitments made by the Applicants (Appendix J to Supplement 3 of the PNPP SER):

(a) The Applicants will complete the geologic mapping and photographing of the Chagrin shale under each safety-related building or structure to be founded on shale, prior to placement of any concrete (or other permanent cover) over the founding bedrock. These maps and photographs will be formally submitted to the NRC Staff. No concrete or other permanent cover will be placed under safety-related buildings where any evidence or indication of degraded Chagrin shale as defined in commitment (b) observed, except as described in commitment (b).

(b) For those safety-related buildings or structures that are to be founded on Chagrin shale, which has been observed during the geologic mapping to have indications of weathering or other surficial indications of degradation, the Applicants will remove all such degraded material, including fractured Chagrin shale, brecciated gouges, clay seams and weathered shale. The Chagrin shale excavated below the foundation level of safety-related buildings pursuant to this commitment, will be replaced with lean concrete having a minimum compressive strength of 1500 pounds per square inch and conforming to the procedures, codes, standards and specifications referenced in Section 3.8.1.6.1 of the PSAR. Additionally, the excavations below the foundation level pursuant to this commitment, will be mapped and photographed and these maps and photographs will be formally submitted to the NRC Staff.

(c) The Applicants will also remove degraded Chagrin shale, as defined above, under those portions of the porous concrete blanket which would otherwise be in contact with the degraded shale and which are not under safety-related buildings or structures, to a depth of two feet below the porous concrete blanket. The degraded Chagrin shale removed under the porous concrete pursuant to this commitment will be replaced with either lean concrete (as defined in commitment b) or with porous concrete conforming to the specifications and procedures for the porous concrete blanket. The Applicants will also remove degraded Chagrin shale two feet beyond the perimeter of the porous concrete blanket for a depth of two feet below the porous concrete blanket. Class A backfill will be placed around the perimeter of the porous concrete blanket in a manner to assure that at least two feet of Class A backfill separates the porous concrete blanket from any degraded Chagrin shale (as defined in commitment (b)) which is not removed pursuant to this commitment.

70. (Reinstated S.P.I.D. Conclusion of Law Paragraph 55) The Licensing Board concludes that, based on the evidence of record concerning events since

the Partial Initial Decision and Supplemental Partial Initial Decision relative to the need for PNPP capacity in the CAPCO service area, there is a demonstrated need for power that justifies the construction of the Perry plant on its present schedule.

IV. ORDER

WHEREFORE, in accordance with the Atomic Energy Act of 1954, as amended, and the Rules of Practice of the Commission, and based on the findings and conclusions set forth herein, IT IS ORDERED that the Director of Nuclear Reactor Regulation should not terminate or suspend work activities previously authorized with respect to Perry Nuclear Power Plant Units 1 and 2. The Board also ORDERS that the Director of Nuclear Reactor Regulation is authorized to permit the conduct of the activities described in Appendix B hereto (as amended by Applicants' withdrawal of items C.1.b. through C.1.e.) with respect to the Perry Nuclear Plant, Units 1 and 2.

IT IS FURTHER ORDERED, in accordance with 10 CFR §§2.760, 2.762, 2.764, 2.785 and 2.786 that this Decision shall constitute the final decision of the Commission on January 30, 1976, which is thirty (30) days after the date of issuance of this Decision, subject to any review pursuant to the above-cited Rules of Practice. Exceptions to this Decision may be filed within seven (7) days after service of this Supplemental Partial Initial Decision and a brief in support of such exceptions may be filed by any party within fifteen (15) days (twenty [20] days in the case of the staff) thereafter. Within fifteen (15) days of the filing and service of the brief of appellant (20 days in the case of the Staff), any other party may file a brief in support of, or in opposition to, such exceptions.

It is so ORDERED.

FOR THE ATOMIC SAFETY AND
LICENSING BOARD

Frank F. Hooper, Member

Gustave A. Linenberger, Member

John M. Frysiak, Chairman

Issued this 31st day of December, 1975
at Bethesda, Maryland.

(The appendixes are omitted from this publication but are available at NRC's Public Document Room, Washington, D. C.)

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

LBP-75-74

ATOMIC SAFETY AND LICENSING BOARD

Edward Luton, Chairman
Gustave A. Linenberger, Member
Dr. John R. Lyman, Member

In the Matter of **COMMONWEALTH EDISON COMPANY**
(Byron Station, Units 1 and 2 and
Braidwood Station, Units 1 and 2)

Docket Nos. **STN 50-454**
STN 50-455
STN 50-456
STN 50-457

December 31, 1975

INITIAL DECISION

Upon application for construction permits for Byron Station, Units 1 and 2 and Braidwood Station, Units 1 and 2, Licensing Board issues its initial decision, making determinations of fact and law, and authorizing the issuance of construction permits for the four units.

APPEARANCES

Michael I. Miller, Esq., John W. Rowe, Esq., and Paul M. Murphy, Esq., of Isham, Lincoln & Beale, One First National Plaza, Chicago, Illinois, and Martha E. Gibbs, Esq.;
For the Applicant, Commonwealth Edison Company;

and

Myron Karman, Esq., Charles A. Barth, Esq., and Steven Sohinki, Esq., Office of the Executive Legal Director, Nuclear Regulatory Commission, Washington, D. C.;
For the NRC Regulatory Staff.

I. PRELIMINARY STATEMENT

1. On September 20, 1973, the Atomic Energy Commission, the predecessor of the Nuclear Regulatory Commission ("Commission"), docketed the application of Commonwealth Edison Company ("Applicant") for authorization to construct and operate four substantially identical pressurized water reactors at sites in Illinois designated by the Applicant as Byron and Braidwood.

2. In July of 1974, the Regulatory Staff ("Staff") issued Final Environmental Statements (FES) for both Byron and Braidwood Stations. On July 10, 1974, Applicant requested that Limited Work Authorizations ("LWA") be issued for both Stations authorizing various activities covered by 10 CFR §50.10(e)(1). Hearings were subsequently held concerning the environmental effects of these facilities and the suitability of the sites for nuclear power plants of the general size and type proposed. Thereafter, on December 6, 1974, with respect to Byron Station (RAI 74-12, p. 1006), and on January 8, 1975, with respect to Braidwood Station (RAI 75-1, p. 1197), the Atomic Safety and Licensing Board ("Board") issued Partial Initial Decisions reviewing the background of the application, generally describing the facilities and sites, and summarizing its inquiries into environmental matters and the suitability of the sites. In its Partial Initial Decisions the Board made all of the findings required by Appendix D to 10 CFR Part 50, in accordance with the National Environmental Policy Act, as a prerequisite to the issuance of a construction permit and determined that there is reasonable assurance that the proposed sites are suitable locations for nuclear power plants of the size and type contemplated. The Directorate of Licensing issued LWAs permitting various activities within the scope of 10 CFR §50.10(e)(1) on December 13, 1974, for Byron Station, and January 14, 1975, for Braidwood Station.

3. The Staff issued its Safety Evaluation for the Byron and Braidwood Stations ("SER") on April 4, 1975. The Advisory Committee on Reactor Safeguards (ACRS) completed its review of the application at its meeting on May 8-10, 1975, and issued its findings on May 13, 1975. Two supplements to the SER ("SER Supp. 1" and "SER Supp. 2") were issued in August and October 1975, in which the Staff evaluated additional information submitted by the Applicant and addressed the comments made by the ACRS.

4. On July 29, 1975 (for Byron Station), and August 7, 1974 (for Braidwood Station), the Applicant requested authorization to conduct certain additional activities, including subsurface preparation and foundation installation, pursuant to 10 CFR §50.10(e)(3)(i). An evidentiary hearing was held on August 26, 1975, for consideration of all matters relevant to Applicant's request, and on October 29, 1975, the Board issued a Second Partial Initial Decision in which it made all of the findings required under 10 CFR §50.10(e)(3)(ii) necessary for the additional authorization requested by the

Applicant. Because the Applicant's request included some safety-related activities, the Board reviewed the Applicant's quality assurance program, heard testimony from Mr. Shewski, the Applicant's Corporate Manager of Quality Assurance, and found that the Applicant's quality assurance program meets the requirements of Appendix B to 10 CFR Part 50. The Directorate of Licensing issued additional limited work authorizations for the Byron and Braidwood Stations permitting various activities within the scope of 10 CFR §50.10(e)(3)(i) on October 30, 1975. In addition, testimony was adduced relative to faults at the Byron site (Tr. 70, 809) and effects of compliance with Appendix I of 10 CFR 50 (Tr. 777).

5. This Decision deals with the remaining radiological health and safety considerations specified in the Notice of Application for Construction Permits, published in the *Federal Register* on October 26, 1973 (38 *Fed. Reg.* 29634). The Board has previously made detailed findings of fact in its three Partial Initial Decisions referred to above. Those findings will not be repeated except where necessary for clarity, and the Board affirms all of its previous findings in this matter except as expressly modified herein. By Order of October 24, 1975 (40 *F. R.* 51098), the Board set an evidentiary hearing for consideration of all remaining matters relevant to the issuance of the construction permits. That hearing was held on November 18, 1975, at Bethesda, Maryland.

6. The Commission has recently completed rulemaking hearings to establish numerical guides and limiting conditions for operation of light-water-cooled reactors to reduce radioactive material in their effluents to levels which are as low as practicable. (Docket No. RM-50-2) The health effects of radiation at various exposure levels were thoroughly considered in the development of release guides in that proceeding. The Applicant has demonstrated that the effluents from the proposed facilities will meet these numerical guides, which are now contained in Appendix I to 10 CFR Part 50. (See Paragraphs 33, 34, and 35 herein) Surveillance and monitoring during operation are used to verify that exposures are not significantly greater than expected.

7. Ms. Mary Tisue made a limited appearance on November 18, 1975, on behalf of herself, Concerned Citizens of Wisconsin, and a group in Rockford composed partially of members of the League of Women Voters. She expressed some general concerns about nuclear power, and, in connection with comments concerning the geologic structures found at the Byron Station, questioned whether a 1972 earthquake centered near Beloit, Wisconsin, had been considered in establishing the design basis earthquake for the Byron Station. (Tr. 848) The geologic investigation undertaken at the Byron Station site and the Board's findings with respect to that issue are found below at Paragraphs 15-19 and in the Second Partial Initial Decision. Dr. George Heim, an expert geologist employed by Applicant's Architect-Engineer, Sargent & Lundy, testified that the 1972 earthquake was one of the earthquakes specifically considered with respect

to the seismic design of the Byron plant and suitability of the Byron site. (Tr. 914)

8. The record in this proceeding consists of the entire record, including exhibits previously considered by the Board in reaching its Partial Initial Decisions concerning site suitability, environmental matters and the expanded limited work authorizations; all material pleadings filed since the issuance of those decisions; the transcript of the evidentiary hearing held on November 18, 1975; 10 exhibits introduced by the Staff on November 18, 1975; and two exhibits introduced by the Staff pursuant to motion of November 20, 1975. The record includes the Applicant's Preliminary Safety Analysis Report ("PSAR"), the general information portion of the application, the Staff's SER and two Supplements thereto ("SER Supp. 1" and "SER Supp. 2"), and the final report of the ACRS. A full listing of the exhibits introduced on or after November 18, 1975, appears as Appendix A to this decision. (Appendix A is omitted from this publication but is available at NRC's Public Document Room, Washington, D. C.)

9. On November 3, 1975, the Board notified the Staff and the Applicant that in addition to considering any other relevant matters, it wished the Staff to address the following items at the construction permit hearing: (a) The Applicant's approach to secondary water chemistry control as it relates to the protection of steam generator tube integrity; (b) The effect of asymmetric blowdown forces on the reactor vessel supports; (c) The status of the geological studies supporting the Staff's conclusion at SER Supp. 2, p. 2-2, that the faults discovered at the Byron site are not capable faults as defined in Appendix A to 10 CFR Part 100; (d) The status of compliance with Institute of Electrical and Electronics Engineers (IEEE) standards for seismic and environmental qualification of electrical equipment; and (e) Turbine missiles. The Board indicated that the Applicant might supplement the Staff's discussion on these issues, as appropriate. Testimony concerning each of these items was presented at the hearing.

10. Pursuant to the notice of hearing, and in the absence of any matters in controversy, the Board must determine:

1. Whether in accordance with the provisions of 10 CFR §50.35(a):

(a) The Applicant has described the proposed design of the facilities including, but not limited to, the principal architectural and engineering criteria for the design, and has identified the major features or components incorporated therein for the protection of the health and safety of the public;

(b) Such further technical or design information as may be required to complete the safety analysis, and which can reasonably be left for later consideration, will be supplied in the final safety analysis report;

(c) Safety features or components, if any, which require research and development have been described by the Applicant and the Applicant has

identified, and there will be conducted a research and development program reasonably designed to resolve any safety questions associated with such features or components; and

(d) On the basis of the foregoing, there is reasonable assurance that (i) such safety questions will be satisfactorily resolved at or before the latest date stated in the application for completion of construction of the proposed facilities, and (ii) taking into consideration the site criteria contained in 10 CFR Part 100, the proposed facilities can be constructed and operated at the proposed location without undue risk to the health and safety of the public.

2. Whether the Applicant is technically qualified to design and construct the proposed facilities;

3. Whether the Applicant is financially qualified to design and construct the proposed facilities, and

4. Whether the issuance of permits for construction of the facilities will be inimical to the common defense and security or to the health and safety of the public.

II. FINDINGS OF FACT—RADIOLOGICAL HEALTH AND SAFETY

A. DESCRIPTION OF APPLICATION AND STAFF ANALYSIS

11. The PSAR contains a description and safety assessment of the sites (Ch. 2) and of the preliminary design of the facilities (Chs. 3-12), including those reactor systems that are essential to health and safety. Various safety-related matters involved in the operation of these facilities and postulated accidents are analyzed (Ch. 15), and the effectiveness of the engineered safety features limiting their effects are evaluated (Chs. 6 and 15). The PSAR and the general information portion of the application (Westermeyer Ex. 2) also include descriptions of the financial qualifications of the Applicant; the technical qualifications of the Applicant, its NSSS vendor, and its architect-engineer to design and construct the proposed facilities; and the quality assurance program to be applied to the design, fabrication, construction, and testing of the facility. (Ch. 17) The Board finds that the Applicant has submitted all information required by the Commission's regulations for issuance of a construction permit.

12. The Staff has performed an extensive technical review and evaluation of the data and information submitted by the Applicant in the PSAR, as amended. As a result of this review and its own independent analysis, the Staff issued the SER (Staff Ex. 4), the SER Supplement No. 1 (Staff Ex. 5), and the SER Supplement No. 2 (Staff Ex. 14), which concluded that all outstanding matters

had been completed in a manner satisfactory to the Staff (SER Supp. No. 2 at 21-1) and that issuance of permits for the construction of the facilities will not be inimical to the health and safety of the public (SER at 21-1).

13. The SER and Supplements Nos. 1 and 2 delineate the scope and summarize the results of the Staff technical evaluation relative to the radiological health and safety aspects of the proposed facilities, including site characteristics (SER §2); design criteria for the reactor, structures, components, equipment, and related systems (SER §§3, 4, 5, 6 and 7); radioactive waste management and radiation protection (SER §§11, 12); accident analysis (SER §15); quality assurance matters (SER §17); the Applicant's financial qualifications (SER §20); and matters concerning the common defense and security of the United States (SER §19). Section 1.6 of the SER lists various modifications to the design of the facilities as originally proposed which were required by the Staff as a result of its review and numerous meetings with the Applicant and its contractors. The Board has considered the PSAR and amendments thereto and the SER and its supplements. The Board finds that the Staff's technical review and safety evaluation are comprehensive and adequate.

B. SITE SUITABILITY

14. The Board has previously made detailed findings of fact describing the Braidwood site in its Partial Initial Decision dated January 8, 1975 (LBP-75-1 at RAI-75-1 p. 1197). We have now considered the additional material and Staff analysis presented in the SER and Supplement No. 1, including the Staff's analysis of offsite radiation doses resulting from postulated accidents and routine releases. We find no reason to alter our previous findings that "the proposed site is a suitable location for two nuclear power reactors of the general size and type proposed from the standpoint of radiological health and safety considerations under the Atomic Energy Act and the rules and regulations of the Commission." The Board has further considered the characteristics of the site in light of the particular design proposed and finds that the Braidwood site and the facility design conform to the requirements of 10 CFR Part 100 for operation of the reactors at their design power level.

15. In its Partial Initial Decision dated December 6, 1974, the Board (LBP-74-87 at RAI-74-12 p. 1006) described the Byron site and evaluated its suitability for nuclear power reactors of the general size and type proposed from the standpoint of radiological health and safety considerations. The Board found, on the basis of the information then available for its review, that there is reasonable assurance that the site is suitable for nuclear reactors of the general size and type proposed. During excavation at the Byron site, the Applicant determined that there have been small amounts of displacement along several joints in the rocks underlying the site. In view of this development, the Board, at

a previous hearing, extensively considered this matter and determined that there was no reason to modify its previous findings. (Paragraphs 15-22 of the Board's Second Partial Initial Decision of October 29, 1975.) At the time of the previous hearing, the Applicant was continuing its fault specific geotechnical investigation, and the Staff had not yet analyzed all of the data collected by the Applicant. (Tr. 815) In Supplement No. 2 to the SER, published on October 17, 1975, the Staff concluded that the faults are not capable faults as defined in Appendix A to 10 CFR Part 100. (SER Supp. 2 §2)

16. At the Board's request, Dr. Robert E. Jackson, the Staff geologist investigating this matter, testified with respect to the status of the Staff's investigation and the support for the Staff's conclusion at SER Supp. 2, p. 2-2. Dr. Jackson and geologists from the United States Geologic Survey have completed their review of the analysis made of a residual soil which overlies the fault and which in turn is capped by glacial material. (Tr. 898) The unfaulted glacial material is no less than 250,000 years old. They concluded that the last faulting at the site can be demonstrated to have occurred more than 250,000 years in the past. Studies of the tectonics of the region indicate a likelihood that the faults occurred at least 65 million years ago. (Tr. 898-899) Dr. Jackson reaffirmed his opinion that the faults are not capable within the meaning of Appendix A to 10 CFR Part 100. (Tr. 900)

17. Dr. George E. Heim, geologist for the Applicant's architect-engineer, and Dr. H. B. Willman, geologist for the Illinois Geologic Survey, explained for the Board the results of the fault specific investigation recently completed at the Byron Station by the Applicant. Dr. Heim testified that since his last appearance before the Board, he has had the opportunity to inspect the largest of the small faults (designated by the Applicant as Fault No. 10-34) at the deepest part of the excavation. The exploratory trenches which were dug to trace the length of Fault No. 10-34 have been completed, and the fault is now known to have a maximum length of 1800 feet. The vertical displacement of the bedding planes at Fault No. 10-34 varies at different depths, with a maximum displacement of six inches. The unfaulted soils overlying other small faults at the site are the same as those which overlie Fault No. 10-34. This observation indicates that these faults have a similar history of development. All of the data collected recently are in agreement with the conclusions presented by Dr. Heim in his earlier testimony. Dr. Heim concluded that the geologic history of Illinois indicates the faults were most likely formed at the end of Paleozoic time (225 million years ago), and that they are overlaid with unfaulted soil which is most likely Tertiary in age (over one million years old). The faults are unrelated to any known macroseismicity in northern Illinois. Dr. Heim stated that the faults are non-capable, and that the discovery of the faults should not require any modifications to the design of the plant; nor are they of concern regarding the safety of the facility. (Heim, 1-6 following Tr. 904)

18. Dr. H. B. Willman, whose extensive professional qualifications were presented to the Board at the August 26, 1975, hearing, revisited the site with Dr. T. C. Buschbach, also of the Illinois State Geologic Survey, on October 21, 1975, when the excavation had reached near maximum depth. Dr. Willman described for the Board the strata exposed in the excavation. Dr. Willman stated that the observable variable vertical displacement of Fault No. 10-34 indicates that the displacement along the fault was probably caused by interbed solution and is not tectonic in origin. (Willman, 4-5 following Tr. 906) At the request of the Board, Dr. Willman described the process referred to as interbed solution, not accompanied by earthquakes or shocks. The variable vertical displacement of the fault is caused by different rates of solution along bedding planes which are deeply buried. Because interbed solution most likely occurred when the site was deeply buried under now eroded soil and rock, the evidence suggests the displacement of faults occurred 200 million years ago. (Tr. 911-912) Dr. Willman explained that the regional geologic history suggests that if the displacement along the faults was not caused by interbed solution, but rather is tectonic in origin, it is equally as old. The evidence at the site itself can demonstrate that the last movement occurred at least 500,000 years ago. (Tr. 911, Willman, 5-6)

19. The Board has reviewed the substantial analyses with respect to the small faults at the Byron site by both the Staff and the Applicant. All of the evidence indicates, and the Board finds, that the faults underlying the Byron site are not capable faults within the meaning of Appendix A to 10 CFR Part 100. The Board has also considered the characteristics of the Byron site as analyzed by the Staff in Section 2 of the SER and Supplements 1 and 2, in light of the particular design proposed for the facility, and finds that the Byron site and facility design conform to all of the requirements of 10 CFR Part 100 for operation of the reactors at their design power level.

C. DESCRIPTION AND SAFETY EVALUATION OF THE PROPOSED FACILITIES

20. The four nuclear power plants, which are the subject of the application, are described in the PSAR and the SER (PSAR §1.2, SER §1.2). The facility will utilize pressurized water reactors provided by Westinghouse. The Nuclear Steam Supply System ("NSSS") for each unit will be housed in a containment building consisting of a steel-lined, reinforced concrete structure, designed to confine safely the radioactive material that could be released in the unlikely event of an accident (SER §1.2). Each of the proposed reactors will be designed to operate at a thermal power of 3411 megawatts (MWt), which corresponds to a net electrical output of about 1120 (MWe) (SER §4.4). All plant safety systems,

including containment and engineered safety features, are designed and evaluated for operation, with appropriate safety margins, at this power level.

21. The Nuclear Steam Supply Systems (NSSS) for the proposed Byron and Braidwood units will each include a pressurized water reactor and four coolant loops connected in parallel to the vessel. Each loop will be equipped with a coolant pump, two loop stop valves, and a steam generator; a pressurizer will be connected to one of the loops. (SER §5.1) The proposed reactor fuel elements for each unit will employ Zircaloy-clad fuel rods with welded end plugs. Pellets of slightly enriched uranium dioxide are sealed in the tubes, which are internally pressurized with helium. (SER §§1.2 and 4.2.1) The four units will use fuel assemblies with a 17 x 17 fuel rod array. This fuel assembly furnishes more linear feet of fuel in a fixed reactor size than did the earlier 15 x 15 fuel assembly designs, and hence a lower linear power density (SER §4.3).

22. The steam generators serve as heat exchangers, transferring energy from the reactor coolant to the secondary water. This heat transfer serves to cool the reactor and to provide steam to drive the turbine generator. The reactor coolant flows inside U-shaped tubes, which are in turn immersed in the secondary water circulating through the steam generator shell. The steam generator tubes form part of the reactor coolant pressure boundary.

23. Prior to the hearing on November 18, 1975, the Board requested information with respect to the secondary water chemistry which the Applicant will employ to maintain steam generator tube integrity. Dr. Frank M. Almeter, a Staff Materials Engineer with primary responsibility for the Staff's safety evaluation of steam generator tube corrosion observed at various facilities, described the Applicant's steam generator and secondary water chemistry. The steam generators for the proposed facilities are of an advanced design with improved secondary waterflow characteristics. This feature provides more tolerance for occasional lack of water chemistry control. The Applicant will be using an all-volatile water treatment chemistry, which has been shown to minimize the probability of tube degradation; and there are provisions for monitoring the secondary water for the presence of impurities or reactor coolant leaks before significant tube degradation or deterioration of tube integrity can occur. The steam generator design permits access for in-service inspection to detect and plug tubes with incipient degradation. The Staff believes that these measures are adequate and that there is no reason to believe plant safety will be compromised by steam generator tube degradation. (Almeter, p. 1-3 following Tr. 874) If future Staff investigations or inspections at similar operating facilities indicate a need, post-construction permit design changes may be required. (Almeter, p. 2)

24. The Board requested a further explanation of how the redesign of the steam generators and the other improvements would reduce the problem of tube degradation. Dr. Almeter stated that the proposed Byron-Braidwood steam generators are of a newer model than the steam generators with which problems

had been encountered at other facilities. The new design incorporates a different tube pitch and better baffles for incoming water, thereby allowing better circulation within the steam generator. The new design limits crevices at the tube-tube sheet interface. (Tr. 877) These changes will reduce the accumulation of sludge and the existence of hideout conditions that can cause degradation of the steam generator tubes. (Tr. 876) Dr. Almeter explained that the sodium phosphate treatment recommended for the earlier steam generators permitted the accumulation of harmful chemicals within the steam generator. The all-volatile water treatment which the Applicant will employ will eliminate oxygen and control the pH of the secondary water without the need to add chemicals that can accumulate within the steam generator. (Tr. 880-881) In response to a question by the Board, Dr. Almeter stated that full-flow demineralization to eliminate solids in the secondary water is not necessary for the protection of the steam generators for the proposed facilities. The proposed steam generator design includes blowdown capability to eliminate any accumulation of solids, as well as adequate condensate and secondary water chemistry monitoring to detect the presence of impurities that might accumulate. (Tr. 884) Dr. Almeter also pointed out that since 1974 the NRC has required frequent in-service inspections of the steam generator tubes. (Tr. 882)

25. James T. Westermeier, the Applicant's project engineer for the proposed facilities, also testified about the Applicant's program to control secondary water chemistry. Mr. Westermeier explained that the condenser has various design features that will prolong condenser tube life and make it easier to identify and isolate condenser tube leaks. Condenser tube leaks are the main source of impurities in the secondary water. These features will assist the Applicant in eliminating secondary water impurities. (Tr. 887-889) Mr. Westermeier concluded that the proposed design is such that the Applicant will be better able to maintain proper secondary water chemistry and that the required in-service inspections of the steam generator tubes are adequate to maintain tube integrity. (Tr. 889) While the design includes space for condensate demineralizers, if ever required, Applicant believes that its control measures are more appropriate. (Tr. 888-890)

26. Each containment structure houses the nuclear steam supply system and certain components of the engineered safety systems. (SER §6.2.1) The containments will be steel-lined, prestressed concrete structures anchored in the bedrock under the sites. Each is designed for an internal pressure of 50 psig (SER §6.2.1), which is sufficient to withstand the internal pressure associated with any loss-of-coolant accident (LOCA) (SER §6.2.1). The Applicant has calculated the maximum internal pressure from a postulated LOCA to be 43.1 psig using very conservative assumptions about initial conditions. (PSAR §6.2, SER §6.2.1) Independent calculations by the Staff of the maximum anticipated pressure confirm the results obtained by the Applicant. (SER §6.2.1) The containment systems, along with other engineered safety features, are designed

to protect the public from potential radiological consequences resulting from a postulated LOCA (SER §6). These systems will assure that the radiological consequences of postulated accidents will not exceed the guideline values in 10 CFR Part 100, (SER §1.5)

27. Each facility will have a number of engineered safety features designed to prevent an accident and to minimize its severity and mitigate its consequences in the event an accident should occur. These features include the containment heat removal systems (SER §6.2.2), the containment air purification and cleanup systems (SER §6.2.3), the containment isolation systems (SER §6.2.4), the combustible gas control systems (SER §6.2.5), and the ECCS (SER §6.3).

28. The Applicant's emergency core cooling system (ECCS) will be designed to provide emergency core cooling during those postulated accident conditions where it is assumed that mechanical failures in the reactor coolant system piping result in losses of coolant (LOCA) from the reactor vessel greater than the available coolant makeup capacity using normal operating equipment. The ECCS is also designed to protect against steam line break consequences. The Applicant submitted (PSAR Amendment 12) and the Staff reviewed a performance evaluation of the ECCS. The analyses submitted were based on the Westinghouse emergency core cooling system evaluation model which was previously reviewed and determined by the Staff to be an acceptable model for the class of pressurized water reactors that includes the Byron and Braidwood reactors. (SER Supp. 2 §6.3.3) The analyses identified the worst break as the double-ended, guillotine break in the cold leg. The calculated peak clad temperature reaches 2178 degrees Fahrenheit, which is within the acceptable limit of 2200 degree Fahrenheit specified in Section 50.46(b) of 10 CFR Part 50. In addition, the calculated maximum local metal-water reaction of 7% and the total core-wide metal-water reaction of less than 0.3% are well below the allowable limits of 17% and 1%, respectively. The Staff required consideration of a LOCA and the simultaneous failure of specified motor operated valves, as well as implementation of procedures to prevent boron concentration buildup in the reactor core following a LOCA. (SER Supp. 2 §6.3.3) On the basis of its review of the performance evaluation of the ECCS, the Staff concluded that: (1) the postulated loss-of-coolant accident analyses that were performed are in conformance with the requirements of Appendix K to 10 CFR Part 50; (2) the performance evaluation conforms to the peak clad temperature, maximum oxidation, and hydrogen generation criteria specified in 10 CFR §50.46; (3) the ECCS performance will be adequate despite any postulated failure of a single component; (4) adequate systems are available to provide long-term core cooling; and (5) the proposed design of the ECCS is acceptable. (SER Supp. No. 2 §6.3.5) The Board has reviewed the Staff's analysis and concurs in its conclusions.

29. The engineered safety features will be designed to be capable of assuring safe shutdown of the reactors under various postulated design basis accidents.

They will be designed to Category I standards and will function even with the complete loss of offsite power. As with the ECCS, the components and systems will be provided in sufficient redundancy so that a single failure of any component or system will not result in the loss of the capability to achieve safe shutdown of the reactor. (SER §6.1)

30. In response to the Board's pre-hearing request that the Staff be prepared to comment on the status of environmental and seismic qualification of Class 1-E electrical equipment for the proposed facilities, Mr. Thomas A. Ippolito, Chief of the Electrical, Instrumentation and Control System Branch, and Mr. Daniel G. McDonald, Jr., a Reactor Engineer in that Branch, testified that this matter is currently the subject of generic review by the Staff. They further stated that the Applicant has agreed to "pursue the qualification program on a generic basis between the Staff and Westinghouse" (Tr. 866). The review will include an analysis of the equipment proposed for the facility (Tr. 868). Mr. Ippolito stated that IEEE 323, 1974 added two significant criteria to those contained in IEEE 323, 1971. The 1971 standards required that electrical equipment be qualified to operate under all anticipated environmental conditions. The 1974 standards require that the equipment also operate with a margin in addition to the anticipated conditions. The 1974 standards also require that the effect of aging on the equipment be considered in order to ensure proper operation at any time within the expected lifetime of the equipment. (Tr. 869) As previously stated, the Staff review of the Westinghouse generic qualifications program is just beginning. At present, no qualification problems are foreseen for equipment to be installed at the Byron and Braidwood Stations (Tr. 869). It is possible that, as a result of the Staff's review of the Westinghouse qualification program, some changes to the equipment currently proposed for the facilities may be required. However, these changes will not involve major design changes nor will they require structural modification. (Tr. 868-869)

31. At the request of the Board, Dennis M. Crutchfield, John Burns, Jr., and Ronald Gamble of the Staff, testified to update the turbine missile discussion at SER Supp. 1, page 18-1. The ACRS, in its report, identified potential damage caused to critical components by turbine missiles as requiring further review. Mr. Crutchfield stated that the Staff is currently engaged in, and will complete within a year, a generic study of turbine missiles. (Tr. 895-896) Any additional measure that might be required would be designed to reduce the probability of turbine failure and would not involve a structural redesign to mitigate the consequences of a failure. These measures could involve reassessment of the turbine overspeed protection system and changes to some plant operating procedures, which could be implemented during construction of the proposed facilities. (Crutchfield, p. 1-2 following Tr. 894) In response to questions from the Board, Mr. Crutchfield testified that the Staff does not anticipate any need for changes to the turbine design, but rather may require changes in the warm-up

procedure for the turbine to change the rate at which the turbine shaft and blades will reach their operating temperature. (Tr. 896-897)

32. In May, 1975, the Staff was informed by another licensee that asymmetric loading resulting from a postulated pipe rupture may not have been taken into account in the original design of the reactor pressure vessel support system at some stations. The Staff is currently taking steps to review this problem on a generic basis. (SER Supp. 2, p. 5-1) Before the hearing in this matter, the Board requested that the Staff be prepared to support at the hearings its conclusions (SER Supp. No. 2) that the Applicant can properly account for these forces during the final design of the reactor support system. Mr. Robert J. Bosnak, a Senior Mechanical Engineer in the Division of Technical Review, explained that the Staff has had continuing discussions with the nuclear steam supply system division at Westinghouse, and these discussions indicate that the forces can be adequately considered in the design. Westinghouse will calculate the asymmetrical forces on a time history basis and determine the maximum anticipated total force. The various forces involved in creating the asymmetric loads on the reactor vessel support systems do not peak simultaneously. (Tr. 919) For simplicity in calculation, earlier calculations of these forces by Westinghouse for other facilities had made an assumption of simultaneous loads. In response to a question by the Board, Mr. Bosnak said that even if it were determined that all of the forces peaked simultaneously, once the designer knows the magnitude of the forces, it is possible to design the reactor pressure vessel support system to account for them. (Tr. 918-921) In a letter dated September 30, 1975, the Applicant verified to the Staff that the final design of the support system will include provisions for the asymmetric forces. (SER Supp. 2, p. 5-1) On the basis of the above and of Supplement No. 2 to the SER, the Board finds that there are reasonable assurances that this item will be resolved satisfactorily prior to plant operation.

33. During routine operation of the facilities, small quantities of radioactive materials will be released to the environment. Treatment will be provided for those effluents by the radioactive waste management system, which will be designed to provide for the control, handling, and treatment of radioactive liquid, gaseous, and solid wastes. (SER §11.0) The Board has previously issued its environmental decisions and made all of the findings required by Appendix D to 10 CFR Part 50, including an evaluation of the environmental effect of the routine radioactive releases. Subsequently, the Commission issued its Opinion in RM 50-2, NRCI-75-4R page 277, April 30, 1975, in which it promulgated guides for design objectives to limit radioactive effluents from light-water-cooled reactors to levels that are as low as practicable, as required under 10 CFR §50.34(a). These guides, which are contained in Appendix I to 10 CFR Part 50 and became effective on June 4, 1975, set maximum limits for the allowable estimated annual dose to any individual from exposure to the radioactive effluents from any single reactor. In addition, the guides require that an

applicant for a construction permit include in the design of his radioactive waste treatment systems all equipment that can, with a favorable cost/benefit analysis as determined by Appendix I requirements, reduce the total exposure to the population within 50 miles from the reactor. At the hearing held on August 26, 1975, the Board heard testimony from both the Staff and the Applicant. On the basis of the Staff's upper bound testimony the Board determined that it was unlikely that compliance with Appendix I would upset the previously reviewed cost/benefit analysis which was performed pursuant to the National Environmental Policy Act. Actual compliance with Appendix I was not established at that time, however, as the Staff was in the process of reassessing the models and assumptions from which compliance could be established. On September 4, 1975 (40 F.R. 40816), the Commission amended Appendix I to provide applicants who have filed applications for construction permits that were docketed on or after January 2, 1971, and before June 4, 1976, the option of dispensing with the cost/benefit analysis required by Paragraph II.D of Appendix I. Instead, such applicants can establish compliance with the Guides on Design Objectives for Light Water-Cooled Nuclear Power Reactors proposed in the Concluding Statement of Position of the Regulatory Staff in Docket RM-50-2 (the "Annex"). By letter to the Commission dated September 30, 1975, the Applicant elected to comply with the September 4, 1974, amendment to Appendix I. (Statement of F. P. Cardile, p. 2 following Tr. 927)

34. Dr. Frank J. Congel and Mr. Francis P. Cardile testified, describing the detailed assessment performed by the Staff to determine if the proposed facilities met the design objective doses contained in Appendix I and the Annex. Mr. Cardile, nuclear engineer in the Effluent Treatment Systems Branch, stated that the Staff has evaluated the radioactive waste management systems proposed for the Byron and Braidwood facilities. These systems are described in the common SER at §11 and in each FES at §3.5. On the basis of information supplied by the Applicant, more recent operating data applicable to the proposed facilities, and changes in the calculational models, the Staff has generated new source terms to determine conformance with Appendix I. (Statement of Mr. Cardile following Tr. 927) These new source terms were calculated using models and methodology described in Draft Regulatory Guide 1.BB. (Staff Ex. 16)

35. On the basis of the radionuclide releases presented in Attachments 1 and 2 to Mr. Cardile's Statement, and using the models described in Draft Regulatory Guide 1.AA (Staff Ex. 15), the Staff calculated the radiation dose to the maximum exposed individual resulting from the radioactive releases from the proposed facilities. (Congel 2nd Statement, p. 1-4 following Tr. 925) The estimated total annual dose to the maximum exposed individual in the unrestricted area resulting from the calculated total annual release of radioactive material from the proposed facilities is reproduced in Tables 1A, 1B, 2A and 2B, attached to Dr. Congel's statement. Table 1A updates and replaces parts of

Tables 5.5 and 5.6 of the Byron FES. Table 2A replaces parts of Tables 5.4 and 5.5 of the Braidwood FES. The Staff found that estimated doses resulting from the calculated releases from each of the proposed facilities are within the design objectives contained in Appendix I and the Annex. (Congel, p. 4) The radiation and source terms reported by the Staff at the hearing differ somewhat from those reviewed by the Board in the environmental hearings and from the upper bound estimates reviewed at the time of the Applicant's request for an expanded limited work authorization. The record (Tr. 663, 798, 933, Lahti, pp. 5, 9-11, Congel 2nd Statement, p. 2) as supplemented by Draft Regulatory Guide 1.AA, "Calculation of Annual Average Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Implementing Appendix I," and Draft Regulatory Guide 1.BB, "Calculation of Releases of Radioactive Materials in Liquid and Gaseous Effluents from Pressurized Water Reactors (PWRs)," reflects the reason for these differences. Pursuant to the Board's request, Draft Regulatory Guides 1.AA and 1.BB were made available to the Board and entered into evidence to enable the Board properly to review the Staff's findings. On the basis of its review of the material presented in Section 5.3 of the FES, the Staff analysis in SER §11 and SER Supp. 2 §11, and the testimony presented at the hearing, the Board finds that the Applicant's radioactive waste management system is capable of reducing effluents to the lowest practicable levels and is in compliance with 10 CRF Part 20 and 10 CFR §50.34(a) as defined in Appendix I to 10 CFR Part 50, and as further modified in 40 F.R. 40816, September 4, 1975. The Board also finds that neither the cost of compliance with Appendix I nor the radiation doses that may result from plant operation would significantly alter the results of the Board's previous review of the NEPA cost/benefit analysis.

36. On the basis of our review of the documentation and testimony related to the design of the facilities in this proceeding as discussed above, including the information supplied in response to the Board's requests for Staff testimony at the hearing, the Board finds that the design of the Byron and Braidwood facilities can be completed and said facilities constructed and operated in compliance with the general design criteria set forth in 10 CFR Part 50, Appendix A, and all other relevant regulations. (SER §1.5, 3.1)

D. INDEPENDENT REVIEW OF THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

37. At its meeting on May 8-10, 1975, the ACRS completed its independent review of the application for authorization to construct the Byron and Braidwood Stations. The plants had been previously considered at a full ACRS meeting on February 6-8, 1975, and at Subcommittee meetings on January 23, 1975, and April 24, 1975. Members of the ACRS visited the sites on January 22, 1975. On May 13, 1975, the Committee forwarded to the Chairman of the

Commission its "Report on the Byron Station Units 1 and 2 and Braidwood Station Units 1 and 2" (SER Supp. No. 2, Appendix B). The ACRS concluded that matters which merited additional analysis could be resolved during construction and that, with due consideration given to these items, the Byron and Braidwood Stations can be constructed with reasonable assurance that they can be operated without undue risk to the health and safety of the public. The Staff and the Applicant have duly considered and are taking appropriate action to implement recommendations of the ACRS. (SER Supp. No. 1, §18)

E. TECHNICAL QUALIFICATIONS

38. The Applicant's technical staff has extensive experience in the engineering and electric utilities areas, including more than 15 years' experience in the construction and operation of nuclear generating stations. In addition, the Applicant is aided in the design, construction, and supplying of components for the facilities by other organizations that have extensive experience and technical qualifications in the field, including Sargent & Lundy, Dames & Moore, Harza Engineering Company, and Westinghouse Electric Corporation. (PSAR §1.4) On the basis of its analysis of the PSAR, the Staff concluded that the Applicant is technically qualified to design and construct the proposed facilities. (SER §21) The Board considers that the evidence before it is adequate to support its own finding that the Applicant is technically qualified to design and construct the Byron and Braidwood facilities.

F. COMMON DEFENSE AND SECURITY

39. The activities to be conducted under the construction permits will be within the jurisdiction of the United States. All of Applicant's directors and principal officers are citizens of the United States, and the Applicant is not owned, dominated, or controlled by an alien, a foreign corporation, or a foreign government. The activities to be conducted do not involve any restricted data, but the Applicant has agreed to safeguard any such data which might become involved in accordance with the Commission's Regulations. The Applicant will rely on obtaining fuel from sources of supply available for civilian purposes, so that no diversion of special nuclear material for military purposes is involved. For the foregoing reasons and absent any evidence to the contrary, the Board finds that the issuance of construction permits for the Byron and Braidwood facilities will not be inimical to the common defense and security.

G. DEVELOPMENT OF FINAL DESIGN

40. The nuclear steam supply systems are similar to other large pressurized water reactors now being designed and built by Westinghouse for plants being

constructed under Commission construction permits. The Applicant, the ACRS, and the Staff have identified certain on-going investigations to confirm and finalize the design of certain of the plant systems, which include generic design features (PSAR §1.5, SER §1.7). These investigations include:

- a. 17 x 17 fuel design;
- b. Reactor pressure vessel support system;
- c. Prevention of turbine missiles; and
- d. Environmental and seismic qualification of Class 1-E electrical equipment.

41. On the basis of the evidence from the Applicant and the Staff that the scope and schedule of the various analytical efforts in such investigations are adequately designed to accomplish their respective development objectives on a timely basis for these facilities, the Board finds that the requirements of the Commission's regulations have been met in this regard.

H. EMERGENCY PLANNING

42. At the hearing on November 18, 1975, the limited appearance statement of Ms. Mary Tisue raised questions with respect to plans for coping with emergencies at the Byron site. The Applicant has described its preliminary plans for coping with emergencies at each site, and has reached an agreement with those Federal and State of Illinois agencies that have responsibilities for coping with emergencies. As prescribed in the regulations, the Applicant will present a final emergency plan in the Final Safety Analysis Report. This plan will be similar to the Applicant's Zion Station Emergency Plan. The Applicant's final plans will address site incidents ranging from abnormal personnel exposures to high radiation releases requiring evacuation, and will include non-nuclear emergencies. (SER §13.3) The Staff has reviewed the Applicant's emergency planning program, which includes provisions for medical treatment of injured persons, location of an offsite Relocation Center, and training and drills for plant personnel and for offsite agencies. The Staff concluded that the Applicant's program meets the requirements of Appendix E to 10 CFR Part 50 and is acceptable at this stage of the licensing process. (SER §13.3) The Board concurs in this finding.

I. FINANCIAL QUALIFICATIONS

43. On the basis of its review of the financial information presented in the application and the amendments thereto prior to the preparation of the SER, and financial information generally available to it, the Staff concluded that the Applicant is financially qualified to design and construct the proposed Byron and Braidwood facilities. (SER §20) As reported in the SER, estimated costs of construction of the plants, including certain transmission facilities and other

associated costs, and of procurement of the initial reactor cores will total \$2,192.9 million. This total reflects a cost of \$607.5 million and \$479.9 million for Byron Units 1 and 2, respectively, and \$650 million and \$455.5 million for Braidwood Units 1 and 2, respectively. The Staff concluded that the Applicant's estimated costs of constructing the facilities are reasonable. (SER §20)

44. The Applicant plans to finance the construction of the plant in the ordinary course of its business and in the same general manner as other additions to its utility plant. The company projects that approximately 35% of its overall construction expenditures for the years 1974-1978 (the latest year for which projections are available) will be financed with internally generated funds. The balance of construction expenditures will be financed by the issuance of debt and equity securities.

45. In the SER, the Staff also reviewed the Applicant's annual report for 1973, which indicated operating revenues of \$1,266.2 million. Operating expenses and taxes were stated at \$1,016.0 million, of which \$145.1 million represented depreciation. Net income totaled \$184.4 million, of which \$139.9 million was distributed as dividends to stockholders with the remaining \$44.5 million retained for use in the business. As of December 31, 1973, the Company's assets totaled \$4,649.2 million, most of which was invested in utility plant (\$4,353.2 million). Retained earnings amounted to \$442.0 million. Moody's Investors Service rates the Company's first mortgage bonds as Aaa (best quality bonds) and the debentures as Aa (high grade bonds). The Company's current Dun and Bradstreet rating is 5A1, the highest rating.

46. More recent financial data have been submitted in the Application and reviewed by the Staff. (SER §20) In addition, Mr. Richard E. Martin, the Applicant's assistant treasurer, testified to update the information previously submitted by the Applicant relevant to the Applicant's financial qualification to construct and operate the proposed facilities. (Martin Statement following Tr. 857). Mr. Martin stated that although inflation continues to increase operating costs and the cost estimates for new plants, the Applicant remains financially qualified to construct the proposed facilities. The Board inquired into the Applicant's financial health now as compared to its health at the time the application was first submitted to the Commission. Mr. Martin testified that owing to a recent rate increase, which offset cost increases caused by inflation, the Applicant's financial position is now stronger. (Tr. 858) Staff Counsel, Mr. Karman, said that the Staff's financial office had been following the Applicant's finances carefully, and there were no developments that would alter the Staff's opinion that the Applicant is financially qualified to construct the facilities within a favorable cost-benefit envelope. (Tr. 860) The record shows that the Applicant has supplied information regarding financial qualifications in accordance with the Commission's Regulations, 10 CFR §50.33(f) and Appendix C of 10 CFR Part 50. The Board finds that, in view of the above facts, the Applicant is financially qualified to design and construct the proposed facilities.

III. CONCLUSIONS

47. The Board has reviewed the entire record of this proceeding. The application and the proceedings thereon comply with the requirements of the Atomic Energy Act of 1954, as amended, the National Environmental Policy Act, and the rules and regulations of the Commission. The Board affirms its prior conclusions that the Staff's NEPA review has been adequate and that NEPA, Section 401 of the Federal Water Pollution Control Act, and Appendix D to 10 CFR Part 50 have been complied with.

48. The Board in summary concludes that the application and the record of the proceeding contain sufficient information and that the review of the application by the Staff has been adequate to support the specific conclusions that follow.

We conclude that:

A. In accordance with the provisions of 10 CFR §50.35(a):

(1) The Applicant has described the proposed design of the facilities, including, but not limited to, the principal architectural and engineering criteria for the design, and has identified the major features or components incorporated therein for the protection of the health and safety of the public;

(2) Such further technical or design information as may be required to complete the safety analysis, and which can reasonably be left for later consideration, will be supplied in the final safety analysis report;

(3) Safety features or components, if any, which require research and development have been described by the Applicant; and the Applicant has identified, and there will be conducted, a research and development program reasonably designed to resolve any safety question associated with such features as components; and

(4) On the basis of the foregoing, there is reasonable assurance that (i) such safety questions will be satisfactorily resolved at or before the latest date stated in the application for completion of construction of the proposed facilities, and (ii) taking into consideration the site criteria contained in 10 CFR Part 100, the proposed facilities can be constructed and operated at the proposed location without undue risk to the health and safety of the public.

B. The Applicant is technically qualified to design and construct the proposed facilities.

C. The Applicant is financially qualified to design and construct the proposed facilities.

D. The issuance of permits for construction of the facilities will not be inimical to the common defense and security or to the health and safety of the public.

E. Subject to the conditions set forth in the first Partial Initial Decision, as modified in the Second Partial Initial Decision and herein:

(1) The Environmental review performed by the Staff (pursuant to the National Environmental Policy Act of 1969) and set forth in the final Environmental Statement has been adequate.

(2) Sections 102(A), (C) and (D) of NEPA and Appendix D of 10 CFR Part 50 have been complied with.

(3) The Board has considered the final balance among conflicting environmental factors, and has weighed the various benefits against costs, taking account of the need for power, the alternatives to the plant, and certain of its design features. As a result, the Board concludes that these considerations favor the issuance of construction permits for the facilities.

IV. ORDER

On the basis of the Board's findings and conclusions, and pursuant to the Atomic Energy Act of 1954, as amended, and the Commission's Regulations, IT IS ORDERED that the Director of Regulation is authorized to issue to Commonwealth Edison Company permits to construct Byron Station Units 1 and 2 and Braidwood Station Units 1 and 2, consistent with the terms of this Initial Decision.

IT IS FURTHER ORDERED, in accordance with 10 CFR §2.760, §2.762, §2.764, §2.786 that this Initial Decision shall become effective immediately and shall constitute with respect to the matters covered therein the final action of the Commission forty-five (45) days after the date of issuance hereof, subject to any review pursuant to the Commission's Rules of Practice. Exceptions to this Initial Decision may be filed by any party within seven (7) days after service of this Initial Decision. Within fifteen (15) days thereafter [twenty (20) days in the case of the Staff] any party filing such exceptions shall file a brief in support thereof. Within fifteen (15) days of the filing of the brief of the appellant

[twenty (20) days in the case of the Staff], any other party may file a brief in support of, or in opposition to, the exceptions.

It is so ORDERED.

**THE ATOMIC SAFETY AND
LICENSING BOARD**

Gustave A. Linenberger, Member

John R. Lyman, Member

Edward Luton, Chairman

**Dated at Bethesda, Maryland
this 31st day of December 1975.**

(Appendix A is omitted from this publication but is available at NRC's Public Document Room, Washington, D. C.)

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

LBP-75-75

ATOMIC SAFETY AND LICENSING BOARD

Edward Luton, Chairman
Dr. John R. Lyman, Member
Dr. David L. Hetrick, Member

In the Matter of

Docket Nos. 50-500
50-501

THE TOLEDO EDISON COMPANY,
ET AL.

December 31, 1975

(Davis-Besse Nuclear Power
Station, Units 2 and 3)

Upon application for construction permits for Davis-Besse Station, Units 2 and 3, Licensing Board issues a partial initial decision on environmental and site suitability aspects of the facility, making determinations of fact and law, and imposing certain conditions.

INITIAL DECISION

APPEARANCES

Bruce W. Churchill, Esq., of Shaw, Pittman, Potts and Trowbridge, for the Applicants Toledo Edison Company et al;

Blaine Fielding, Esq., of Columbus, Ohio, for the State of Ohio;

and

Gregory H. Fess, Esq., and Stuart Treby, Esq., Office of the Executive Legal Director, Nuclear Regulatory Commission, Washington, D. C.

I. INTRODUCTION AND BACKGROUND

1. On August 28, 1974, the U. S. Atomic Energy Commission¹ issued a Notice of Hearing on Application for Construction Permits (Notice) which was published in the *Federal Register* on September 5, 1974 (39 *F.R.* 32176), with respect to the application filed under the Atomic Energy Act of 1954, as amended, by the Toledo Edison Company, the Cleveland Electric Illuminating Company, the Duquesne Light Company, the Ohio Edison Company, and the Pennsylvania Power Company (hereafter collectively referred to as the Applicant).² The application sought authority to construct the pressurized water nuclear reactors designated as Davis-Besse Nuclear Power Station, Units 2 and 3 (Davis-Besse 2 & 3 or facilities). Each of the two facilities will be designed for operation at 2772 megawatts thermal (MWt) with a net electrical output of about 906 megawatts (MWe). The proposed facilities are to be located at Locust Point on the southwestern shore of Lake Erie in Carroll Township of Ottawa County, Ohio, 21 miles southeast of Toledo, Ohio. Presently under construction on the site is the Davis-Besse Nuclear Power Station, Unit 1.

2. The Notice set forth the requirements pursuant to the Atomic Energy Act of 1954, as amended, and the National Environmental Policy Act of 1969 which are to be met prior to the issuance of construction permits. The Notice also provided that any person whose interest might be affected by the proceeding could file a petition for leave to intervene, in accordance with the requirements of 10 CFR §2.714, not later than October 7, 1974. The Notice further provided that interested persons could file requests for limited appearances pursuant to the provisions of 10 CFR §2.715. In addition, the Notice designated an Atomic Safety and Licensing Board (Board) for this Proceeding.

3. Although the Notice set forth all the issues which must be considered and decided by this Board to determine whether construction permits should be issued to the Applicant, this Initial Decision addresses only the environmental issues specified by 10 CFR Part 51 and the site suitability issues specified by 10 CFR 50.10(e)(2). A partial initial decision addressing the remaining radiological health and safety issues, together with this Board's ultimate decision on issuance of the construction permits, will be issued after the conclusion of public hearing on the remaining radiological health and safety aspects of the application.

¹ In accordance with the Energy Reorganization Act of 1974, 88 Stat. 1233, the Atomic Energy Commission has been abolished and its regulatory responsibilities have been assumed by the Nuclear Regulatory Commission. All references in this decision to the "Commission" shall refer, unless otherwise indicated, to the Nuclear Regulatory Commission.

² The Toledo Edison Company is acting as agent for all the companies in the design and construction of the proposed facilities.

4. Pursuant to the Notice, a timely petition to participate pursuant to 10 CFR §2.715(c) was filed by the State of Ohio on October 3, 1974. This petition was supported by the Applicant and the Staff in their responses filed on October 15, 1974. Pursuant to the "Notice of Prehearing Conference", issued on November 27, 1974, the Board held a prehearing conference in Toledo, Ohio, on December 17, 1974. During the prehearing conference, the Board approved the participation of the State of Ohio pursuant to 10 CFR §2.715(c). Subsequently, on August 4, 1975, the State of Ohio withdrew as a participant in the proceeding.

5. Due to a schedule conflict, Dr. Richard F. Cole was unable to continue his service on the Board. On October 21, 1975, the Acting Chairman of the Atomic Safety and Licensing Board Panel issued a "Notice of Reconstitution of Board", pursuant to 10 CFR §2.721(b), which provided that Dr. John R. Lyman replace Dr. Cole as a member of the Board.

6. The Evidentiary Hearing was held on November 13, 1975, in Toledo, Ohio. In accordance with 10 CFR §2.715, two limited appearances were made at the hearing. (Tr. 20-30).

7. The record in this proceeding to date consists of transcripts of the prehearing conference on December 17, 1974, and the evidentiary hearing on November 13, 1975, containing, *inter alia*, the testimony of two witnesses presented by the Staff and one witness presented by the Applicant, and all the exhibits identified and admitted into evidence as listed in Appendix A to this Partial Initial Decision. (Appendix A is omitted from this publication but is available at NRC's Public Document Room, Washington, D. C.)

8. In making these findings and conclusions, the Board reviewed and considered the entire record of the proceeding and all of the proposed findings of fact and conclusions of law submitted by the parties in the proceeding. All of the proposed findings of fact and conclusions of law submitted by the parties which are not incorporated directly or inferentially in this Partial Initial Decision are rejected as being unsupported in law or fact or as unnecessary to the rendering of this Partial Initial Decision.

II. ENVIRONMENTAL MATTERS

A. Compliance with the Federal Water Pollution Control Act Amendments of 1972

9. The Commission may not issue any license or permit for Davis-Besse 2 & 3 unless, in compliance with Section 401 of the Federal Water Pollution Control Act Amendments of 1972 (FWPCA, the State of Ohio either certifies (a) that there are no applicable effluent limitations or standards under Sections 301,

302, 306 and 307 of the FWPCA, or (b) that there are such applicable standards and limitations, and the discharges from Davis-Besse 2 & 3 will comply with those standards and limitations; or, in the alternative, certification is waived.

10. On October 8, 1974, the Environmental Protection Agency (EPA) promulgated standards which defined the various levels of technology contemplated by FWPCA to reduce the discharge of pollutants (39 *F.R.* 36186). Water quality standards were adopted by the State of Ohio Environmental Protection Agency (OEPA) on January 8, 1975, and were approved by the regional administrator of the EPA on May 14, 1975.

11. On November 4, 1975, the OEPA issued a Section 401 certification (Applicant's Exhibit No. 3-A), pursuant to the FWPCA, certifying, in pertinent part, that:

... the discharges from the proposed Davis-Besse Nuclear Power Station, Units 2 & 3, would comply with the applicable provisions of Section 301, 302, 306 and 307 of the Federal Water Pollution Control Act.

12. On the basis of the foregoing, the Board finds that the State of Ohio, in compliance with Section 401 of the FWPCA, has certified that the discharges from Davis-Besse 2 & 3 will comply with the applicable effluent standards and limitations under Sections 301, 302, 306 and 307 of the FWPCA.

B. Compliance with Sections 102(A), (C) and (D) of the National Environmental Policy Act of 1969 and 10 CFR Part 51

13. As required by 10 CFR Part 51, the Applicant submitted, with its application, an Environmental Report—Construction Permit Stage (ER). The ER, as amended, was received into evidence on November 13, 1975, as Applicant's Exhibit No. 2 (Tr. 39). On the basis of the environmental information submitted by the Applicant in the ER, as supplemented, and on its independent analysis and review, the Staff prepared a Draft Environmental Statement (DES) which was issued February 13, 1975. By a Notice of Availability published February 20, 1975, the public was invited to comment on the DES (40 *F.R.* 7506). Copies of the DES were also provided to appropriate Federal, State, and local agencies for their comment. On September 25, 1975, the Staff published its Final Environmental Statement (FES) which includes, among other things, the full text of all comments received with respect to the DES (Appendix A) as well as the Staff's responses to those comments (Chapter 11). By a Notice of Availability, published September 30, 1975, the availability of the Final Environmental Statement was made known to various agencies and to the public (40 *F.R.* 44897). The FES was received into evidence and is incorporated into the record following transcript page 59.

14. The FES, as amended by the record of this proceeding, fully describes the plant site, the major systems of the plant, the environmental effects of site

preparation and transmission line construction, environmental impacts of both plant operation and postulated design basis accidents, and the Applicant's environmental monitoring program. The FES also contains a cost-benefit analysis which considers and balances the environmental effects of the proposed facility, alternatives available for reducing or avoiding adverse environmental effects, alternative methods for generating electricity, and the environmental, economic, technical, and other benefits of Davis-Besse 2 & 3.

15. The Staff concluded on the basis of its analysis and evaluation, set forth in the FES, that after weighing the environmental, economic, technical, and other benefits of Davis-Besse 2 & 3 against their environmental and other costs, the action called for under the National Environmental Policy Act of 1969 (NEPA) and 10 CFR Part 51 is the issuance of construction permits subject to certain conditions for the protection of the environment (FES, pp. ii and iii). The Board, on the basis of its consideration of the entire record, finds that these are appropriate conditions to be imposed on the construction permit. Further, the Board finds that the FES, as supplemented and corrected by the testimony and evidence presented in this proceeding, is a comprehensive and adequate review and evaluation of the environmental impacts resulting from plant construction and operation.

I. IMPACTS OF CONSTRUCTION

16. Davis-Besse 2 & 3 will be constructed on a 954-acre site previously licensed for the construction of Davis-Besse Nuclear Power Station Unit 1 (Construction Permit CPPR-80, issued March 24, 1971; Docket No. 50-346). Approximately 600 acres are marshland, leased to the U. S. Bureau of Sport Fisheries and Wildlife. The balance of the site is highland. Some impacts of construction, which occur at a virgin site, will not arise here because of joint use areas already utilized in connection with Davis-Besse 1 activities (FES §§2.1.1, 4.1.1).

17. The proposed site preparation and construction activities will require about 100 acres within the available highland area of the site. About four acres of woodland will be cleared for the construction of the Unit 3 cooling tower, and about 2.5 acres of woodland will be cleared to allow construction of the wave protection dike. The remaining area to be affected is either presently used for laydown areas and parking lots for Davis-Besse 1 or is fallow or cultivated farmland. Once construction is fully under way, this farmland will be lost to production (FES, p.i; §4.1.1).

18. Approximately 100 acres of land will be acquired offsite and 1.5 million cubic yards excavated from it as fill to raise the construction area 6 feet. Vacant or minimal farm land will be used, and the excavation will be graded and stabilized and allowed to fill with water to be used as a waterfowl habitat or recreational area (FES, p.i, §4.1.2). The U. S. Department of Agriculture has

expressed concern over the removal of land from agricultural production (FES, A-2), and the Board shares this concern. The Staff has pointed out that 100 acres is equivalent to the amount of land withdrawn from farming by the construction of a half mile of interstate freeway (FES, §11.2.1), although it is not clear to the Board how this computation is relevant in the present context. More significant is the figure for total area of cropland in Ottawa County, 97,000 acres (FES, Table 2.2), from which we compute that the proposed borrow-pit area comprises 0.1% of the land currently farmed in the county. And although we have no information on aquaculture in northern Ohio, the flooded 100 acres, with proper stocking and management, have the capability of producing annual crops of edible fish. The Board therefore concludes that the withdrawal from crop production of the 100 offsite acres and of the approximately equal area on the site now being used for farming (FES §4.1.1) will have a negligibly small effect on total food production in Ohio.

19. Construction of transmission lines will be minimal. The only construction work presently planned for transmission of power from Units 2 and 3 is the stringing of lines to existing towers in existing corridors. Except for a few small and widely scattered woodlots, the areas crossed by the lines consist of flat farmland. The lines will probably be strung during the winter, when the ground is frozen and stringing equipment will least likely cause adverse environmental disturbance (FES §4.1.3).

20. Land use in areas adjacent to the site will not be noticeably affected by site construction activities. The Applicant is committed to several measures and controls to limit adverse effects during construction. (See, FES §4.6.1). The Board finds that the impacts of land use conversion will be acceptable, provided that these commitments, and the additional measures suggested by the Staff in FES §4.6.2, are implemented. (See §27, *infra.*).

a. Impacts on Water Use

21. Impacts on water use will be primarily associated with runoff water, dewatering, waste treatment, and construction of a canal through the beach for the delivery of the reactor vessels. Runoff water mixed with dewatering effluent will flow into the drainage canal at the southern end of the site, which flows into the Toussaint River. Suspended solids are expected to settle out prior to reaching the river, and careful controls during construction will keep pollutants such as oils and chemicals from contaminating the water which enters the canal (FES §§4.2, 4.6.1). Dewatering during construction may lower the water level in two offsite wells, but they are near the maximum expected radius of the zone of influence and are generally not suitable for domestic use. Judging from experience with Davis-Besse 1, groundwater drawdown is expected to recover in approximately one year. No requirement for dewatering of the offsite borrow pit is expected (FES p.i; §§4.2, 11.5.4). Effluents from the sanitary waste

treatment plant will be discharged into Lake Erie. Wastes will receive secondary treatment and chlorination, and will meet all applicable health standards (FES §4.2). A temporary impact on water use during construction will occur when the beach is opened up for entry into the intake canal of barges delivering the reactor vessels. The fill, which will have been stored on the northwestern bank of the excavated channel, will be replaced into the channel after delivery. The beach will be restored with sand to a distance of 50 feet into the lake beyond the water line. Boaters and fishermen will have to avoid the areas in the lake where dredging activities occur. Owing to the nature of the excavated sediments (sand on top and compact glacial till underneath), net increase in turbidity is expected to be very slight. There will be slight damage to aquatic life (FES, p.i; §4.2, 11.11.8, 11.13.13). The Board concludes that the impacts on water use from construction activities associated with Davis-Besse 2 & 3 will be acceptable, provided the commitments to limit adverse effects (FES §4.6.1) and the additional measures suggested by the Staff (FES §4.6.2) are implemented. (*See, § 27, infra.*)

b. Impacts on Ecological Systems

22. Most of the impacts on terrestrial systems have already occurred as a result of Davis-Besse 1 construction. However, most of the southwestern portion of the site has not been disturbed and is lying fallow or is planted in farm crops. This area will be filled in and graded and/or will be used for laydown and building areas for the facilities. Following construction, the site will be landscaped (FES §4.3.1). Fences and signs will be used to keep personnel out of non-construction portions of the site. Consequently, litter, vegetation destruction, poaching, and disturbance of wildlife by people will be minimal (FES §4.3.1).

23. The additional turbidity from dredging will cause some local, temporary reduction in phytoplankton and zooplankton populations, and benthic populations will be reduced in the dredged areas. The area is not a spawning site for fish, and there are no major migrations through the area. Hence, the excavation should not cause problems for spawning or migrating fish. On the basis of monitoring results from Unit 1 dredging, the biotic communities are expected to recover after completion of the work (FES §§4.3.2, 11.4.5, 11.13.13).

24. The Board concludes that the impact from construction activities on the ecological systems in the area of the Davis-Besse site will be kept to an acceptable minimum, provided the measures and controls to limit adverse impacts are followed. (*See, § 27, infra.*)

c. Impacts on the Community

25. Since the site was purchased in conjunction with Davis-Besse 1, no relocation of residents will be required for the new facilities. It is expected that

the same pool of workers will be employed as is presently being utilized in the construction of Davis-Besse 1, with an increase due to the expanded activities. No significant impact on the community is expected from this increase. Average monthly wages will be \$2 million, with a total during construction of \$150 million (FES §4.4). The Applicant has received no complaints of noise from construction activities related to Davis-Besse 1. Reasonable efforts will be made to reduce excessive and objectionable noises during construction of Davis-Besse 2 & 3 (FES §§4.4, 4.6.1, 11.10.6).

26. No public transportation facilities currently exist to serve the site, nor are any expected to be in operation. Construction workers will commute by way of existing roadways to the site in personal vehicles. These same roadways will also be used by common carriers for transportation of construction materials and small equipment components. County roads are not constructed for heavy traffic, and some upgrading may be in order. The Staff has recommended, and the Board agrees, that the Applicant coordinate with State and local highway officials so as to minimize road and traffic impacts due to the movement of heavy construction equipment and trucks (FES §4.4).

27. In sum, the Board finds that the adverse impacts on the site area from construction of Davis-Besse 2 & 3 have been adequately described and evaluated. The Board also finds that these impacts will be acceptable, provided that the measures and controls committed to by the Applicant and summarized in FES §4.6.1 are implemented. Further, the Board concludes that, in addition to these commitments, the following further conditions, as suggested in the Staff's FES §4.6.2, are necessary to ensure that adverse environmental effects will be of a minimum practicable level:

1. The Applicant should submit for Staff review and approval an erosion and sediment control plan for all construction areas directly under his control, including any offsite borrow pits operated by the Applicant. It should include the probable timing of mitigative measures, and should be submitted prior to any construction activities.

2. Prior to any blasting activities, final details for blasting operations which assure protection of offsite structures should be submitted for Staff review.

3. The Applicant should coordinate with State and local highway officials so as to minimize road and traffic impacts due to the movement of heavy construction equipment and trucks.

4. If there are any difficulties experienced by nearby residents as a result of any construction-induced alterations of the groundwater supply, the Applicant should take the necessary actions to alleviate such well-water problems.

5. The finalized plans for systems cleaning and for the treatment and monitoring of waste solutions shall be reviewed and approved by the NRC Staff prior to any discharge of such waste solutions.

6. A control program shall be established by the Applicant to provide for a periodic review of all construction activities to assure that those activities conform to the environmental conditions set forth in the construction permit.

2. IMPACTS OF OPERATION

a. Impacts on Land Use

28. The impacts of operation of Davis-Besse 2 & 3 on land use will be essentially no different from the impacts of Davis-Besse 1. The Applicant's agreements with the Bureau of Sport Fisheries and Wildlife, U. S. Department of the Interior, has brought vanishing marshland under public control and upgraded the management of the Navarre Marsh by implementing two plans to provide food, water, and cover for breeding and migrating waterfowl. The first plan is for maintaining a seminatural cattail marsh, and the second is for maintaining an early-succession moist soils area to be flooded during the fall, winter, and spring. Both plans will provide breeding habitat improvements to include a series of islands to be constructed across two pools. Both will allow flexibility in maintaining a habitat which complements the local and regional wetland resources. Each plan provides food, cover, and water for migratory and local waterbirds. The Bureau of Sport Fisheries and Wildlife will determine which management plans best complement the surrounding wetland habitat (FES § 5.1,5.5.1.2). The Board finds this procedure acceptable.

29. There will be an aesthetic impact due to the addition of two more cooling towers protruding from the flat landscape. The presence of the Davis-Besse 1 cooling tower has already caused a visual aesthetic impact, and the additional towers will not greatly increase this (FES § 5.1.1).

30. Owing to cooling tower discharges of large amounts of warm air and water vapor from a relatively small area, the possibility exists that inadvertent weather modifications will occur in the locale. The possible environmental impacts of such modifications are the creation of visible plumes; the initiation of clouds; changes in local rain, drizzle, icing, and snowfall patterns; and salt deposition. The Staff and the Applicant have examined these possible environmental impacts with respect to the three Davis-Besse units. On the basis of computer models which simulate plume behavior, the Applicant predicted that plumes as long as nine miles could occasionally be generated, and about three hours of light fog per year (visibility between 200 and 1000 meters) could occur within one mile of the plant. The Staff review indicated that plumes rarely, if ever, reach the ground. The Staff concluded, and the Board agrees, that the Applicant's estimates are conservative and that no ground-level icing or fogging is expected. The state of the art in cloud physics is such that it cannot be said that rain, snow, or ice will be generated by the towers. Reported

occurrences indicate that such generation would be rare and in very small amounts. Using models to predict salt deposition due to drift, the Staff and the Applicant concluded, and the Board agrees, that measurable salt depositions probably not occur and will have no significant effect on terrestrial ecosystems (FES § 5.1.1, 5.5.1.1).

31. On the basis of experience at Davis-Besse 1, bird mortalities will occur at Davis-Besse 2 & 3. The Staff has reviewed the possibility of major bird kills. It concluded that since the facilities are not as tall as television towers or other buildings where major mortalities have occurred and since they will not have guy wires, which are particularly lethal, major bird kills will not occur (FES § 5.5.1.3). The Board agrees with this assessment.

32. Since the power from Davis-Besse 2 & 3 will be carried over the transmission lines for Davis-Besse 1, and only the stringing of the second circuit on the double-circuit towers will be necessary, land use impacts due to transmission line operation will not significantly change. These impacts include the prohibition of buildings and forests (except for the Christmas tree, nursery stock, or other low-growing trees) from the rights-of-way, and probably will preclude construction of transmitting and receiving stations close to the lines (FES § 5.1.2). The Staff evaluated the electrical effects associated with the operation of the high-voltage transmission lines, including induced voltages, ozone production, audible noise, and radio and television interference. The Staff concluded, and the Board agrees, that the transmission lines may be operated with no unacceptable effects in connection with high voltage transmission (FES § 5.5.1.4).

b. Impacts on Water Use

33. In order to prevent the buildup of dissolved solids in the 11 million gallons of water stored in each cooling system, a portion of water (blowdown) will be bled off. Approximately 8125 gallons per minute (gpm) of blowdown will normally be released from each cooling tower to maintain a dissolved solid concentration of twice the ambient lake water. The blowdown water will be discharged to Lake Erie by means of a slot-type orifice to promote high velocity and rapid dilution and mixing. Prior to discharge to the lake the water from each tower will be discharged to a 12-acre sink, where it will remain for approximately 4.5 days. The outflow of the pond is then directed to a collection box, in which it is combined with the blowdown from Davis-Besse 1. An alarm connected to the thermal discharge monitoring system will be sounded when the effluent blowdown exceeds the lake temperature by more than 18°F. If discharge temperatures exceed lake temperatures by 20°F or more, one or both of the 10,000 gpm dilution pumps will be used to reduce the temperature. The water velocity emerging from the slot discharge will be 4.6 feet per second (fps) at an expected flow of 27,777 gpm. The lake bottom is riprapped for about 200 feet in front of the slot to minimize both scouring of the lake bottom and

turbidity (FES §§3.4.3, 5.3.1, 5.5.2.2). The Board has reviewed the proposed discharge system and finds it acceptable.

34. A number of chemicals will be added to the water systems for such purposes as controlling corrosion, scale, and the growth of organisms, and for water purification or sterilization. With the exception of sulfate ion, which is quadrupled, and carbonate ion, which is unchanged, the average chemical concentrations of the water discharged to Lake Erie will be double those of ambient Lake Erie water. Some of the chemicals are toxic in nature, but they will be considerably diluted by the main cooling water or will be neutralized. Chlorine will be added as a biocide, both continuously and cyclically, at a level of 0.5 parts per million (ppm), to the service water system, the recirculating cooling water system, the domestic and makeup water system, and the sewage treatment system. There will be no adverse impact from chlorine use since it is being added at low levels, will be diluted with the main cooling water, will mix with chlorine-demanding substances in the cooling towers, and will have a 4.5-day decay time in the cooling pond prior to discharge (FES §§3.6, 5.2.1, 5.5.2.2, 11.4.11, 11.11.13). The Board has concluded that there will be no detectable adverse impact to the environment from the addition of chemical materials to the water systems.

35. The normal discharge temperatures into the lake were independently predicted by the Applicant and the Staff. The two results are essentially in agreement, except that the Staff's values are on the order of 5°F higher for the maximum discharge temperature. In calculating the temperature difference between maximum discharge temperature and minimum lake temperature, 20,000 gpm of dilution was used in the Staff's calculations. The Staff concluded that the discharge temperature differential would be 24°F for the month of April, even with this dilution (FES Table 5.3). This differential is 4° above the Applicant's commitment to keep the discharged water temperature within 20° of the receiving lake water temperature (ER p. 5.1-3). If this rise should occur, the Applicant will be required to prevent any further increase by methods acceptable to the Staff, which will be detailed in the technical specifications (FES §5.3). The Board finds this procedure acceptable.

36. Separate values of the size of the thermal plume were also calculated by the Applicant and the Staff. Both calculations are essentially in agreement as to its size (3.2 vs. 2.6 acres), but not as to the shape, the Applicant's extending about half as far as the Staff's from the discharge structure (approximately 1600 vs. 800 ft.). The discrepancy is probably attributable to paucity of analytical techniques to predict the size of thermal plumes from diffusers in shallow water (FES §5.3). The Board concludes that both plumes are reasonable expectations of what could occur at the Davis-Besse site, and that the thermal plume will not exceed any reasonably proposed mixing zone.

37. The final cooling water effluent to the lake from the station (all three units) will not be warmer than 20°F above ambient under normal operating

conditions, and a 3°F isotherm will cover about three acres. Phytoplankton and zooplankton contained in the entrained lake water will be subject to the sudden temperature increase and will then be carried along with the slightly warm plume. Residence time in the isotherm will be less than 5 hours, which is not long enough to reasonably stimulate population growth. Benthos are expected to populate only sparsely the area in front of the discharge owing to the high velocity and 200 feet of riprap. The buoyant thermal plume will not contact the lake bottom beyond a few feet from the discharge, and the discharge temperature will not be lethal to most benthic organisms. Accordingly, no adverse impact is expected for the benthic community. Some fish will be attracted to the thermal plume, primarily during winter and spring. Fish probably will not frequent the water that is from 10° to 20°F above ambient since they will not be able to hold station in front of the high-velocity discharge. Heat or cold shock is unlikely for several reasons. First, fish will avoid uncomfortably high temperatures. Second, fish can generally withstand a sudden drop of 10°F or less. Third, the station design features (three units, cooling towers, and the ultimate heat sink pond) will preclude any sudden drops in effluent temperature. Finally, the combination of such factors as the small size of the plume, the small temperature increase, the lack of spawning or nursery areas, and the lack of major migrations through the area led the Staff to conclude, and the Board agrees, that adverse impacts on fish due to heat or cold shock are unlikely (FES § 5.5.2.2, 11.4.2-5, 11.4.13, 11.6.1, 11.6.13, 11.10.1, 11.11.11).

38. In sum, the Board finds that during station operation of all three units, neither the chemical nature of the effluent nor the thermal plume will cause any water-use restrictions in the site area, and that the applicable water quality standards for discharges into Lake Erie will be satisfied, including State of Ohio and Federal standards and those emanating from the International Great Lakes Treaty agreement (FES § 5.2, 11.11.1).

39. It is estimated that the station will consumptively use about 0.03% of the total flow through the western basin of Lake Erie, primarily through cooling tower evaporation. This is equivalent to about 0.02% of the lake volume per year. The Staff concluded, and the Board is in agreement, that this water usage is acceptable because there is an adequate supply and the water will be recycled in the environment. Some of the water will eventually return to the Great Lakes system as precipitation into the watersheds of rivers flowing into the lakes (FES § 5.2.1).

40. The octagonal-shaped intake structure installed for Davis-Besse 1 will be used for the additional units. It is located 3000 feet from the shore and is submerged 11 feet below the low-water datum. A semicircular rockfill is installed around the intake structure to prevent large pieces of ice from being driven by wind and wave action into the intake crib. A bubble screen is installed to discourage fish from entering the crib. Trash racks and traveling screens have

been installed to prevent large objects from entering the intake bay and to prevent fish and small debris from clogging the system. The intake velocity will be such that most adult fish will avoid being entrained. On the basis of comparisons with other intake systems, the Staff concluded, and the Board agrees, that the intake at Davis-Besse will probably not entrain large numbers of fish (FES §§5.5.2.1, 11.4.4, 11.4.9). To assure this, the non-radiological monitoring program will include studies on entrainment of fish of all ages. The Board concludes that this procedure is appropriate.

c. Impacts on the Community

41. The present sound level in the environs of the site will be affected by the operational noise of the station. This noise will principally emanate from the natural-draft cooling towers, the transformers and related equipment in the switchyard, and the turbines, motors, and pumps within the main structures of each unit. On the basis of the Staff's evaluation of the Applicant's analysis, no persons are expected to be exposed to noise levels exceeding the Housing and Urban Development (HUD) "normally acceptable" noise criterion. The Applicant's model for predicting noise levels is conservative in that no credit was taken for ground absorption which could reduce the predicted values (FES §5.6.1). The Board finds that there will be no significant adverse impact from noise due to the operation of the Davis-Besse station.

42. It is expected that after completion of the two units, a total of 190 full-time employees will be needed for operation and maintenance. Similar living patterns are expected to occur as now exist for Davis-Besse 1, i.e., 10% live in the immediate area, 10% moved in from other areas, and 80% commute. No significant burden is expected to local services, such as water, sewage, and schools, during the operation of Davis-Besse 2 & 3 from the added population (FES §§5.6, 11.10.6).

43. The projected payroll for permanent employees is \$5 million per year in 1986 and \$53 million over the 40-year life of the plant (discounted to 1986 dollars). The Applicant estimated that taxes (local, state, federal) will come to approximately \$71 million in 1986. The total taxes paid during the life of Davis-Besse 2 & 3, discounted to present worth at 9.25%, are estimated at \$740 million. The Staff concluded, and the Board is in agreement, that the benefits derived from tax revenues will compensate for increased cost to local governments for services required by permanently employed personnel and their families (FES §§5.6, 11.10.6).

44. The operation of the facilities will not impair the recreational values in the site area. Operation will not curtail boating, fishing, swimming, camping, and hunting activities. Access to areas of scenic, historic, or cultural interest will not be restricted, and no areas having known historic, cultural, natural, or archaeological value will be degraded. The Staff concluded, and the Board agrees, that no unusual impacts of an unacceptable nature are presently

apparent, and that limitations on impacts, should any become necessary, can be incorporated in the technical specifications (FES §5.6).

3. RADIOLOGICAL RELEASES

a. Impacts on Biota

45. Depending on the exposure pathway being considered, terrestrial and aquatic organisms will receive approximately the same radiation doses as man. Although no guidelines have been established for desirable limits for radiation exposure to species other than man, the Board is in agreement with the authorities, who indicate that the guidelines established for humans are also conservative for these species (FES §5.4).

46. Doses will be delivered to aquatic organisms living in water which contains radionuclides discharged from the power station. Doses to aquatic plants and fish living in the discharge region due to water uptake and ingestion were calculated to be 37 and 7.6 mrad/year, respectively, for the Davis-Besse 2 & 3 operation. The doses are conservative in that it is unlikely that any of the mobile life forms will spend a significant portion of their life spans in the maximum activity concentration of the discharge region. Both radioactive decay and additional dilution will reduce the dose at other points in the lake (FES §5.4.1.3).

47. External doses to terrestrial animals other than man are determined on the basis of gaseous effluent concentrations and direct radiation contribution at the locations where such animals may actually be present. Terrestrial animals in the site environs will receive approximately the same external radiation doses as man. An estimate can be made for the ingestion dose to a terrestrial animal. The Staff estimated that the ingestion dose for a duck, consuming only vegetation in the discharge region, would be about 28 mrad/year, which represents an upper limit (FES §5.4.1.3).

48. The most recent and pertinent studies on low-level exposure to radiation from ingested radionuclides on natural aquatic or terrestrial populations indicate that no biota have been discovered which show a sensitivity to radiation exposures at the low level anticipated in the area surrounding the station. Studies to date have identified no other living organisms which are significantly more radiosensitive than man (FES §5.4.1.3). The Board has, therefore, concluded that no detectable radiological impact is expected in the aquatic biota or terrestrial mammals as a result of the quantity of radionuclides to be released in Lake Erie and into the air by Davis-Besse 2 & 3.

b. Impacts on Man

49. During the operation of the Davis-Besse Nuclear Station Units 2 & 3, radioactive materials will be produced by fission and by neutron activation of

corrosion products in the reactor coolant system. From the radioactive material produced, small amounts of gaseous and liquid radioactive wastes will enter the waste streams. These streams will be processed and monitored within the station to minimize the quantity of radionuclides ultimately released to the atmosphere and to Lake Erie. The waste handling and treatment systems to be installed at the station are discussed in the Applicant's PSAR and ER. In these documents, the Applicant has prepared an analysis of the treatment systems and has estimated the annual radioactive effluents. The Staff has independently evaluated and reviewed the Applicant's analyses and calculations to assure that releases from the facilities are in accord with the requirements of the Commission's regulations (FES §§3.5, 5.4). The Board has reviewed the evidence introduced by the parties, and has determined that both the Applicant and the Staff have adequately described the radiological impact which could be expected from the operation of the proposed facilities.

50. The liquid radioactive waste treatment system will consist of the process equipment and instrumentation necessary to collect, process, monitor, and recycle or dispose of potentially radioactive liquid wastes. Liquid will be processed on a batch basis to permit optimum control of releases. Prior to releasing liquid waste, samples will be analyzed to determine the type and amounts of radioactivity present. Depending on the results of the analyses, the waste will be either recycled, released under controlled conditions to Lake Erie, or retained for further processing. A signal from the radiation monitors will automatically terminate liquid waste discharges if radiation measurements exceed a predetermined level in the discharge line (FES §3.5.1).

51. On the basis of its evaluation of the liquid waste treatment systems, the Staff calculated the releases of radioactive materials in the liquid wastes to be approximately 0.3 Ci/reactor yr, normalized to include anticipated operational occurrences and equipment malfunctions, excluding tritium and dissolved noble gases. Based on experience at operating reactors, the Staff estimated the tritium releases to be 350 Ci/reactor yr. The Applicant estimated the liquid releases to be 0.14 Ci/reactor yr, excluding tritium, and 350 Ci/reactor yr of tritium (FES §3.5.1.4).

52. The gaseous waste system will consist of equipment and instrumentation necessary to reduce releases of radioactive gases and airborne particulates from equipment and building vents. The principal source of radioactive gaseous wastes will be gases stripped from the primary coolant. Additional sources of gaseous wastes will be main condenser air ejector offgases, ventilation exhausts from the auxiliary and turbine buildings, and gases collected in the containment vessel building. The principal system for treating gaseous wastes will be the gaseous radioactive waste system (GRWS). The GRWS consists of compressors, moisture separators, three pressurized storage tanks, and a charcoal filter. The GRWS will collect and store gases stripped from the primary coolant and gases vented from tanks and systems containing hydrogen-rich primary coolant. The containment

atmosphere will be purged through high efficiency particulate absolute (HEPA) filters. Ventilation exhausts from the auxiliary building will be processed through HEPA filters prior to release. Ventilation exhausts from the turbine building and offgases from the main condenser air ejector will be released without treatment. Both Davis-Besse 2 & 3 will have once-through steam generators, thereby eliminating the necessity for steam generator blowdown (FES §3.5.2).

53. On the basis of certain design parameters and a 60-day holdup time in the wastegas tanks, the Staff calculated releases to the atmosphere from the GRWS to be approximately 340 Ci/reactor yr for noble gases and less than 10^{-4} Ci/reactor yr for iodine-131. The Applicant calculated releases of approximately 810 Ci/reactor yr for noble gases and less than 6×10^{-4} Ci/reactor yr for iodine-131. The Applicant used a 30-day holdup time (FES §3.5.2.1).

54. In determining releases from containment purges, the Staff calculated the containment airborne activity based on a daily leakage rate of 1% of the noble gas inventory and 0.001% of the iodine inventory in the primary coolant being released to the containment atmosphere. The Staff also assumed a continuous containment purge of 1000 cubic feet per minute with four purges per year. The Staff calculated the releases from the containment to be approximately 8100 Ci/reactor yr for noble gases and 0.21 Ci/reactor yr for iodine-131. The Applicant calculated a release of approximately 100 Ci/reactor yr for noble gases and 0.184 Ci/reactor yr for iodine-131 (FES §3.5.2.2).

55. Assuming that 160 lb/day of primary coolant will leak to the auxiliary building, the Staff calculated the auxiliary building releases to be approximately 330 Ci/reactor yr for noble gases and 0.06 Ci/reactor yr for iodine-131. The Applicant calculated 580 and 0.008 respectively. In addition, both the Staff and the Applicant calculated turbine building vent releases to be negligible for the noble gases and 0.001 Ci/reactor yr for iodine-131, assuming 1700 lb/hr of steam leaking to the turbine building atmosphere (FES §3.5.2.3).

56. In estimating the main condenser offgas releases, the Staff assumed a 100 lb/day primary factor of 0.15 for volatile radioiodine species. The calculated releases are approximately 200 Ci/reactor yr for noble gases and 0.04 Ci/reactor yr for iodine-131. The Applicant calculated 360 and negligible, respectively (FES §3.5.2.5).

57. Solid waste containing radioactive materials will be generated during station operation. Solid wastes will be categorized as "wet" or "dry" based on the need for moisture absorption and solidification during processing. Wet solid wastes will consist mainly of spent demineralizer resins, spent filter cartridges, and evaporator concentrates. These wastes will be dewatered and combined with a solidification agent and catalyst in 50-cubic-foot casks to form a solid matrix. The radioactivity removed from the liquid waste stream by demineralizers, evaporators, or filters will become wet solid wastes. Dry solid wastes will consist of ventilation air filters, contaminated clothing and paper, and miscellaneous

items such as tools and laboratory glassware. Based on the Staff's evaluation of similar reactors and operating reactor data, it was estimated that approximately 4400 cubic feet of wet waste containing approximately 6000 Ci total, and approximately 450 drums of dry solid waste containing less than five Ci total will be shipped offsite annually as the result of the operation of each unit. More than 90% of the radioactivity associated with the solid waste will be long-lived fission and corrosion products, principally Cs-134, Cs-137, Co-58, Co-60, and Fe-55. The Applicant estimates that approximately 3000 cubic feet of wet solid waste containing approximately 16,000 Ci and 990 cubic feet of dry solid waste containing approximately 0.3 Ci will be shipped offsite annually. All containers will be shipped to a licensed burial site in accordance with Commission and Department of Transportation regulations. The solid waste system will be similar to systems which the Staff evaluated and found acceptable in previous license applications (FES §3.5.3).

58. In estimating the radiological impact on man from the operation of Davis-Besse 2 & 3, the Staff established an upper bound exposure to the population of the United States which is unlikely to be exceeded when the Staff performs its detailed review in order to reflect the Commission's guidance in Appendix I to 10 CFR Part 50, issued April 30, 1975. Using conservative assumptions, the Staff estimated the dose to the population to be 270 man-rem/year. The dose calculated from all three Davis-Besse units was 410 man-rem/year. These doses are only small fractions of the annual population dose due to natural background radiation. The Staff estimated natural environmental radioactivity to be 21 million man-rem/year. Though the detailed assessment has not been performed, the individual doses associated with the radioactive releases of Davis-Besse 2 & 3 will be in accord with the requirements of Appendix I to 10 CFR Part 50. No final plant design will be approved which will result in individual doses in excess of these requirements. Appendix I requires that individual doses be kept to a small fraction of the doses specified by 10 CFR Part 20 (FES §5.4.2). Therefore, the Board has concluded that the maximum individual doses and the upper bound population doses resulting from the operation of Davis-Besse 2 & 3 are fractions of the doses that individuals and the population receive from naturally occurring radiation, and that no significant environmental impact will occur as the result of normal operational radioactive releases.

59. The Staff concluded, and the Board is in agreement, that individual occupational doses can be maintained within the limits specified by 10 CFR Part 20. Maintaining radiation doses of plant personnel within these limits ensures that risk associated with radiation exposure is no greater than those risks normally accepted by workers in other present-day industries (FES §5.4.2.4).

4. ENVIRONMENTAL EFFECTS OF TRANSPORTATION OF RADIOACTIVE MATERIAL AND THE URANIUM FUEL CYCLE

60. The Staff evaluated the effects of the uranium fuel cycle as it pertains to Davis-Besse 2 & 3 and the transportation of radioactive material to and from the facilities, in accordance with standard tables S-3 and S-4 to 10 CFR Part 51, and has considered the effect of these impacts in the cost-benefit balance (FES §5.4.2.6, Table 5.11, and Section 10.4.2 (uranium fuel cycle); FES §5.4.2.4, Table 5.9, Section 7.2, and Table 7.3 (transportation)). The Board has examined the Staff's evaluation and concludes that they were properly performed pursuant to the regulations, and that such environmental effects are negligible.

5. ENVIRONMENTAL EFFECTS OF POSTULATED ACCIDENTS

61. The probability of occurrence of accidents and the spectrum of their consequences to be considered from an environmental effects standpoint have been analyzed using best estimates of probabilities and realistic fission product release and transport assumptions. The radiological effects of accidents on the environment have been assessed using the standard accident assumptions and guidance issued as a proposed amendment to Appendix D to CFR Part 50 on December 1, 1971 (36 *F.R.* 22851) (FES Chapter 7). The results of this realistic analysis demonstrate that the environmental risks due to postulated radiological accidents are exceedingly small.

6. ENVIRONMENTAL MONITORING

62. The Staff evaluated the hydrological monitoring program conducted by the Applicant. The program was found acceptable, with the recommendation that the Applicant submit to the Staff a program to verify the predicted thermal plume characteristics prior to operation of Davis-Besse 2 (FES §6.1.1).

63. The Applicant initiated a meteorological monitoring program in October 1968. Although some data evidenced interference problems from Davis-Besse 1 structures, the Staff determined that the 12-month data from December 1969 through November 1970 did not exhibit interference problems and provided an acceptable basis for determining meteorological characteristics. However, this program was initiated prior to the issuance of the Commission's Regulatory Guide 1.23, "Onsite Meteorological Programs". Data gathered pursuant to this guide have now been submitted by the Applicant and will be compared to the relative concentration values calculated previously. The Staff does not expect these values to increase sufficiently to change its conclusions on site and design suitability (FES §6.1.2; Tr. 71, 75, 75; See §113, *infra*). The Board finds the

Applicant's 12-month meteorological monitoring program beginning December 1969 to November 1970 provides an acceptable basis for determining meteorological characteristics at the site.

64. Extensive studies of the ecological system in the area of the Davis-Besse site have been conducted by various organizations, including the Applicant, the Applicant's subcontractor NUS Corporation, the Bowling Green State University Environmental Studies Center, the U. S. Bureau of Sport Fisheries and Wildlife, the Ohio State University, and the Ohio Division of Wildlife. The studies covered a great many parameters which included vegetation and soil; birds, mammals, reptiles, and amphibians; water chemistry; and plankton, benthos, and fish (FES §6.1.3). The Staff reviewed the preoperational terrestrial and aquatic monitoring programs and found them adequate, subject to the recommendations that the study of algae in the lake be continued and that the Applicant detail the statistical procedures and methodology which will be used to determine the significance of any changes in the measured ecological parameters, and submit them for Staff approval at least three years prior to start-up of Davis-Besse 2 (FES §6.1.3.2).

65. The Applicant began conducting an offsite preoperational radiological monitoring program to provide for measurement of background radiation levels and radioactivity in the plant environs in July 1972. The preoperational program, which provides a necessary basis for the operational radiological monitoring program, will also permit the Applicant to train personnel and evaluate procedures, equipment, and techniques, as indicated in the Commission's Regulatory Guide 4.1 (FES §6.1.4, Tables 6.1, 6.2). The Staff concluded that the Applicant's preoperational monitoring program will provide adequate baseline data for most environmental media, which will assist in verifying radioactivity concentrations and related public exposures after plant operation. However, it is the Staff's recommendation that the sampling and analysis schedule for the environmental media be augmented in order for the program to be considered complete (FES §6.1.4). The Staff recommends that:

1. Gamma spectral analysis should be performed on all composited samples on a routine basis, independently of gross beta activity.

2. Iodine-131 analysis should be performed with a sensitivity of 0.5 pCi/l on all monthly milk samples collected during the grazing season which immediately precedes the projected fuel-loading date of Davis-Besse Unit 1.

3. Soil samples should be collected at a frequency of once per three years at all air sample locations and analyzed as indicated in the ER.

66. The Board has reviewed the preoperational monitoring programs and finds them adequate to provide the baseline information necessary to evaluate the impact from construction and operation of Davis-Besse 2 & 3, subject to the conditions recommended by the Staff.

7. NEED FOR POWER

67. The Davis-Besse Nuclear Power Station Units 2 & 3 are jointly owned nuclear power generating facilities. Ownership is divided among the Toledo Edison Company (20%), the Cleveland Electric Illuminating Company (25%), the Ohio Edison Company (35%), the Duquesne Light Company (14%), and the Pennsylvania Power Company (6%). The Pennsylvania Power Company is a wholly owned subsidiary of Ohio Edison. Collectively, the companies make up the Central Area Power Coordination Group (CAPCO). The CAPCO group serves an area of approximately 14,000 square miles in northern Ohio and western Pennsylvania and a population of about seven million people. The CAPCO service area is in the East Central Region of the Federal Power Commission, and all members of CAPCO are also members of the East Central Reliability Coordination Agreement (ECAR). ECAR consists of 26 electric utilities with 19 power systems. The CAPCO group, formed in 1967, is designed to coordinate the installation of generating capacity on the systems of the members to further the reliability of bulk power supply, attain maximum economy, share responsibilities and benefits on an equitable basis, and provide a means for more effective coordination with other power pools and coordination groups (FES Chapter 8).

68. The two customer demands which the CAPCO members must satisfy are the annual energy demand (MWh) and the daily peak power demands (MW). To meet the former demand, the members must ensure that they have sufficient generating capacity or can purchase sufficient energy to supply the time-integrated energy requirements of their customers. To meet the latter, the members must ensure that they have adequate and reliable generating capacity to meet power demands of relatively short duration (FES §8.2.1).

69. The Staff elected to base its projections of the CAPCO energy and power needs on the reported 1973 energy and peak power supplied. Historically, the 1963-73 period showed a 6.63% per year growth in energy demand, in which case the energy requirement in 1985 would be about 132×10^6 MWh. Using assumptions designed to reflect the 1974 economic recession, future economic trends, and projected effects of energy saving measures, the Staff and the Applicant independently calculated 1985 energy requirements to be 116×10^6 MWh and 110×10^6 MWh, respectively. The Applicant's figures are more conservative and represent an average annual growth rate of 5.04%. The Staff reviewed the CAPCO generating units, and, using certain defined parameters, concluded that the addition of the proposed units to meet energy demands will be necessary within a few years after the proposed operation dates, but that the primary need for the additional generating capacity in the CAPCO group is based on peak power demand, and not on the total energy consumption over the year (FES §§8.2.3.5, 8.2.4.1, 8.2.4.2).

70. The second demand which the CAPCO members must satisfy is the daily peak power demand. The Applicant submitted to the Staff an analysis of

CAPCO peak power demand and supply (ER §1.1.1; Revision 3, Tables 1.1-4 and 1.1-6). Using the information supplied, the Staff analyzed the peak power capability of the Applicant in relation to the projected need (FES §8.2.4.3, 8.2.4.4, Table 8.3, Figure 8.4). In 1983, the peak power production capability will be 19,202 MW without Davis-Besse 2. The projected power demand, which for the CAPCO service area occurs in summer, is 17,626 MW. By 1985, without Davis-Besse 2 or 3, the capability will still be the same, but peak demand will have climbed to 19,700 MW. The addition of the proposed units would yield 20,106 MW in 1983 and 21,010 MW in 1985. These figures reflect a 6.3% projected average annual growth rate of power demand. The Staff's independent analysis substantially agreed with that of the Applicant (FES §8.2.4.3).

71. Utilizing the above figures, the Staff calculated the reserve margins available to the CAPCO group. To assure system reliability the Federal Power Commission considers it desirable for planning purposes to have a reserve margin of 20% (FES §8.2.6). In 1983, the summer reserve margins calculated, with and without Davis-Besse 2, are 14.2% and 9.0%, respectively. In 1985, the summer reserve margins, without Davis-Besse 2 or 3, are 6.7% and -2.4%, respectively (FES Table 8.5; ER, Revision 3, Tables 1.1-6 and 1.1-8).

72. The calculations and projections performed by both the Applicant and the Staff included compensating features to account for recent downward trends in energy and power demand. This procedure reflects the sale characteristics of the CAPCO service area, which has a higher industrial demand than the nation as a whole, and thus its energy requirements can be expected to vary with the national economic conditions, particularly as related to automotive and durable goods demands (FES §8.2.2).

73. In addition, both the Applicant and the Staff considered the effect of conservation measures on the demand for electricity. Since the end of 1973, the CAPCO members have attempted, through advertising, to promote the efficient residential usage of electricity and have terminated promotional advertising. Consumption of electricity in the CAPCO service area from December 1973 through June 1974 was less than that forecast by 3.9%. Milder weather than anticipated, energy conservation, and the generally poor economic climate probably all contributed to the reduction in growth. Thus, the significance of energy conservation in reducing total energy demand is uncertain (FES §8.2.3.1, 8.2.3.2).

74. The Staff also considered the effect, if any, that a change in utility rate structure may have on electrical demand. In general, regulation of utility rates is carried out by the Federal Power Commission and the state public utility commissions, and although there has been recent interest in alternative rate structures, the complexity of factors affecting the demand for electricity make it exceedingly difficult to determine the extent to which price changes alone would affect the demand for electricity in the CAPCO service area (FES §8.2.3.3).

75. Load shedding, load staggering, and interruptible load contracts were considered by the Staff as possible procedures to reduce peak power demand. Load shedding is an emergency measure used only as a last resort to prevent system collapse. Load staggering involves shifting the work hours of industrial and commercial firms to avoid peak demand. Interference with customer and worker preferences, as well as productivity, makes load staggering of questionable feasibility. Interruptible load contracts, primarily utilized by industrial customers to save money at the reduced rates, would probably not be continued if customers were faced with frequent and long periods without electrical service (FES §8.2.3.4). In short, none of these measures seems likely to be a viable alternative for the required additional capacity, and would do little to solve the energy shortage.

76. The Board recognizes that during the past few years, much of industry, the Federal government, and many state and local governments have made the promotion of energy conservation a priority program. The National Bureau of Standards has been given a leading role in promoting and developing energy-saving standards. Any present estimates of the magnitude of electricity savings to be realized over time are tentative. It is possible that some savings could be realized by improved insulation, more efficient lighting, or energy efficiency labeling. However, other considerations, such as the proposed requirement for air-conditioning in industries where employees are subject to heat stress, make any significant reduction in the future peak demand for electricity due to measures for conservation of energy highly uncertain at this time (FES §8.2.3.5).

77. Included in the Staff's analysis was the effect of the substitution of electricity for scarce fuels, and the effect this shift has on techniques for conservation of energy. It is expected that substitution of electricity for scarce energy sources will accelerate in the Applicant's service area because of the uncertainty of oil supplies, the widespread curtailment of gas supplies, and the outlook for higher prices for oil and gas relative to the price of electricity produced by coal-fired or nuclear plants. In the Applicant's service area, 71% of the new living units are projected to be all-electric in 1980, compared with only 29% in 1972. In addition, a second type of substitution was considered, that of adding nuclear capacity to reduce fuel consumed by gas- or oil-fired units on the Applicant's system. With 476 MW of oil-fired steam, the effect of this type of substitution could be to eliminate the need for about 3 million barrels of oil per year (FES §8.2.3.6).

78. The Board has analyzed the information and analyses presented by Applicant and the Staff and concludes that the Applicant's energy requirement projections appear to be realistic and represent a definite decrease from the historic trend prior to 1973. Although the Applicant's peak power projections appear to be optimistic, both energy and power projections are conservative extrapolations of the pre-1974 trends, and could, if present economic conditions

improve, be realized. The Board further concludes that the Applicant's projections are at a reasonable and safe level to assure that the Applicant is capable of meeting potential demand, and that, therefore, the Applicant has a definite need to expand its generating capability with the addition of Davis-Besse 2 & 3.

8. ALTERNATIVES TO THE PROPOSED PLANT

79. The Staff independently evaluated a number of alternative energy sources, including alternatives such as purchased power, that would not require construction of additional generating capacity, and alternative methods of generating the necessary power (FES §9.1). Purchased power would be a viable alternative if the Applicant could contract for several thousand megawatts for several decades into the future. However, the purchase of large amounts of base-load power from other utilities on a long-range basis is not presently a viable alternative in the Applicant's service area (FES §9.1.1.2). At present, the only generally available large-scale alternatives to a nuclear plant are hydroelectric or fossil fueled plants. The State of Ohio lacks suitable terrain for hydroelectric power. Natural gas, besides being in short supply, is not economically suitable for baseload duty. Uncertainties of supply as well as costs make oil an unrecommended fuel for large-scale baseload power generation. Other alternatives were considered, including purification and liquefaction of coal for gas turbine cycles or magnetohydrodynamic generators, the burning of solid wastes, geothermal energy, and solar and wind energy. These alternatives are either not available in the Ohio region, are excessively expensive, or are so undeveloped as to preclude their ability to supply sufficient energy to the region (FES §9.1.2).

80. The only viable alternative means of generating the electricity required in the CAPCO service area is with coal. Coal has been, and remains, a major fuel for power generation in the area. Although large domestic supplies are available, the present problem is that most Ohio and Appalachian coal is relatively high in sulfur. Sulfur-removal equipment is expensive and its reliability questionable. Low-sulfur coal is mostly available in Montana and Wyoming, but it has relatively low heating value, and transportation costs are high. The decision to build a coal or nuclear plant must in each case depend on an evaluation of the economic and environmental impacts of the proposed power source (FES §9.1.2).

81. The Staff considered the alternative of a coal-fired plant with and without sulfur-removing equipment. In calculating costs the Staff considered construction and annualized capital costs, operating and maintenance costs, and fuel costs. The Staff's calculations indicate that the total cost, in 1984 dollars, is 1666 million for a nuclear plant, and for a coal plant, with and without sulfur removal equipment, 2273 million and 2092 million, respectively

(FES Table 9.1). In nuclear plant operation, a major environmental consideration is that highly radioactive materials must be carefully protected over a long period of time. Given this protection, which can reasonably be expected, a nuclear plant has relatively small operational impacts. In contrast, during operation of coal plants, large quantities of noxious gases and particulates are discharged to the atmosphere. On balance, the Staff concluded, and the Board agrees, that a nuclear plant is environmentally and economically preferable to a coal plant in the Applicant's service area (FES §9.1.2).

82. The Staff independently evaluated the Applicant's review of alternative sites (FES §9.1.3; ER §9.2.2, 9.3, Supplement 1). The Applicant considered a number of sites in seven areas in Ohio and Pennsylvania served by CAPCO. Selection of the proposed site was made by optimizing the total requirement of the member companies. Normal considerations for siting were used, including geology, cooling water availability, nearness to load centers, minimization of transmission line costs, and population distribution. Meeting the final requirements were three sites along Lake Erie and a fourth two miles from the lake. Three sites already had nuclear plants planned or being built. The use of a previously developed site minimizes the major impacts of new site development. Davis-Besse was superior in transmission line costs, and none of the other sites offered any significant advantage (FES §9.1.3). The Board finds that the Staff's independent assessment of the alternative sites is adequate, and further, finds that Davis-Besse is the preferable site.

83. Both the Applicant and the Staff analyzed possible modifications to the proposed plant design that might significantly change the balance between economic and environmental costs (FES §9.2). The cooling system for each unit of Davis-Besse 2 & 3 must be capable of dissipating 9.2×10^9 Btu/hr. Five alternatives to the proposed natural draft cooling towers were considered: once-through cooling, mechanical-draft towers, cooling lake, spray canals, and dry cooling towers.

84. The Board agrees with the Staff that the aquatic impact from once-through cooling would be unacceptable and that this system would fail to meet the applicable state water quality standards (FES §9.2.1.2). A cooling lake, although technically feasible, necessitates the purchase and excavation of approximately 2600 acres. The Staff noted, and the Board agrees, that portions of the adjacent marshland would be destroyed. In addition, fogging and icing are caused by the heated waters (FES §9.2.1.3). Spray canals would require a system approximately 12,000 feet long and 200 feet wide, containing 304 spray modules. Additional land would be required to minimize recirculation and to serve as a buffer zone between the canal and nearby roads and houses. In addition, there has been little experience with large spray cooling systems, especially in winter (FES §9.2.14).

85. Dry cooling towers were considered since they function with small quantities of cooling water, without creating drift, fogging, icing problems, and

blowdown dispersal. A major disadvantage of dry cooling towers is economic, since for a given reactor size, plant capacity can be expected to decrease by about 5 to 15%, depending on ambient temperatures and assuming an optimized turbine design (FES §9.2.15). Further, bus-bar energy costs can be expected to be on the order of 20% more with dry cooling towers than with a once-through system and 15% more than with a wet cooling tower system. The use of dry towers to meet the cooling requirements of a 1000-MW nuclear plant requires new turbine designs to achieve optimum efficiencies (*Id.*).

86. The Board concludes, after weighing the overall advantages and disadvantages of the various alternative cooling systems, that the natural draft cooling towers chosen by the Applicant for Davis-Besse 2 & 3 are most advantageous from economic and environmental considerations.

87. Davis-Besse 2 & 3 will utilize the presently existing intake system built for Davis-Besse 1. Although the intake flow rate will be slightly higher, no unacceptable increase in loss of aquatic biota is anticipated (FES §9.2.2).

88. Alternative diffusers for the discharge system were considered by the Staff. The Staff concluded that the expected environmental impact of the proposed system is so small that the economic cost of any change at this time is unwarranted (FES §9.2.3).

89. The Board concludes that the Staff has adequately considered alternatives in the proposed systems, including chemical, sewage, and biocide systems, and that the proposed systems are to be preferred both economically and environmentally (FES §§9.2.4, 9.2.5).

9. COST-BENEFIT BALANCING

90. The Board has considered the environmental, economic, technical, and other costs and benefits for the proposed Davis-Besse Nuclear Power Station, Units 2 & 3 (FES p. i, ii; Chapter 10). The Board finds that the major environmental and other costs are as follows:

(a) Disturbance during construction of approximately 100 on-site acres of upland and 100 off-site acres of farmland, both of which will be permanently lost to agricultural production, and 6.5 on-site acres of woodland. Minor erosion will occur.

(b) Consumption of Lake Erie water at the rate of approximately 30,000 acre-feet per year due to cooling tower evaporation, with a resulting discharge of minute amounts of various chemicals, radioactive substances, and sanitary wastes to the lake.

(c) Possible lowering of the water level of two offsite wells as the result of dewatering during construction.

(d) Excavation of a temporary barge canal through the beach to the existing closed canal for the delivery of reactor vessels for Davis-Besse 2 & 3.

Dredging operations for this channel will cause slight damage of a short-term nature to aquatic life in the immediate vicinity, especially the benthos.

(e) Impingement mortality of planktonic organisms and a small number of fish will occur at the cooling water intake structure.

(f) Entrainment of planktonic organisms and fish in the 3-acre thermal plume created by the high velocity discharge.

(g) Transient smoke, dust, and noise in the site area due to construction.

(h) Annual deposition of 0.1 lb/acre of dissolved solids due to cooling tower drift. There will be an occasional visible plume extending for several miles.

(i) Minor bird kills from collision with station structures, particularly during spring and fall songbird migrations.

(j) Radiological impact of less than a few percent of natural background and an occupational exposure of 900 man-rem per year, well within the requirements of 10 CFR Part 20.

(k) A slight increase in traffic during construction.

(l) A slight increase in population during operation.

(m) The capital and operating costs of the plant.

91. The Board finds that the principal benefits of the proposed facilities are as follows:

(a) The generation of approximately 12 billion kilowatt hours per year of electricity, at the lowest cost among viable alternatives, which is required by the Applicant to meet the need for electric power.

(b) The addition of more than 500 acres of waterfowl habitat to the National Wildlife Refuge System.

(c) Local economic advantage from a large construction project, and permanent employment of station personnel.

(d) Creation of a 100-acre pond for recreation, wildlife refuge, or aquaculture.

(e) Enhanced knowledge of southwestern Lake Erie through ecological surveys and monitoring.

92. Additionally, the Board has reviewed Tables S-3 and S-4 of 10 CFR §51.20 which summarize environmental considerations for the uranium fuel cycle and transportation of fuel and waste to and from a light-water-cooled reactor, respectively.

93. The Board finds that the benefits of operation of the proposed Davis-Besse 2 & 3 outweigh the environmental, economic, and other costs, and therefore the balancing of these factors favors issuance of construction permits for the proposed facilities.

III. SITE SUITABILITY

94. In accordance with 10 CFR §50.10(e)(2), the Board has reviewed the site proposed for Davis-Besse 2 & 3 to determine whether, on the basis of the available information and review to date, there is reasonable assurance that the proposed site is a suitable location for nuclear power reactors of the general size and type proposed from the standpoint of radiological health and safety considerations under the Atomic Energy Act of 1954, as amended, and rules and regulations promulgated by the Commission pursuant thereto.

95. The Davis-Besse site is a 954-acre tract of land located on the southwestern shore of Lake Erie in Ottawa County, Ohio. The site is approximately 21 miles southeast of Toledo, Ohio, and 24 miles northwest of Sandusky, Ohio. The proposed units will consist of two identical pressurized-water reactors which are to be located adjacent to Unit 1, which is now under construction on the same site under Construction Permit No. CPPR-80, issued by the Atomic Energy Commission on March 24, 1971. Each of the proposed units is designed for a thermal output of 2772 megawatts and a net electrical output of 906 megawatts. (U. S. Nuclear Regulatory Commission Report on Site Suitability of the Proposed Davis-Besse Nuclear Power Station Units 2 and 3, p. 1, following Tr. 64, hereinafter referred to as "Staff Report").

96. The Board's review has included consideration of the reactor site criteria given in the Commission's regulation 10 CFR Part 100 concerning site suitability as related to the radiological health and safety of the public. The factors considered were population density and use characteristics, including the exclusion area, low population zone, and population center distance; whether there are any nearby industrial, transportation, or military facilities that could influence the acceptability of the site; and the physical characteristics of the site, including meteorology, hydrology, geology, and seismology.

A. Population Density and Use Characteristics

97. The 1970 population figures in the area surrounding the site, including their distribution, are set out by the Staff in its Final Environmental Statement (FES §2.2). Carroll Township, which encompasses the entire site, has the lowest population (1355) and population density (37 persons per square mile) of any township in Ottawa County. The 1970 population density within 10 miles of the site was 110 persons per square mile. This figure is expected to increase to 115 persons per square mile by the year 1980 and to 143 persons per square mile by the year 2020. Including seasonal population variations (primarily summer vacationers) projected by the Applicant, these population densities would be 136, 142, and 179 persons per square mile respectively (Staff Report p. 2).

98. The Applicant has specified a minimum exclusion area distance of 2080 feet (0.39 mile) for Davis-Besse 2 & 3, which is the distance from the Unit 3 vent to the nearest site boundary. There are no people residing within the minimum exclusion area distance. However, there is one residence located within the boundaries of the exclusion area but farther than 2080 feet. The residence is owned by the Toledo Edison Company and occupied by one of its employees. The ownership of the site resides in the Toledo Edison Company and the Cleveland Electric Illuminating Company as tenants in common. The marsh and beach ridge areas of the site encompassing 582 acres is leased to the U. S. Government as a national wildlife refuge. Access to the leased areas is limited to government employees, employees of Toledo Edison, and to others authorized by the government or Toledo Edison. Toledo Edison has complete authority to exclude personnel from the areas if station conditions require such exclusion. There are no public roads within the exclusion area (Staff Report, p. 3). Accordingly, the Board concludes that the Applicant has the authority to determine all activities within the exclusion area.

99. Applicants have specified a low population zone ("LPZ") having a radius of 2 miles. The Staff has concluded that the present and projected total number and density of residents and transients in the LPZ are such that there is reasonable assurance that the 10 CFR Part 100 definition of LPZ can be satisfied in that appropriate protective measures could be taken in the event of a serious accident, and that there are no unusual features that would prevent development of appropriate emergency response procedures. The nearest population centers containing more than 25,000 residents are Toledo, Ohio, with a 1970 population of 383,818 and Sandusky, Ohio, with a 1970 population of 32,674. Both cities are located approximately 20 to 25 miles from the site, but in opposite directions. These population center distances meet the requirement of 10 CFR Part 100 in that they are well over one and one-third times the distance from the facility to the outer boundary of the LPZ. In addition, the Staff has identified no future population center distances which would not be over one and one-third times the LPZ distance within the life of the facility.

100. (Paragraph deleted.)

101. On the basis of its review, the Board has concluded that the specified minimum exclusion distance (2080 feet) and low population zone radius (2 miles) are of sufficient size in comparison with previously licensed plants to furnish reasonable assurance that adequate engineered safety features can be provided to satisfy the exposure guidelines of 10 CFR Part 100 for reactors of the general size and type proposed for the Davis-Besse site.

102. The 954-acre Davis-Besse site consists of a 7250-foot frontage along Lake Erie and extends back across the sand ridge and marsh into the higher agricultural land. About 600 acres of the site are marshland and the rest highland. The land surrounding the site are marshland and the rest highland. The land surrounding the site is predominantly of an agricultural or wetlands nature.

The principal crops grown in the area include corn, wheat, soybeans, hay, alfalfa, other small grains such as oats, sugar beets, vegetables, and fruits. Wetlands cover a large section of the shoreline at and on both sides of the site. They principally provide wildlife refuge (Staff Report, p. 5).

103. Water sport activities are popular in the area. These activities include pleasure boating, sport fishing, duck hunting, and swimming. In addition, Lake Erie supports commercial fishing and shipping industries. Also located near the site (within 10 miles) are several state parks and campgrounds. The attendance figures have been considered to determine the transient population factored into the population density figures discussed above. The recreation areas receiving the greatest percentage of annual attendance are Crane Creek State Park and Magee Marsh Wildlife Area. The Crane Creek State Park, extending along the lakeshore 2 to 5 miles from the site, has an average daily summertime attendance of 2500 and a peak attendance of 5000. The Magee Marsh Wildlife Area, located 3 miles from the site, has an annual attendance of 48,000 with a daily peak attendance of 1500 (Staff Report, pp. 5, 6).

104. On the basis of its review, the Board has concluded that the use characteristics in the area of the proposed site present no features which preclude the acceptability of the site.

B. Nearby Industrial, Transportation, and Military Facilities

105. Industrial activities near the Davis-Besse site are concentrated in the Erie Industrial Park, about 5 miles southeast of the site. This park is the closest industrial area to the site. The Erie Industrial Park has 20 firms of miscellaneous types with a total employment of approximately 900 people. One of the firms located in the Erie Industrial Parks is Cadillac Gage Company. This firm operates a facility at this location for the test firing of ordnance. The maximum amount of ammunition stored is equivalent to 10,000 pounds of high explosives (Staff Report, pp. 6, 7). The Board has concluded that the ammunition, stored in bunkers, does not pose a threat to the safety of the proposed Davis-Besse facilities because of the distance of the Erie Industrial Park from the site.

106. The closest military facility is Camp Perry, which abuts the eastern boundary of the Erie Industrial Park. Camp Perry is used for Ohio National Guard and U. S. Army training and is the site of the annual National Rifle Matches during July and August. There are about 70 permanent Army and National Guard personnel, with short-term population increases of about 500 in the summer and on weekends. Weapons firing is also conducted at Camp Perry (Staff Report, p. 7).

107. The firing of ordnance from Camp Perry and Cadillac Gage Company is directed toward impact areas located in Lake Erie. These impact areas lie within areas that have been designated by the U. S. Army Corps of Engineers as

restricted areas. The nearest boundary of these restricted areas is approximately 1.5 miles to the east of the Davis-Besse site. The use of these restricted areas was evaluated at the time of the Davis-Besse Unit 1 construction permit review to determine the effect of such use on the Davis-Besse facility. The results of this evaluation appear in the Staff's Safety Evaluation Report for Davis-Besse Unit 1. Since publication of the Unit 1 Safety Evaluation, use of Restricted Area III has been discontinued and the area is no longer designated as a restricted area. The only presently designated restricted areas are Areas I and II (Staff Report, pp. 7, 8).

108. Cadillac Gage Company directs the firing of its weapons toward Restricted Area II. The closest boundary of Area II is 1.5 miles east of the plant, but the firing fan is limited to 5° east and west of north. The closest impact point of ordnance fired from Cadillac Gage Company is, therefore, about 2 miles from the Davis-Besse station. Camp Perry directs the firing of its weapons toward both Restricted Areas I and II. Small arms firing is directed toward Restricted Area I, which has its nearest boundary approximately 1.8 miles from the station. The firing of 40 mm anti-aircraft guns is directed toward Restricted Area II but the firing fans limit the possible impact area to a distance of about 2.5 miles from the Davis-Besse station. In addition, the projectiles carry self-destruct charges and fuses to prevent surface impact of intact projectiles. These self-destruct charges limit the maximum range of projectile to approximately two-thirds the distance from the firing area to the station (Staff Report, p. 8).

109. On the basis of its review of the present use of the restricted areas, the Board concludes that the activities associated with these areas have not changed since the Unit 1 construction permit review in a way that would increase the hazard to the site. Since no plant structures are to be located in the restricted areas and testing activities will be limited by the firing fans and self-destruct charges, the Board concludes that the activities in those areas pose no danger to the proposed Davis-Besse Nuclear Power Station, Units 2 and 3.

110. There are no oil or gas pipelines within 5 miles of the Davis-Besse site. The closest airport with a paved runway is at Port Clinton, 13 miles southeast of the site. Because of shallowness of Lake Erie in the areas of the site, the nearest shipping lanes are 20 miles from the site. The nearest railroad is the Penn Central, which runs in an east-west direction 5 miles south of the site. The closest highway is State Highway Route 2, located approximately 2600 feet from the station structures (Staff Report, p. 9). In view of the distance to major transportation routes and oil and gas lines, the Board concludes that accidents involving the shipment of hazardous materials or the rupture of oil and gas lines would not affect the safety of the nuclear facilities.

111. On the basis of its review, the Board has concluded that there are no nearby industrial, transportation, or military facilities that preclude the acceptability of the site proposed for Davis-Besse Units 2 and 3.

C. Meteorology

112. The Davis-Besse site is in a region where atmospheric dispersion conditions are about average compared to other areas of the country (Staff Report, p. 10). A description of meteorological conditions at the site, including the climatology of the region, local meteorological conditions, and expected severe weather, is presented in Section 2.6 of the Commission's Final Environmental Statement for Units 2 and 3.

113. The Davis-Besse 2 & 3 plant design basis tornado (360 mph maximum wind speed) conforms to the recommendations of Regulatory Guide 1.76 "Design Basis Tornado for Nuclear Power Plants", and is adequately conservative for this region of the country (Staff Report, p. 10).

114. The Applicant has provided 1 year (December 1969–November 1970) of onsite joint frequency distributions of wind speed and direction at the 20-ft. level by atmospheric stability (defined by the vertical temperature gradient between 145 ft. and 5 ft.). The data were collected from this meteorological program commensurate with the Commission's Regulatory Guide 1.4 but before the issuance of the Commission's Regulatory Guide 1.23 "Onsite Meteorological Programs". The Staff has determined that the data sufficiently describe atmospheric conditions. One full year of onsite data from a program commensurate with the recommendations and intent of Regulatory Guide 1.23 was received by the Staff on October 30, 1975, and will be compared to the Staff's assessment of atmospheric diffusion conditions (Staff Report, pp. 10, 11; Tr. 71-72, 75-76). The Board finds that the data provided by the Applicant for the period December 1969 to November 1970 adequately describe the atmospheric diffusion conditions for the area, and that the Staff's plan to use recently submitted data for comparison is appropriate.

115. An evaluation of short-term accidental releases from buildings and vents, assuming a ground-level release with a building wake factor, cA , of $1300m^2$, was made using the available onsite data and the diffusion model described in Regulatory Guide 1.4. A comparison of the short-term (0-2 hours) relative concentration (X/Q) value calculated for the Davis-Besse site with similar values calculated by the Staff for over 40 other nuclear plant sites indicates that the dispersion conditions at Davis-Besse are better than about 60% of the other sites (Staff Report, p. 11).

116. The Board concurs with the Staff conclusion that there are no meteorological characteristics that would preclude site acceptability.

D. Hydrology

117. The proposed site is located on the southwestern shore of Lake Erie in Ottawa County, Ohio. The major station structures will be located approximately in the center of the site area, 3000 feet from the lake shoreline. The

southern site boundary borders the Toussaint River, which is about 3000 feet from the major plant structures (Staff Report, p. 11).

118. The potential for flooding of the site from several sources has been investigated by the Applicant. Plant grade is to be 584 feet, and the level of entrances to plant structures will be at 585 feet. The Applicant has calculated a maximum wind tide resulting from a probable maximum meteorological event (PMME). The Applicant also determined a probable maximum transverse seiche. These values of wind tide and seiche were added to the maximum recorded static lake level to yield a maximum stillwater lake level of 583.7 feet, or 0.3 foot lower than the plant grade of 584.0 feet. The maximum wave height at the plant is governed by the maximum depth of water between the lake shore and the plant. The maximum wave that can be supported at the maximum stillwater lake level is 8.5 feet. The maximum runup onto the wave protection dike from such a wave is 6.6 feet above maximum stillwater lake level of 583.7 feet. Since the top of the dike will be at elevation 591, the maximum wave runup of 6.6 feet will not overtop the dike. Therefore, the plant will be protected from wave action. In addition, the lakeside face of the dike will be protected by a 3-foot layer of random-placed angular quarry stone (Staff Report, pp. 12, 13).

119. The Applicant has estimated the peak flow rate for the Toussaint River probable maximum flood to be 78,500 cfs. It was conservatively assumed that there would be no inflow to the lake, and the maximum stage associated with this "dammed up" condition would be 579.0 feet. This level is well below plant grade (Staff Report, p. 13). The Staff reviewed Applicant's estimates and the proposed flood protection, including the design basis for site drainage systems, and concluded that appropriate flood protection can be provided. The Staff also determined that the Applicant plans to design site drainage systems such that there will be no threat to the safety of the plant during severe local precipitation up to the probable maximum (Staff Report, p. 13). The Board has reviewed the Staff's assessment and is in agreement.

120. Lake Erie is to provide water for normal operation and shutdown requirements. The water will flow from an intake crib, 3300 feet out in Lake Erie, to the intake structure at the plant. The Applicant has investigated the potential for a PMME to make the intake crib unusable as a source of cooling water. Because a lake level below the intake could result from a PMME-produced maximum wind-tide fall, the Applicant has proposed that the Ultimate Heat Sink (UHS) cooling pond be used to bring the plant to a safe shutdown condition should the lake level drop to less than 0.4 feet above the crest of the intake crib. This is the minimum level at which the plant can be assured of an adequate water supply for continuous operation at full rated power (Staff Report, pp. 13, 14). The Board finds that this procedure is acceptable to assure an adequate cooling water supply and safe operation and shutdown of the facilities.

121. The UHS cooling pond will be an existing rock quarry, which is also used as a hold-up pond for cooling tower blowdown (*See*, §33, *supra*). The pond level will be maintained at normal operating level by cooling tower blowdown, direct service water, or normal groundwater flow. The Staff concluded, using conservative assumptions, that adequate water supply for plant shutdown will be available (Staff Report, p. 14; Affidavit of Robert A. Benedict, Staff Exhibit 1). On the basis of its review, the Board is in agreement with the Staff's analysis.

122. The Staff has also considered the potential for leakage of radioactive liquids from the plant into the groundwater. The foundation of the radwaste building will be at elevation 545 feet, and the top of the confined groundwater aquifer in the plant area is at elevation 560 feet. The resultant positive pressure on the radwaste building foundation would preclude leakage from the building into the confined aquifer. Therefore, it is highly unlikely that liquid waste could contaminate the groundwater. However, should such leakage occur, the groundwater gradient of about 2 feet per mile toward Lake Erie would preclude contamination of wells located inland from the plant. There are no wells between the plant site and Lake Erie that draw from the confined aquifer. In the interest of additional conservatism, however, the Staff has estimated that any leakage in the rad-waste building would be diluted by a factor of greater than 10^6 before it would appear at the water-use points at the Erie Industrial Park, the nearest Lake Erie potable water supply user. The dilution factor for surface contact at the interface of the confined aquifer and Lake Erie would be about 3000. Moreover, the distance the groundwater travels between the plant and the water use points is such that the travel time would be more than 50 years. The dilution and decay time provide further assurance that offsite water use points would not be contaminated by liquid waste (Staff Report, pp. 14, 15).

123. The foundation of all structures will be designed for groundwater-induced hydrostatic and hydrodynamic loadings. No unusual problems were encountered during excavation dewatering for the construction of Unit 1, and dewatering effects should be similar for Units 2 and 3 (Staff Report, p. 15).

124. The Board concludes that the site safety-related facilities can be protected against flooding from any source, and that an adequate safety-related water supply will be provided. Furthermore, it is concluded that groundwater travel time, dilution, dispersion, and ion exchange factors present in the event of a postulated accidental liquid radwaste spill are such that there is an extremely low risk of public exposure and that no special precautions need be taken. These conclusions are based on the Staff's independent evaluations and on comparisons of hydrologic engineering factors associated with this site with those at other plants of similar size that have been licensed. Therefore, the Board concludes that with regard to hydrological conditions, the proposed site is acceptable for reactors of the general size and type proposed for Davis-Besse Units 2 and 3.

E. Geology and Seismology

125. The site is located in the Great Lakes Section of the Central Lowland physiographic province. Tectonically, it is situated on the east flank of the Findlay Arch, an ancient, broad, regional northeast-trending anticlinal structure. The trace of the axis on the Findlay Arch is inferred to be about 15 miles west of the site. The arch is a major early Paleozoic structure that, based on stratigraphic data from deep wells, has not been tectonically active since at least the close of the Paleozoic Era, which was 220 million years before the present (mybp) (Staff Report, p. 16).

126. The site is located in a relatively stable seismic portion of the Central Stable Region Tectonic Province. The largest historical earthquake that has occurred in the province was located in Anna, Ohio, and occurred in 1937. This shock had a maximum intensity of VII-VIII on the Modified Mercalli scale (Staff Report, p. 16).

127. In the area of Units 2 and 3, about 8 to 16 feet of Pleistocene fill and glaciolacustrine silty clay overlie nearly flat-lying Paleozoic sedimentary rocks. Bedrock underlying the site consists of dolomitic strata of the Tymochtee Formation containing interbedded, soluble gypsum and anhydrite. The Tymochtee Formation is part of the Bass Island Group of Silurian age (395 mybp) (Staff Report, p. 17).

128. As a result of the Applicant's investigations conducted thus far, it has been determined that there is a significant number of solution cavities in the top of 30 feet of bedrock. In general, foundation grades for the major safety related structures will be located below this highly solutioned zone. However, the existence of significant solutioning below this level at the Units 2 and 3 locations should be considered. The Applicant will be required to conduct further investigations to define completely the extent of all solution activity and to treat the foundation as required (Staff Report, p. 17). The Board finds that there are acceptable engineering and foundation treatment measures available, including the filling of all voids in the foundation with cement grout or concrete fill, to carry out any treatment that may be required. This investigation and treatment program is to be accomplished during construction.

129. The Board concludes that there are no geologic hazards or unusual seismic characteristics associated with the proposed site which preclude its acceptability.

F. Conclusions

130. As a result of our review, the Board has considered that the proposed Davis-Besse site is a suitable location for the two nuclear power units of the general size and type proposed from the standpoint of radiological health and

safety considerations under the Atomic Energy Act and the rules and regulations promulgated by the Nuclear Regulatory Commission pursuant thereto.

IV. CONCLUSIONS OF LAW AND CONDITIONS

131. The Board has considered all documentary and oral evidence presented by the parties. On the basis of our review of the entire record in this proceeding and the foregoing findings, and in accordance with 10 CFR §50.10(e) and 10 CFR Part 51 of the Commission's regulations, the Board has concluded as follows:

(a) The environmental review performed by the Staff pursuant to the National Environmental Policy Act of 1969, as presented in the FES, has been adequate.

(b) The certification issued to the Applicant on November 4, 1975, by the Ohio Environmental Protection Agency pursuant to Section 401(a)(1) of the Federal Water Pollution Control Act Amendments of 1972 satisfies the requirements of that Section 401.

(c) The requirements of §102(2)(A), (C) and (D) of the National Environmental Policy Act of 1969 and 10 CFR Part 51 have been complied with in this proceeding.

(d) Having given independent consideration to the final balance among conflicting environmental factors set forth in the record of this proceeding with a view to determining the appropriate action to be taken, having weighed the environmental, economic, technical, and other benefits against environmental and other costs, and having considered available alternatives, in accordance with 10 CFR Part 51, the Board has determined that the appropriate action to be taken, if and when all of the radiological health and safety findings required by the Atomic Energy Act of 1954, as amended, and the Notice of Hearing in this proceeding, are made, is the issuance of construction permits for the Davis-Besse Nuclear Power Stations, Units 2 and 3, subject to (i) conditions which may hereafter be determined to be warranted with respect to radiological health and safety matters, and (ii) the following conditions for the protection of the environment:

(1) The Applicant shall take the necessary mitigating actions (including those summarized in Section 4.6.1 and recommended in Section 4.6.2 of the Final Environmental Statement) required during construction of the facility and of associated transmission lines to minimize adverse environmental impacts from construction activities.

(2) The Applicant shall establish a control program that shall include written procedures and instructions to control all construction activities as prescribed in subdivision (1) of this subparagraph (d), and shall provide for periodic management audits to determine the adequacy of implementation

of environmental conditions. The Applicant shall maintain sufficient records to furnish evidence of compliance with all of the environmental conditions in the Final Environmental Statement.

(3) Before engaging in a construction activity not evaluated by the Commission, the Applicant will prepare and record an environmental evaluation of such activity. When the evaluation indicates that such activity may result in a significant adverse environmental impact that was not evaluated, or that is significantly greater than that evaluated in the Final Environmental Statement, the Applicant shall provide a written evaluation of such activities and obtain prior approval of the Director of Reactor Licensing for the activities.

(4) If unexpected harmful effects or evidences of serious damage are detected during the facility construction, the Applicant shall provide to the Staff an acceptable analysis of the problem and a plan of action to eliminate or significantly reduce the harmful effects or damage.

(5) In addition to the preoperational monitoring programs described in the Environmental Report, with supplements, the Staff recommendations included in Section 6 of the Final Environmental Statement shall be followed.

(e) On the basis of the available information and review to date, there is reasonable assurance that the proposed site is a suitable location for nuclear power reactors of the general size and type proposed from the standpoint of radiological health and safety considerations under the Atomic Energy Act of 1954, as amended, and rules and regulations promulgated by the Commission pursuant thereto.

V. ORDER

On the basis of the Board's Findings and Conclusions, and pursuant to the Atomic Energy Act of 1954, as amended, and the Commission's Regulations, IT IS ORDERED that this Partial Initial Decision shall constitute a portion of the ultimate Initial Decision to be issued upon completion of the radiological health and safety phase of this proceeding.

It is further ORDERED, in accordance with Sections 2.760, 2.762 and 2.764 of the Commission's Rules of Practice, 10 CFR Part 2, that this Partial Initial Decision shall be effective immediately and shall constitute the final action of the Commission thirty (30) days after the date of issuance hereof, subject to any review pursuant to the Rules of Practice. Exceptions to this Partial Initial Decision may be filed by any party within seven (7) days after service of this Partial Initial Decision. A brief in support of the exceptions shall be filed within fifteen (15) days thereafter (twenty (20) days in the case of the Regulatory

Staff). Within fifteen (15) days after the service of the brief of appellant (twenty (20) days in the case of the Regulatory Staff), any other party may file a brief in support of, or in opposition to, the exceptions.

It is so ORDERED.

**THE ATOMIC SAFETY AND
LICENSING BOARD**

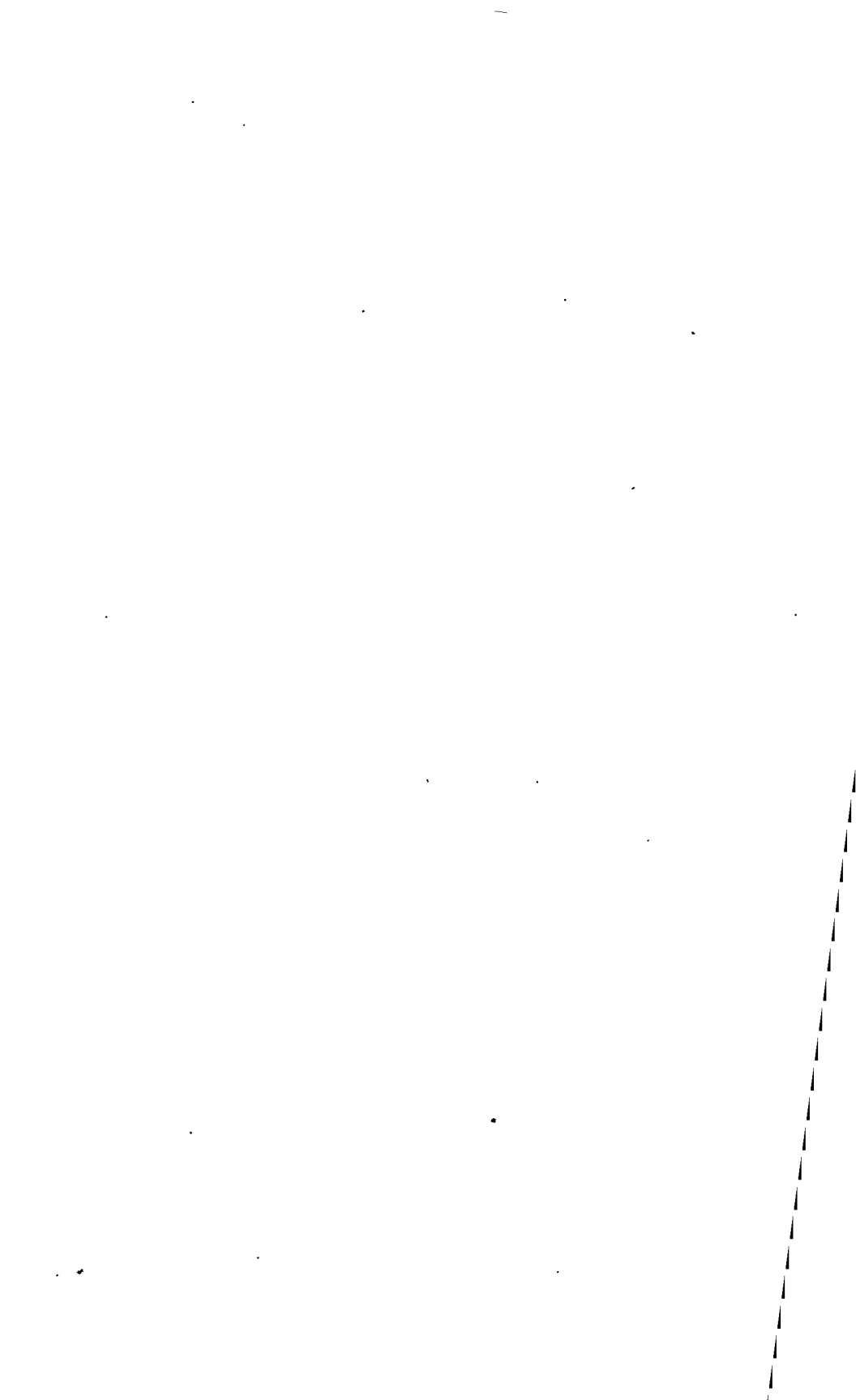
John R. Lyman, Member

David L. Hetrick, Member

Edward Luton, Chairman

Dated at Bethesda, Maryland
this 31st day of December, 1975.

(Appendix A is omitted from this publication but is available at NRC's Public Document Room, Washington, D. C.)



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