



ADJUDICATORY ISSUE

July 29, 1983

(Notation Vote)

SECY-83-310

For: The Commission

From: James A. Fitzgerald
Assistant General Counsel

Subject: REVIEW OF ALAB-725 - CONSUMERS POWER COMPANY (BIG ROCK POINT NUCLEAR POWER PLANT)

Purpose: To advise the Commission of an Appeal Board decision [which, in our opinion, L.F.

Review Time Expires: August 10, 1983, as extended

Petitions for Review: Two: Intervenors John O'Neill and JoAnne Bier

Discussion: In ALAB-725, the Appeal Board determined that the Licensing Board erred in concluding that Consumers Power's proposed modifications to the spent fuel pool at the Big Rock Point facility did not comply with the Commission staff's guidance on the calculation of the

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neutron multiplication factor (k_{eff}).¹ Accordingly, it vacated the Licensing Board's order requiring Consumers Power to amend its application to conform to that guidance.

Consumers Power Company (CPC) has applied for a license amendment to increase the density of storage racks in the spent fuel pool at Big Rock Point plant. Both CPC and the staff made calculations of k_{eff} which they believed showed that accident induced criticality would not be credible in the modified pool. Intervenors claimed that the calculations were deficient because they failed to consider the possibility of the boil-off of much of the pool water resulting in a mist condition. Under these conditions, criticality is more likely in the pool. Applicants and staff rejected this possible accident as incredible in view of the remotely controlled makeup line which CPC is installing to supply additional water² to the pool in the event of an accident.² The Licensing Board, in its initial

¹The Appeal Board explained:

"A system containing fissionable material, such as a spent fuel pool, is "critical," or "supercritical," if it is capable of supporting a neutron chain reaction. This condition is expressed in terms of the "effective neutron multiplication factor" (k_{eff}) -- i.e., the ratio of the number of neutrons produced by fission in each generation to the number of neutrons lost by absorption and leakage. Thus, when a system is critical or supercritical, k_{eff} equals or is greater than 1.0."

decision on October 29, 1982, determined that the criticality analyses were "non-conservative" because they did not consider the postulated boil-off accident scenario. Although the Licensing Board acknowledged that "extended boil-off might be averted if the [remotely controlled] makeup line applicant is installing is reliable," it nevertheless concluded that it could not consider the makeup line as mitigation because the k_{eff} limitation mandated by staff guidance documents must not exceed 0.95 for all conditions of the pool. Thus, the Licensing Board's conclusion that the spent fuel pool criticality analysis was inadequate was based on its interpretation of staff guidance documents to require these analyses to be done assuming all postulated conditions of the pool without taking any credit for features designed to prevent criticality.

Consumers Power Company and the staff appealed the Licensing Board's initial decision. The Appeal Board limited its review to a narrow issue: whether the applicant's criticality analysis must assume the loss of a significant amount of pool coolant. After a review of the Commission's general design criteria (GDC) 61 and 62, Section 9.1.2 of the

²At Big Rock Point, unlike other newer facilities, the spent fuel pool is housed within the reactor primary containment building rather than in a separate structure. Thus, in an accident in which the containment is isolated, repairs to spent fuel pool cooling systems would be prohibited.

Standard Review Plan (SRP), American National Standard design objective ANS-57.2, the NRC staff's Branch Technical Position (April 14, 1978), and the staff's Safety Evaluation Report (SER) for the Big Rock Point facility, the Appeal Board first concluded that the Licensing Board imparted an overly broad construction to the staff guidance providing that k_{eff} not exceed 0.95 "under all conditions" in a spent fuel pool. The Appeal Board believed that "the phrase 'under all conditions' is necessarily limited by the context in which it appears and is intended to be used -- most particularly by the statements that calculations of k_{eff} are to assume the pool is flooded with unborated water." Moreover, the Appeal Board found that none of the documents required a criticality analysis under a postulated condition of loss of pool water or low density water. Thus, the Appeal Board determined that the Licensing Board's consideration of the boil-off accident scenario was not required by Staff guidance.³

The Appeal Board did note that guidance documents do not prescribe maximum

³The Appeal Board expressed doubts whether the extended boil-off scenario could happen. This was based mainly on the fact that fresh unirradiated fuel, which is a required assumption in criticality analyses, would not be hot enough to cause the pool to boil for a period sufficient to effect a significant water loss. On the other hand, it is questionable whether spent fuel -- though hot enough to cause boiling in the absence of cooling systems -- has enough reactivity to go critical if substantial water is lost.

design objectives and the sole means of obtaining them. Therefore, under some circumstances it may be appropriate to require a higher level of performance or to consider accidents other than those postulated in staff guidance. Thus, the Licensing Board's belief that the uncertainties in the criticality analysis under a boil-off accident scenario required further examination of the issue could have been sufficient reason for the Board's order. However, the Appeal Board found that the Licensing Board failed to establish that consideration of an extended boil-off accident was justified here because the Licensing Board refused to permit consideration of means to mitigate such an accident. The Appeal Board concluded that the remotely controlled makeup line was a "physical system" to aid in preventing criticality within the meaning of GDC 62. Additionally, consideration of the makeup line is fully consistent with the approach of other staff guidance, which recognizes engineered safety features as providing defenses against a range of postulated accidents.

Therefore, because the Licensing Board erred in its interpretation of staff guidance with respect to the boil-off scenario and consideration of engineered safety features to mitigate criticality, the Appeal Board vacated the Board's order requiring Consumers Power to amend its application and remanded the matter with instructions to the Board to make its findings on the adequacy of the applicant's criticality analysis contin

gent upon the reliability of the makeup line.⁴

Petitions for
Review:

Two petitions for review of ALAB-725 were filed. The petition of Ms. JoAnn Bier and Ms. Christa-Maria raised 5 issues:⁵

- (1) There is no safety grade equipment associated with spent fuel pool cooling at the Big Rock facility;
- (2) Certain staff expert testimony conflicted with other staff and licensee expert testimony in the hearing;
- (3) The Big Rock spent fuel pool is unique in that radiation levels are high, the pool is overmoderated, and the fuel is highly enriched;

⁴The makeup line has not yet been installed at Big Rock Point. Thus, the applicant proposed that the Board make its finding on the criticality contention contingent upon a finding that the remotely controlled makeup line will be reliable -- a matter that remains to be litigated. Assuming that the makeup line is found to be reliable, the Licensing Board presumably will not be justified in considering the boil-off accident in further review of the applicant's criticality analysis. In addition, the Appeal Board determined it was not necessary to rule on Consumers Power's argument that the 0.98 k_{eff} acceptance criterion for new fuel storage may properly be applied to the condition of optimum moderation postulated by the Board.

⁵The petition was originally entitled "Motion to Reconsider," but was subsequently changed by Telex to "Motion for Commission Review."

- (4) The staff expert at the hearing was not familiar with the testimony of the licensee's expert; and
- (5) The Appeal Board's acceptance of a makeup water line as a safety grade cooling system sets a dangerous precedent.

Mr O'Neill's petition raised 9 areas of concern:

- (1) The Appeal Board erred in its interpretation of staff guidance and therefore erroneously dismissed the Licensing Board's ruling;
- (2) The Appeal Board's interpretation of GDC 62 was incorrect;
- (3) It was error to ignore GDC 23 of Appendix I, Part 50;
- (4) The Appeal Board erred in stating that there is no claim that the spent fuel pool is not designed in a geometrically safe configuration;
- (5) The Appeal Board erred in ignoring the Zion decision (11 NRC 245 (1980));
- (6) The option of discretionary reviews by the Licensing Board has been excluded;
- (7) The Appeal Board erred in relying on the wrong experts for certain matters;
- (8) The Appeal Board misunderstood the concern of the Licensing Board regarding the level of water in a boil-off accident scenario; and

- (9) The Appeal Board erred in not considering the consequences of makeup water line failure.

The applicants and NRC staff filed replies to both petitions opposing Commission review.

OGC Analysis:

ALAB-725:

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EX. 5

First, Mr. O'Neill believes that the Appeal Board erred in favoring the makeup line over a geometrically safe configuration. The Appeal Board noted that a geometrically safe configuration is an important safety requirement, and that the makeup line is an additional safety system which in this case may or may not be reliable. However, the makeup line was never favored by the Appeal Board.

Second, Mr. O'Neill was concerned that the Appeal Board ignored the Zion decision, LBP-80-7, 11 NRC 245 (1980).

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⁹The staff has expressed the view that his contentions are procedurally inadequate under 10 CFR §2.786.

EX. 5

Third, Mr. O'Neill claims that the Appeal Board misunderstood the Licensing Board's concern regarding the level of water in the spent fuel pool in relation to criticality during a boil-off accident. |

EX 5

Mr. O'Neill's remaining contentions are based on his view that the Appeal Board incorrectly interpreted staff guidance and regulations. |

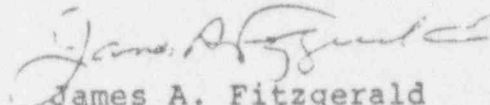
EX 5

Conclusion:

OGC concludes that

EX 5

EX 5


James A. Fitzgerald
Assistant General Counsel

Attachment:

1. ALAB-725
2. Staff's Answer in Opposition
3. Answer of Consumers Power Co.
4. Motion for Commission Review
5. Decision, April 27, 1983

Commissioners' comments or consent should be provided directly to the Office of the Secretary by c.o.b. Monday, August 15, 1983.

Commission Staff Office comments, if any, should be submitted to the Commissioners NLT Monday, August 8, 1983, with an information copy to the Office of the Secretary. If the paper is of such a nature that it requires additional time for analytical review and comment, the Commissioners and the Secretariat should be apprised of when comments may be expected.

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ATTACHMENT 1

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NUCLEAR REGULATORY COMMISSION

DOCKETED
1983

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

Thomas S. Moore, Chairman
Dr. John H. Buck
Christine N. Kohl

SERVED APR 28 1983

In the Matter of)	
CONSUMERS POWER COMPANY)	Docket No. 50-155 OLA
(Big Rock Point Nuclear Plant))	(Spent Fuel Pool Modification)

Joseph Gallo, Washington, D.C. (with whom Peter Thornton, Chicago, Illinois, was on the brief), for applicant Consumers Power Company.

Herbert Semmel, Washington, D.C., for intervenors Christa-Maria, Bier, and Mills.

John O'Neill, II, Maple City, Michigan, intervenor pro se.

Richard G. Bachmann for the Nuclear Regulatory Commission staff.

DECISION

April 27, 1983

(ALAB-725)

In one of a series of partial initial decisions in this proceeding, the Licensing Board concluded that Consumers Power Company's proposed modification to the spent fuel pool at the Big Rock Point facility did not comply with the Commission staff's guidance on the neutron multiplication factor. As a result, the Board ordered Consumers Power essentially to perform additional analysis and to amend its

application to conform to that guidance. The Board also ordered the NRC staff to review and evaluate the applicant's filing. LBP-82-97, 16 NRC ___, ___, ___ (Oct. 29, 1982) (slip opinion at 1, 24). Consumers Power has appealed.¹

As explained below, we disagree with the Licensing Board's interpretation of staff guidance on criticality calculations for spent fuel pools. Accordingly, we vacate the order requiring Consumers Power to amend its application and remand the matter with instructions to the Board to take specified further action.

I.

The matter at hand arises from intervenor John O'Neill's contention IIE-3, which states:

The application has not adequately analyzed the possibility of criticality occurring in the fuel pool because of the increased density of storage without a gross distortion of the racks.²

¹ The Licensing Board originally gave Consumers Power 60 days in which to amend its application. In response to the applicant's motion for a stay of that deadline, the Board extended the time in which Consumers Power must comply to 60 days from the issuance of our decision disposing of the appeal. Memorandum and Order of Dec. 7, 1982 (unpublished), at 3.

² A system containing fissionable material -- such as a spent fuel pool -- is "critical," or "supercritical," if it is capable of supporting a neutron chain reaction. This condition is expressed in terms of the "effective neutron multiplication factor" (k_{eff}) -- i.e., the ratio of the number of neutrons produced by fission in each generation to the number of neutrons lost by absorption and leakage. Thus, when a system is critical or supercritical, k_{eff} equals or is greater than 1.0.

Consumers Power and the staff moved for summary disposition of this issue. See 10 CFR § 2.749. The Licensing Board, however, denied the motions on the basis of its agreement with other intervenors (Christa-Maria, et al.) that the applicant's criticality calculations may not have been conservative enough. The Board also raised questions concerning the adequacy of the staff's review of the calculations. LBP-82-7, 15 NRC 290, 292-93 (1982). Further, in another memorandum and order issued shortly thereafter, the Licensing Board indicated that the applicant and staff should address at the upcoming hearing on O'Neill contention IIE-3 whether the Big Rock Point spent fuel pool might reach supercriticality if it were to begin boiling. The Board's concern on this matter was prompted by an article cited in an affidavit submitted by Mr. O'Neill in connection with a different contention. LBP-82-8, 15 NRC 299, 332-33 (1982).³

At the hearing, the applicant and staff presented the testimony of several witnesses. Although the intervenors did not file testimony or present their own witnesses, they participated extensively with the Board itself in cross-examination of the applicant and staff witnesses.

³ See Cano, Caro, and Martinez-Val, Supercriticality through Optimum Moderation in Nuclear Fuel Storage, 48 Nuclear Technology 251 (1980).

In its partial initial decision, the Licensing Board thoroughly recounted the witnesses' testimony on the water temperature and density parameters of the criticality analyses. LBP-82-97, supra, 16 NRC at ___ - ___ (slip opinion at 6-15).⁴ With respect to one of the applicant's witnesses in particular, Dr. Yong S. Kim, the Board now found his revised analysis of k_{eff} to be "thorough and persuasive." Id. at ___ (slip opinion at 11).⁵ The Board was less enthusiastic about the analysis and testimony of staff witness Edward Lantz. Id. at ___ - ___ (slip opinion at 13-15). The Board thus concluded that, for a scenario that assumes loss of all pool cooling systems and the beginning of boiling, Dr. Kim's criticality analysis was preferable. The Board, however, viewed his calculations as "non-conservative" because they did not "adequately consider the possibility of extended boil-off, as might occur during a TMI-2 type incident in which the containment could not be entered to gain access to the fuel pool." Id. at ___ (slip

⁴ The Board's decision also covers other aspects of the criticality analyses that are not at issue in this appeal.

⁵ That analysis, which assumed the failure of all pool cooling systems, used an average temperature of 224.5°F along the length of the fuel bundles and assumed a 20.6 percent steam void. Dr. Kim's calculations yielded a k_{eff} of 0.9470, below the 0.95 acceptance criterion of the Commission's Standard Review Plan for spent fuel storage. See NUREG-0800, "Standard Review Plan," Revision 3 (July 1981), § 9.1.2, at 9.1.2-4.

opinion at 15).⁶ The Board acknowledged that "this extended boil-off might be averted if the [remotely controlled] makeup line applicant is installing is reliable." But because " k_{eff} is intended to remain above [sic] 0.95 for all conditions in the pool," the Licensing Board concluded that "it is not proper . . . to consider a makeup line as mitigation of this requirement." Id. at ___ (slip opinion at 15). See also id. at ___ - ___ (slip opinion at 22-24).

The Board then explored the possibility of supercriticality occurring when all or a substantial part of the water in the spent fuel pool boils away and is replaced by mist or some other form of low density water -- a condition characterized as "optimum moderation." Id. at ___ - ___ (slip opinion at 15-18). See 48 Nuclear Technology 251, supra note 3. Dr. Kim testified that no criticality analysis for that condition at Big Rock Point had been performed. He opined, however, that it was extremely unlikely, given the remotely controlled makeup line, that the water in the pool would boil away enough to effect a supercritical condition. He also noted that the article relied on by the Board (see note 3, supra) indicates that,

⁶ Unlike most facilities, the spent fuel pool at Big Rock Point is housed within the reactor containment building rather than in a separate structure.

at very low water densities in a pool with racks like those at Big Rock Point, the maximum k_{eff} would in any event be approximately 0.97 and thus below criticality. Id. at ___ (slip opinion at 15-16). Mr. Lantz, for the staff, testified to his belief that additional calculations would show k_{eff} decreasing with decreasing water density, thus precluding a supercritical condition. Id. at ___ (slip opinion at 17). Nonetheless, the Board expressed its "substantial uncertainty about whether k_{eff} . . . for the Big Rock spent fuel pool would be higher or lower than 0.95 at very low water densities." Id. at ___ (slip opinion at 17-18).

The Licensing Board emphasized that "the 0.95 k_{eff} limitation generally applied by the staff should be rigorously applied to spent fuel pools, including application to all conditions that may be found in those pools." Id. at ___ (slip opinion at 22). The Board found further support for its view in the staff's Safety Evaluation Report ("SER") for this proceeding. It states that "the neutron multiplication factor in spent fuel pools shall be less than or equal to 0.95, including all uncertainties, under all conditions, throughout the life of the racks." Staff Exhibit 1, SER, at 3-2. Seeing no reason to depart from the terms of the SER or other more generalized staff guidance, the Board directed the applicant, pursuant to staff review, to demonstrate --

presumably either through further calculations and analysis or by modification of its proposed method of enlarging the storage capacity of the pool -- that k_{eff} will not exceed 0.95 at extremely low water densities.

II.

Consumers Power argues that the Licensing Board erred in refusing to take account of the remotely controlled makeup line the applicant plans to install. According to Consumers Power, this engineered safety feature will prevent loss of coolant in the spent fuel pool, should all other normal means of cooling fail, and thus preclude the condition leading to supercriticality postulated by the Board. It argues that, contrary to the Board's belief, relevant Commission standards and guidance on performing criticality analyses for spent fuel pools permit credit to be taken for features designed to prevent supercriticality. Moreover, the accident specified by the Board -- significant loss of pool water through boiling -- is not the type of accident that must be considered for criticality purposes. The applicant therefore objects to the Board's order requiring it to demonstrate that k_{eff} will not exceed 0.95 at very low water densities in the pool. Instead, it proposes (as it did before the Licensing Board) that the Board make its finding on the criticality contention contingent upon a finding that the remotely controlled makeup line will be reliable -- a matter that remains to be

litigated. Consumers Power Brief (Dec. 16, 1982) at 5; App. Tr. 7. Finally, the applicant contends that, if a criticality analysis must be performed for the scenario postulated by the Board, the proper acceptance criterion against which such calculations should be measured is 0.98. This is the value for k_{eff} specified in the Standard Review Plan ("SRP") for new fuel stored under a condition of optimum moderation. See NUREG-0800, "Standard Review Plan," Revision 2 (July 1981), § 9.1.1, at 9.1.1-4.

The staff takes a position similar to that of the applicant, although it does not agree that reliance on the Standard Review Plan acceptance criterion for new fuel storage is appropriate. Intervenors O'Neill and Christa-Maria, et al., on the other hand, contend that the Board correctly applied Commission guidance in ordering that k_{eff} must not exceed 0.95 under all conditions (including loss of pool water) and without regard to assertedly reliable engineered safety features.

The issue before us is a very narrow one: must the applicant's criticality analysis assume the loss of a significant amount of pool coolant? The starting point for our discussion is a brief review of the standards and staff guidance for such spent fuel pool analyses.

Two of the Commission's general design criteria ("GDC") are germane.⁷ GDC 61 provides, as pertinent:

Fuel storage and handling and radioactivity control. The fuel storage and handling, radioactive waste, and other systems which may contain radioactivity shall be designed to assure adequate safety under normal and postulated accident conditions. These systems shall be designed * * * (4) with a residual heat removal capability having reliability and testability that reflects the importance to safety of decay heat and other residual heat removal, and (5) to prevent significant reduction in fuel storage coolant inventory under accident conditions.

⁷ The Commission discussed general design criteria in Petition for Emergency and Remedial Action, CLI-78-6, 7 NRC 400, 406-07 (1978):

General design criteria (GDC), as their name implies, are "intended to provide engineering goals rather than precise tests or methodologies by which reactor safety [can] be fully and satisfactorily gauged." Nader v. NRC, 513 F.2d 1045, 1052 (1975). They are cast in broad, general terms and constitute the minimum requirements for the principal design criteria of water-cooled nuclear power plants. There are a variety of methods for demonstrating compliance with GDC. Through regulatory guides, standard format and content guides for safety analysis reports, Standard Review Plan provisions, and Branch Technical Positions, license applicants are given guidance as to acceptable methods for implementing the general criteria. However, applicants are free to select other methods to achieve the same goal. If there is conformance with regulatory guides, there is likely to be compliance with the GDC. Even if there is nonconformance with the staff's guidance to licensees, the GDC may still be met.

See also 36 Fed. Reg. 3255 (Feb. 20, 1971); 10 CFR § 50.34(a)(3)(i).

10 CFR Part 50, Appendix A, § VI. Regulatory Guide 1.13, "Spent Fuel Storage Facility Design Basis," Revision 1 (December 1975), describes methods acceptable to the staff for implementing this criterion.⁸ GDC 62 states:

Prevention of criticality in fuel storage and handling. Criticality in the fuel storage and handling system shall be prevented by physical systems or processes, preferably by use of geometrically safe configurations.

10 CFR Part 50, Appendix A, § VI.

Section 9.1.2 of the Commission's Standard Review Plan sets forth guidance for staff review of applications relating to spent fuel storage "during all credible . . . conditions." As pertinent to this proceeding, it establishes an acceptance criterion for criticality: k_{eff} should not be greater than 0.95 for a pool "when fully loaded and flooded with nonborated water." SRP, § 9.1.2, supra note 5, at 9.1.2-4. According to the Standard Review Plan, meeting GDC 62 "is based on conformance to position C.1 and C.4 of Regulatory Guide 1.13 [which relate to the structure in which the spent fuel pool is housed] and the appropriate paragraphs of ANS 57.2." Id. at 9.1.2-3. ANS-57.2, published by the American Nuclear Society,

⁸ For example, Regulatory Guide 1.13 refers to the use of a permanent fuel-pool-coolant makeup system to mitigate the effect of small leaks and prevent the fuel from becoming uncovered. Such a system would include water level and radiation monitors to alert personnel to pool leakage.

contains the American National Standard design objectives for light water reactor spent fuel storage facilities at nuclear power stations. It, too, provides that k_{eff} shall not be greater than 0.95 "with the racks fully loaded with fuel and flooded with unborated water." Further, the design of the spent fuel racks and pool "shall be based on the maximum enrichment and fissile isotopic content of fuel to be cycled in the plant" -- i.e., fresh fuel. ANS-57.2, § 5.1.12.1. See also id., § 6.6.1(1).

Finally, the staff has compiled pertinent portions of the references necessary to address spent fuel pool modifications in a document known as the Branch Technical Position (Apr. 14, 1978) ("BTP").⁹ It states that k_{eff} "shall be less than or equal to 0.95, including all uncertainties, under all conditions." BTP at III-3. See also id. at III-5. More specifically, k_{eff} is to be calculated for "all credible conditions," including "normal storage" (where the fuel is conservatively assumed to be "at the most reactive point in its life") and four postulated accidents (one of which is the "loss of all cooling systems or flow"). Id. at III-1, III-2.

⁹ The cover letter for this BTP carries the following disclaimer: "No additional regulatory requirements are imposed or implied by this document."

In discussing spent fuel pool criticality calculations, the staff's Safety Evaluation Report for the Big Rock Point facility noted that the "0.95 acceptance criterion is based on the overall uncertainties associated with the calculational methods." Staff Exhibit 1, SER, at 3-2. Hence, this criterion has a number of built-in conservatisms: it is calculated on the basis of fresh, unirradiated (and thus highly reactive) fuel, racks with no burnable poisons to absorb neutrons, and unborated water. Further, in addition to a technical specification limiting k_{eff} to 0.95 under these conditions, another technical specification limits the maximum amount of uranium that each fuel assembly may contain. Calculations based on such assumptions, in the staff's view, provide a sufficient margin to preclude criticality. Ibid.

Given the uncertainties associated with these calculations, we agree with the Licensing Board that the staff guidance and acceptance criterion for spent fuel pool criticality is entitled to considerable weight.¹⁰ But

¹⁰ Nonetheless, regulatory guides and the like do not have the force of regulations. Vermont Yankee Nuclear Power Corp. (Vermont Yankee Nuclear Power Station), CLI-74-40, 8 AEC 809, 811 (1974). Applicants are free to accomplish the same ultimate objectives by different means (see note 7, supra) and, by the same token, other parties are not "precluded from demonstrating that the prescribed method is inadequate in the particular circumstances of the case." Gulf States Utilities Co. (River Bend Station, Units 1 and

although purporting to apply that guidance "rigorously" to the matter at hand (LBP-82-97, supra, 16 NRC at ___ (slip opinion at 22)), the Board in fact only selectively applied parts of it, thus failing to consider all of the relevant documents.

Most troublesome is the Board's extended focus on statements that k_{eff} should not exceed 0.95 "for all conditions" -- a phrase sprinkled, in one form or another, throughout the Safety Evaluation Report, Branch Technical Position, and Standard Review Plan § 9.1.2. Id. at ___, ___, ___, ___ (slip opinion at 15, 22, 23, 24). The Board has interpreted this isolated phrase quite literally, so as to encompass a condition in which the pool, through extended boil-off, is no longer full of water and is enveloped to a significant degree by mist or a comparable form of low density water. The Board's interpretation might be plausible were it not that the two principal documents establishing the 0.95 acceptance criterion clearly state that the criticality calculation is to assume a pool "flooded" with unborated water. See SRP, § 9.1.2, at 9.1.2-4; ANS-57.2, § 5.1.12.1.

¹⁰ (FOOTNOTE CONTINUED FROM PREVIOUS PAGE)

2), ALAB-444, 6 NRC 760, 773 (1977). Cf. 10 CFR § 50.34(g)(3), 47 Fed. Reg. 11651, 11652 (Mar. 18, 1982), as corrected, 47 Fed. Reg. 15569 (Apr. 12, 1982). Simply stated, staff guidance generally sets neither minimum nor maximum standards.

Moreover, none of the documents relied on by the Board mentions loss of pool water or a low density water condition as a postulated accident that must be considered for criticality purposes. For example, the portion of the Branch Technical Position devoted to k_{eff} describes four accident scenarios that must be considered, none of which involves a loss of coolant or mist condition. BTP at III-1 - III-2.¹¹ ANS-57.2 describes four categories of "general design conditions," ranging from normal operation to "the most severe incident for which the spent fuel facility must be designed to remain intact." ANS-57.2, § 4.2. None specifies a significant or total loss of pool water, extended boil-off, or a mist condition. Id., §§ 4.2.1, 4.2.2, 4.2.3, 4.2.4. The Standard Review Plan, § 9.1.2,

¹¹ The fourth postulated accident assumes a "loss of all cooling systems or flow." BTP at III-2 (emphasis added). This refers to a failure of the pool's cooling loops and related apparatus -- a condition assumed and analyzed by Dr. Kim and the applicant's and staff's other witnesses. See LBP-82-97, supra, 16 NRC at ____, ____, ____ (slip opinion at 6, 11, 15). See also Staff Exhibit 1, SER, at 3-3 - 3-4; Kim, fol. Tr. 1419, at 3, 6; Prelewicz, fol. Tr. 1420, at 2.

The Branch Technical Position also states that "[e]xcessive pool water temperatures may lead to excessive loss of water due to evaporation and/or cause fogging." But again, in that context the BTP specifies that consideration be given to "loss of all pool cooling systems" and incorporation of a technical specification to limit pool water temperatures. BTP at III-5. Thus, the focus is on preventing or mitigating excessive water loss, not on requiring analysis of that condition, itself.

refers to, among other things, "[t]he effects of external loads and forces" and "[f]ailures of nonsafety-related systems or structures," but is silent as to the condition posited by the Licensing Board. SRP, § 9.1.2, at 9.1.2-1, 9.1.2-5.

We therefore conclude that the Licensing Board imparted an overly broad construction to the staff guidance providing that k_{eff} not exceed 0.95 under all conditions in a spent fuel pool. The phrase "under all conditions" is necessarily limited by the context in which it appears and is intended to be used -- most particularly by the statements that calculations of k_{eff} are to assume the pool is flooded with unborated water. See ANS-57.2, § 5.1.12.1; SRP, § 9.1.2, at 9.1.2-4.¹²

The result reached by the Licensing Board is thus not one mandated by strict adherence to the staff guidance on spent fuel pool criticality calculations. As noted earlier, however, regulatory guides and the like do not prescribe maximum design objectives and the sole means of obtaining

¹² The Staff's Safety Evaluation Report repeats the "under all conditions" language of the staff guidance and was relied upon by the Board. See LBP-82-97, *supra*, 16 NRC at ___ (slip opinion at 23). Yet the staff clearly did not construe its own guidance as requiring analysis of the extended boil-off condition postulated by the Board and, further, it concluded that Consumers Power's calculations and their underlying assumptions were acceptable. Staff Exhibit 1, SER, at 3-1 - 3-2.

them. See note 10, supra. In some circumstances, it may well be appropriate -- indeed, necessary -- to require a higher level of performance or more stringent measures of compliance. In the same vein, consideration of accidents other than those postulated in staff guidance may be warranted. See, e.g., Florida Power and Light Co. (St. Lucie Nuclear Power Plant, Unit No. 2), ALAB-603, 12 NRC 30, 45 (1980) (consideration of loss of all AC power). The Licensing Board in the case at bar ordered consideration of the boil-off scenario because it felt obliged to do so by the staff guidance. Assuming, however, that the Board would have taken the same action as a matter of discretion, it failed to establish that consideration of this type of accident was justified here.

The principal source of the Board's concern is that extended boil-off "might occur during a TMI-2 type incident in which the containment could not be entered to gain access to the fuel pool." LBP-82-97, supra, 16 NRC at ___ (slip opinion at 15). See note 6, supra. This concern was fueled further by the Cano article discussing the possibility of supercriticality occurring in a pool under a condition of

optimum moderation. See note 3, supra.¹³

We agree that the Board's initial interest in the matter was valid. Indeed, the applicant's own witnesses gave some, albeit limited, credence to the scenario hypothesized. For example, in an affidavit filed in support of summary disposition of a different contention, David P. Blanchard addressed the spent fuel pool implications of inaccessibility to containment following a loss-of-coolant accident resulting in reactor core damage. Assuming a fully loaded pool, failure of the pool cooling system, and no makeup water, Mr. Blanchard found that "[t]he amount of time required to boil off all the water above the fuel is approximately one month." Blanchard Affidavit (Oct. 2, 1981) at 8. See also Staff Exhibit 1, SER, at 3-4. Dr. Kim acknowledged that an increase in k_e , very low water densities in pools like Big Rock Point has been recognized in the scientific literature, and that supercriticality could occur "after the pool water boiled away to at least

¹³ This article was never admitted or introduced into evidence. Several witnesses, however, discussed it in their testimony in response to the Board's inquiry. See LBP-82-8, supra, 15 NRC at 332-33.

below the level of the storage racks." Kim, fol. Tr. 1419, at 10-12.

Both Dr. Kim and Mr. Blanchard, however, found that extended boil-off in the pool was a very unlikely condition with a remotely controlled makeup line in place. Id. at 12-13; Blanchard Affidavit, supra, at 9, 11.¹⁴ But the Licensing Board concluded -- wrongly, in our view -- that it was "not proper . . . to consider a makeup line as mitigation" of the hypothetical extended boil-off scenario. LBP-82-97, supra, 16 NRC at ___ (slip opinion at 15). The Board was driven to this position by its belief that the staff guidance required criticality analyses for "all conditions." As we have shown, the Board misinterpreted

¹⁴ We have our own doubts about the likelihood of the extended boil-off scenario. In the first place, the Cano article on supercriticality refused to speculate on the circumstances that could lead to an optimum moderation pool environment, and the authors considered the feasibility of such uniformly low water densities "rather questionable." 48 Nuclear Technology, supra, at 251, 260. Second, the work discussed in the article assumed fresh fuel, "in the upper range of enrichments." Id. at 251, 252. Like the fresh fuel Dr. Kim used in his calculations, this fuel has more reactivity than the spent fuel to be stored at Big Rock Point. See Kim, fol. Tr. 1419, at 5. Although the record here does not appear to explore it, we question whether fresh, unirradiated fuel -- though more prone to go critical -- would be hot enough to cause the pool to boil for a period sufficient to effect a significant water loss. And the corollary question is whether an assemblage of spent fuel -- though hot enough to cause boiling in the absence of cooling systems -- has enough reactivity to go critical if substantial water were lost.

that guidance. But more importantly, the Commission's regulatory requirements themselves permit consideration of means to mitigate criticality in the spent fuel pool.

GDC 62 provides that "[c]riticality . . . shall be prevented by physical systems or processes, preferably by use of geometrically safe configurations." Given that general design criteria are drafted in intentionally "broad, general terms" (see note 7, supra) and that there is no evidence to suggest a contrary meaning, we conclude that the applicant's remotely controlled makeup line (assuming its reliability is proven) is a "physical system" within the scope of GDC 62.¹⁵ To be sure, its principal function is to prevent a significant coolant loss as required by GDC 61. See pp. 9-10 and note 8, supra.¹⁶ But by performing that function, the line will also necessarily aid in preventing criticality as contemplated by GDC 62.¹⁷ Consideration of

¹⁵ ANS-57.2, § 5.1.9.3.2, specifically contemplates that a makeup system will be the primary means of recovery if the pool begins to boil. See also ANS-57.2, § 6.6.1(2)(c).

¹⁶ The staff points out that if the applicant is in compliance with GDC 61, as required, the loss of pool coolant accident contemplated by the Board and O'Neill contention IIE-3 literally is not possible.

¹⁷ There is no claim that the spent fuel pool at Big Rock Point is not designed in a "geometrically safe configuration," the preferred method of preventing criticality. See generally Consumers Power Exhibit 2, "Spent Fuel Rack Addition Consolidated Environmental Impact Evaluation, Description and Safety Analysis" (April 1982),

the makeup line is also fully consistent with the approach of other staff guidance, which recognizes engineered safety features as providing defenses against a range of postulated accidents. For example, Regulatory Guide 1.13 suggests the use of certain design or mechanical features to mitigate the effects of (or prevent) the dropping of heavy loads over the pool.

We conclude that the Licensing Board erred in refusing to consider the makeup line in connection with the extended boil-off accident scenario.¹⁸ The order requiring Consumers Power to amend its application is therefore vacated and the matter is remanded with instructions to the Board to make its finding on the adequacy of the applicant's criticality analysis contingent upon the reliability of the makeup line.¹⁹

¹⁷ (FOOTNOTE CONTINUED FROM PREVIOUS PAGE)

§§ 2.1-2.4; Staff Exhibit 1, SER, at 4-1. Thus, in addition to the geometrically safe configuration of the pool, the makeup line helps to assure compliance with GDC 62 because it provides a method of maintaining full coolant inventory, which, in turn, assures proper coolant density.


¹⁸ In view of the decision reached here, it is unnecessary for us to rule on Consumers Power's argument that the 0.98 acceptance criterion for new fuel storage may properly be applied to the condition of optimum moderation posited by the Board.

¹⁹ Consumers Power has also requested dismissal of O'Neill contention IIE-3. The Licensing Board appears to be satisfied with the applicant's criticality calculation but for its failure to include analysis of the pool coolant loss scenario. See LBP-82-97, supra, 16 NRC at ___ (slip opinion

(FOOTNOTE CONTINUED ON NEXT PAGE)

It is so ORDERED.

FOR THE APPEAL BOARD


Barbara A. Tompkins
Secretary to the
Appeal Board

¹⁹ (FOOTNOTE CONTINUED FROM PREVIOUS PAGE)

at 15). But we believe that dismissal of the contention would be premature and inconsistent with the applicant's consent to making the finding of adequacy of the criticality analysis dependent on the reliability of the makeup line.

ATTACHMENT 2

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE COMMISSION



In the Matter of
CONSUMERS POWER COMPANY
(Big Rock Point Plant)

}
Docket No. 50-155
(Spent Fuel Pool Modification)

NRC STAFF'S ANSWER IN OPPOSITION
TO INTERVENORS' PETITIONS FOR REVIEW

Richard G. Bachman
Counsel for NRC Staff

Richard J. Goddard
Counsel for NRC Staff

June 16, 1983

June 16, 1983

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE COMMISSION

In the Matter of
CONSUMERS POWER COMPANY
(Big Rock Point Plant)

}
}
} Docket No. 50-155
(Spent Fuel Pool Modification)

NRC STAFF'S ANSWER IN OPPOSITION
TO INTERVENORS' PETITIONS FOR REVIEW

I. INTRODUCTION

On June 2, 1983 intervenors Christa-Maria, Mills and Bier ("Christa-Maria et al.") and John O'Neill ("O'Neill") filed separate petitions^{1/} for Commission review of the Atomic Safety and Licensing Appeal Board ("Appeal Board") Decision, ALAB-725, 17 NRC ____ (Slip Opinion, April 27, 1983). In ALAB-725 the Appeal Board issued an order vacating and remanding the Initial Decision (Concerning Neutron Multiplication Factor), LBP-82-97, 16 NRC ____ (Slip Opinion, October 29, 1982) ("Initial Decision") issued by the Atomic Safety and Licensing Board ("Licensing Board"). As discussed below, the NRC staff opposes both petitions and urges that they be denied.

^{1/} Mr. O'Neill entitled his petition "Motion for Commission Review." Christa-Maria et al. originally entitled their petition "Motion to Reconsider," which was subsequently changed to "Motion for Commission Review" by a telex sent on June 6, 1983. These filings will be referred to as the "O'Neill Petition" and the "Bier Petition," respectively, in order to conform to Commission nomenclature.

II. BACKGROUND

This proceeding concerns an application for a license amendment to permit refueling, and thus increase the capacity, of the spent fuel pool at the Big Rock Point Plant. The contention which forms the basis for the petitions for review was submitted by Intervenor O'Neill and alleges:

The application has not adequately analyzed the possibility of criticality occurring in the fuel pool because of the increased density of storage without a gross distortion of the racks.

The contention withstood motions for summary disposition filed by the licensee and the Staff,^{2/} and was litigated at the evidentiary hearing held in Boyne Falls, Michigan on June 10-12, 1982. (Tr. 1391-1468, 1503-1692, 1748-2002, 2006-2009, 2092-2094, 2383-2384). Following the hearing, the Licensing Board issued its Initial Decision which, inter alia, ordered the licensee to amend its application for the license amendment to demonstrate that the neutron multiplication factor (K_{eff}) "in its spent fuel pool will not exceed 0.95 under any conditions,^{3/} including extremely low densities of water." Initial Decision at 24. The Licensing Board had found that this condition could not arise unless

^{2/} Memorandum and Order (Denying Summary Disposition of Criticality Contention) dated February 5, 1982.

^{3/} A system containing fissionable material -- such as a spent fuel pool -- is "critical," or "supercritical," if it is capable of supporting a neutron chain reaction. This condition is expressed in terms of the "effective neutron multiplication factor" (k_{eff}) -- i.e., the ratio of the number of neutrons produced by fission in each generation to the number of neutrons lost by absorption and leakage. Thus, when a system is critical or supercritical, k_{eff} equals or is greater than 1.0. See ALAB-725, slip op. at 2.

a substantial part of the water in the spent fuel pool boiled away and was replaced by mist or some other form of low density water. Id. at 15-18. However, it declined to consider the reliability of a makeup line, an engineered safety feature which would maintain the pool in a flooded condition preventing low density water conditions from arising. Id. at 15. The Appeal Board determined that the Licensing Board had erred in failing to consider regulatory requirements in General Design Criteria 61 and 62, which require that engineered safety features such as the water makeup line be present to prevent a significant loss of coolant. ALAB-725, Slip op. at 19-20.^{4/} The Appeal Board therefore vacated the order requiring the licensee to amend its amendment application and remanded the matter to the Licensing Board "with instructions to the Board to make its finding on the adequacy of the applicant's criticality analysis contingent upon the reliability of the makeup line." Id. This Appeal Board decision forms the basis for these two petitions for Commission review.

III. ARGUMENT

A. No Important Matter that Could Affect the Health and Safety of the Public is Presented for Review

10 CFR § 2.786(b)(4)(i) provides in part:

(i) A petition for [Commission] review will not ordinarily be granted unless it appears the case involves an important matter that could significantly affect the environment, the public health and safety, or . . . constitutes an important procedural issue, or otherwise raises important questions of public policy.

^{4/} The Board further concluded that Staff guidance was not at variance with these regulatory requirements. See, ALAB-725, slip op. at 12-15, 18-19.

The Petitioners fail to meet these standards in their petitions for review of ALAB-725. In ALAB-725 the Appeal Board remanded this proceeding to the Licensing Board to consider the reliability of the engineered safety feature, a water make-up line, which would prevent "boil-off" and criticality in the spent fuel pool.

The Bier petition states as its primary concern that: "There is no safety grade equipment associated with spent fuel pool cooling at the Big Rock facility." (Bier Petition at 1). The O'Neill petition states: "The main policy error that the Appeal Board made was in not considering the consequences of makeup water line failure in the Big Rock Pool." (O'Neill Petition at 7). Where the Appeal Board has specifically remanded to the Licensing Board the question of the safety reliability of the makeup water line, no question is now presented, prior to the Licensing Board's decision on remand, that could significantly affect the public health and safety or could involve any important questions of public policy.

The Appeal Board, in a practical sense, has not made a decision or taken an action with regard to the adequacy of the proposed makeup line. Thus, any assignment of error with regard to the ability of the makeup line to reliably foreclose accidents does not constitute a proper subject for Commission review within the language of 10 C.F.R. § 2.786(b)(4)(i).

B. The Bier Petition Should be Denied Because it is Based Entirely on Matters of Fact or Law not Previously Raised Before the Atomic Safety and Licensing Appeal Board

The requirements for a petition for Commission review of a decision or action by the Appeal Board are set forth in § 2.786 of the Commission's regulations. One specific requirement is that:

A petition for review . . . shall contain the following:

* * *

(ii) A statement (including record citation) where the matters of fact or law raised in the petition for review were previously raised before the Atomic Safety and Licensing Appeal Board and, if they were not why they could not have been raised. 10 C.F.R. § 2.786(b)(2)(ii).

The companion provision states:

The grant or denial of a petition for review is within the discretion of the Commission, except that:

* * *

(iii) A petition for review will not be granted to the extent that it relies on matters that could have been but were not raised before the Atomic Safety and Licensing Appeal Board. 10 C.F.R. § 2.786(b)(4)(iii).

The petitioner Bier fails to show where the particular matters it seeks to bring to the Commission^{5/} were raised before the Appeal

5/ The issues raised in the Bier Petition are:

1. There is no safety grade equipment associated with spent fuel pool cooling at the Big Rock Point Facility.

(CONTINUED)

Board.^{6/} Further, there is no explanation as to why these issues could not have been raised before the Appeal Board. The Commission has stated in the Supplemental Information which accompanied the promulgation of 10 C.F.R. § 2.786 that it intended a strict application of the requirement that it would not review petitions which rely on matters which could have been but were not raised before the Appeal Board.^{7/} See also, Houston Lighting & Power Co. (Allens Creek Nuclear Generating Station No. 1), ALAB-582, 11 NRC 239, 242 (1980) (Appeal Board refused to consider matters and arguments not presented below).

5/ (CONTINUED)

2. Testimony of NRC Staff witnesses Brooks and Fieno conflicts with testimony of NRC Staff witness Lantz and licensee witness Kim in regard to temperature measurements, void fraction calculations, and enrichment of the fuel.
3. The Big Rock Point spent fuel pool is unique due to radiation levels, highly enriched fuel and overmoderation.
4. Staff witness Lantz was not familiar with the testimony of licensee witness Kim.
5. The makeup water line should not be used as a substitute for a spent fuel pool cooling system.

6/ Brief of Intervenor's [sic] in Support of Licensing Board's Decision Concerning O'Neill Contention IIE-3 dated January 28, 1983.

7/ "The Commission in this respect intends a set of strict rules in order to retain the concept of a limited review. Accordingly, it prefers, at this time, not to exercise its discretion within the enumerated areas of constraint in § 2.786(b)(4) (ii), (iii) and (iv)." 42 Fed. Reg. 22128, May 2, 1977.

The Bier Petition is fatally flawed in seeking to raise issues before the Commission which were not raised before the Appeal Board. There is no apparent reason to justify an exception to this regulatory policy in the instant case. In addition, the Bier Petition contains the same defects as the O'Neill Petition, discussed infra, in that it does not address the standards for Commission review set forth in 10 CFR § 2.786(b)(4). Accordingly, for the reasons stated, the Bier Petition should be denied.

C. The O'Neill Petition Should be Denied Because it does not Satisfy the Standards for Commission Review as Set Forth in the Regulations

As discussed above, the requirements applicable to a petition for review, and the standards for the grant or denial of such a petition, are set forth in 10 C.F.R. § 2.786. Some of the issues raised in the O'Neill Petition were not raised before the Appeal Board, and there are no record citations and no explanation as to why they could not have been raised.^{8/} The remaining issues, which were previously raised and can be identified by citations to the record, do not meet the standards for Commission review.

Mr. O'Neill has not attempted to comply with any of the provisions of 10 C.F.R. § 2.786. As we have detailed, the O'Neill Petition fails to

^{8/} The Staff would characterize these issues as: (1) Appeal Board's disregard of General Design Criterion 23 (petition at 4); (2) discretionary powers of the Licensing Board (petition at 5-6); (3) unreliability of the ECCS system (petition at 6); and (4) Licensing Board error in failing to adopt a conservative policy toward engineered safety factors (petition at 7).

demonstrate that this case, which has been remanded to determine the reliability of the spent fuel pool water makeup system, involves an important matter that could significantly affect the public health and safety, raises an important question of public policy or satisfies any of the other criteria of 10 C.F.R. § 2.786(b)(4)(i).^{9/} He states at page 2 of his petition that he is concerned about: (1) "at what reduced water level did the lower water pressure allow significant void fractions to occur"; and (2) "the uncertain K-effective values when these void fractions" occurred. In view of the Appeal Board's remand to determine the reliability of the water makeup system which would prevent reduced water level and lower water pressure, no important issue involving the public health and safety can exist in regard to these matters.

Finally, the O'Neill Petition makes no claim, pursuant to 10 C.F.R. § 2.786(b)(4)(ii), that the Appeal Board "has resolved a factual issue necessary for decision in a clearly erroneous manner contrary to the resolution of that same issue" by the Licensing Board. Indeed, both decisions below recognized that criticality would not occur if the pool were maintained in a flooded state. See Initial Decision at 15-16, 18; ALAB-725, Slip op. at 18-20. This was the factual issue necessary for decision.

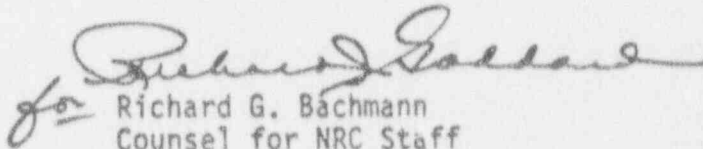
^{9/} For example, Mr. O'Neill continually emphasizes, throughout his petition, his disagreement with the Appeal Board's interpretation of Staff guidance. He characterizes the Appeal Board's alleged preference for a "physical system" over "the geometrically safe rack configuration" as a "serious error of law." O'Neill Petition at 4. The fact that Mr. O'Neill may disagree with the Appeal Board does not, without more, provide any basis for the grant of Commission review pursuant to 10 CFR § 2.786(b)(4)(i).

Thus, the standards set forth for Commission review have not been met by the O'Neill Petition. Accordingly, it should be denied.

IV. CONCLUSION

The Bier Petition and the O'Neill Petition fail to (1) satisfy the requirements of the Commission's regulations; (2) meet the standards for the grant of Commission review. Therefore, both Petitions should be denied.

Respectfully submitted,


for Richard G. Bachmann
Counsel for NRC Staff


Richard J. Goddard
Counsel for NRC Staff

Dated at Bethesda, Maryland
this 16th day of June, 1983

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE COMMISSION

In the Matter of
CONSUMERS POWER COMPANY
(Big Rock Point Plant)

}
} Docket No. 50-155
} (Spent Fuel Pool Modification)

CERTIFICATE OF SERVICE

I hereby certify that copies of "NRC STAFF'S ANSWER IN OPPOSITION TO INTERVENORS' PETITIONS FOR REVIEW" in the above-captioned proceeding have been served on the following by deposit in the United States mail, first class, or, as indicated by an asterisk, through deposit in the Nuclear Regulatory Commission's internal mail system, this 16th day of June, 1983:

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ATTACHMENT 3

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

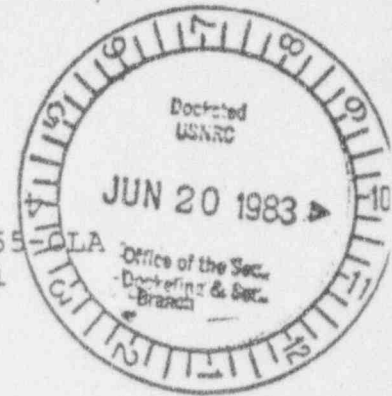
BEFORE THE COMMISSION

IN THE MATTER OF)

CONSUMERS POWER COMPANY)

Big Rock Point Nuclear)
Power Plant)

Docket No. 50-155-OLA
(Spent Fuel Pool
Modification)



ANSWER OF CONSUMERS POWER COMPANY TO PETITION OF
JOHN O'NEILL AND JO ANNE BIER FOR COMMISSION
REVIEW OF ALAB-725

Pursuant to 10 C.F.R. § 2.786(b) Consumers Power Company ("Licensee") hereby responds to the petitions of John O'Neill and Jo Anne Bier for Commission review of the decision of the Atomic Safety and Licensing Appeal Board ("Appeal Board") in Consumers Power Company (Big Rock Point Nuclear Plant), ALAB-725, _____ NRC _____ (April 27, 1983).

Section 2.786 provides that the grant or denial of a petition for review of an appeal board decision is within the Commission's discretion, except that a petition will not be granted: (i) unless it raises an important question concerning the public health and safety or an important matter of public policy; or (ii) unless it appears that the appeal board has committed a clear error of fact in reversing a decision of a licensing board; and (iii) to the extent that the petition raises matters not raised before the appeal board. Licensee submits that Mr. O'Neill's and Mrs. Bier's petitions should be denied because they raise no important question of law or policy, demonstrate no error of fact committed by the Appeal Board and raise matters

not raised before the Appeal Board. In support thereof, Licensee states as follows:

1. Mr. O'Neill argues that the Appeal Board erred in interpreting relevant NRC Staff guidance, namely Standard Review Plan § 9.1.2. The guidance states that spacing between spent fuel assemblies must be "sufficient to maintain the array, when fully loaded and flooded with nonborated water, in a sub-critical condition" (SRP § 9.1.2, at 9.1.2-4). The Appeal Board concluded that this guidance clearly states that the criticality calculation is to assume a pool flooded with unborated water (ALAB-725, Slip. Op. at 13). Mr. O'Neill's argument that this was error flies in the face of the plain language quoted.

2. Mr. O'Neill argues that the Appeal Board misinterpreted General Design Criterion 62 of 10 C.F.R. Part 50, Appendix A, which provides: "Criticality in the fuel storage and handling system shall be prevented by physical systems or processes, preferably by use of geometrically safe configurations." The Appeal Board held that Licensee's remotely controlled makeup water line to the spent fuel pool was a "physical system" within the meaning of GDC 62, and that if it functioned adequately, it would "necessarily aid in preventing criticality as contemplated by GDC 62" (ALAB-725, Slip Op. at 19). Furthermore, the Appeal Board noted that this physical system was in addition to, not in place of, the geometrically safe configuration of the pool, the preferred method of preventing criticality, because with the coolant inventory maintained there was no claim that the

geometrical configuration of the fuel was not safe (ALAB-725, Slip Op. at 19-20, fn. 17).

Mr. O'Neill simply misunderstands the Appeal Board's reasoning. He argues that the Appeal Board committed a "serious error of law" because it preferred a physical system over the geometrically safe rack configuration without ever addressing the language of GDC 62 favoring the latter. This claim is factually incorrect.

3. Mr. O'Neill argues that the Appeal Board erred by ignoring GDC 23 of 10 C.F.R. Part 50, Appendix A. It is unnecessary to address the relevance of this regulation because this issue was not before the Appeal Board and has been raised for the first time in Mr. O'Neill's petition.

4. Mr. O'Neill argues that the Appeal Board erred in ignoring the decision of the licensing board in Commonwealth Edison Company (Zion Station, Units 1 and 2), LBP-80-7, 11 NRC 245 (1980). This argument must fail, because the portions of the Zion decision cited were inapposite, Mr. O'Neill's analysis of Zion is flawed, and the decision was in any case not binding on the Appeal Board.

5. Mr. O'Neill argues that the Appeal Board improperly precluded the Licensing Board from exercising its discretion to require Licensee to meet more stringent criteria than those contained in the NRC Staff guidance. This argument is without merit. The Appeal Board reasoned that the Licensing Board had felt itself constrained by the Staff guidance but that it had misinterpreted that guidance. The Appeal Board went on to recognize that in some instances it may be appropriate for a Licensing Board to require more stringent measures of compliance

than those contained in Staff guidance. Such an exercise of Licensing Board discretion would have to be justified, however, by facts appearing in the record (ALAB-725, Slip Op. at 16). The Appeal Board reviewed the record in this case and determined that it did not support imposition of requirements going beyond the Staff guidance (ALAB-725, Slip Op. at 16-19). The Appeal Board concluded: "Assuming, however, that the Board would have taken the same action as a matter of discretion, it failed to establish that consideration of this type of accident was justified here" (Slip Op. at 16).

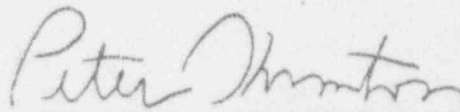
6. Mr. O'Neill argues that the Licensee's makeup water line will not function adequately and asserts that the Appeal Board's "main policy error" lay in not considering the consequences of a failure of the line. He cites several decisions which he claims show that the effectiveness of engineered safeguards must be considered as very limited. Mr. O'Neill has mischaracterized the cited cases, but even if they stood for this proposition, they would be irrelevant. The adequacy of the makeup water line was clearly not an issue before the Appeal Board. Indeed, that issue has not yet been decided by the Licensing Board. The Appeal Board simply instructed the Licensing Board to "make its finding on the adequacy of the applicant's criticality analysis contingent upon the reliability of the makeup line" (ALAB-725, Slip Op. at 20).

7. The petition of Mrs. Bier consists entirely of matters that were not raised before the Licensing Board and that

would have been irrelevant had they been raised. Mrs. Bier makes various representations about the Big Rock spent fuel pool cooling system and the adequacy of the makeup line. These issues were not before the Appeal Board. Mrs. Bier also makes various representations about the contents of depositions by Dr. Walter L. Brooks and Mr. Daniel B. Fieno of the NRC Staff, taken in December 1982 and January 1983. These depositions were taken after the decision of the Licensing Board on appeal and were not part of the record before the Appeal Board.

For the reasons stated, the petitions of Mr. O'Neill and Mrs. Bier for Commission review of the Appeal Board's decision in ALAB-725 should be denied.

Respectfully submitted,

BY 
One of the Attorneys for
CONSUMERS POWER COMPANY

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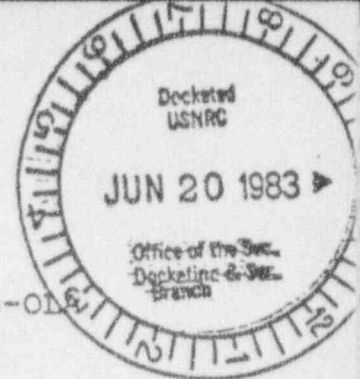
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DATED: June 17, 1983

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE COMMISSION

IN THE MATTER OF)
)
CONSUMERS POWER COMPANY) Docket No. 50-155-016
) (Spent Fuel Pool
) Modification)
Big Rock Point Nuclear)
Power Plant)



CERTIFICATION OF SERVICE

I hereby certify that copies of ANSWER OF CONSUMERS POWER COMPANY TO PETITION OF JOHN O'NEILL AND JO ANNE BIER FOR COMMISSION REVIEW OF ALAB-725 were served on all persons listed below by deposit in the United States mail, first-class postage prepaid, delivery this 17th day of June, 1983.

Nunzio J. Palladino
Chairman
U.S. Nuclear Regulatory
Commission
Washington, D.C. 20555

John Ahearne
Commissioner
U.S. Nuclear Regulatory
Commission
Washington, D.C. 20555

Victor Gilinsky
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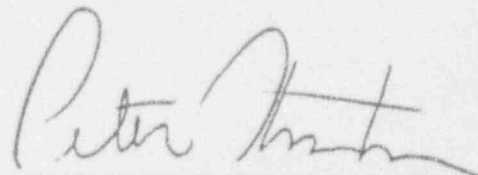
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ATTACHMENT 4

Release:

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION JUN -6 11:22

BEFORE THE COMMISSIONERS:
Nunzio J. Palladino, Chairman
Victor Gilinsky
John F. Ahearne
Thomas N. Roberts
James K. Asselstine

In the Matter of

CONSUMERS POWER COMPANY

(Big Rock Point Nuclear Plant)

)
)
)
) Docket No.
) 50-155 OLA
) (Spent Fuel
) Pool Modifica-
) tion)
)
) ALAB-725

MOTION FOR COMMISSION REVIEW
ALAB-725

JOHN O'NEILL II
Intervenor, pro se

Dated: June 2nd, 1983, anno Domini

NOW COMES John O'Neill II, Intervenor, pro se, and as and for his Motion for Commission Review says as follows:

Under the provision of 10CFR.786, I am appealing the decision of April 27, 1983 of the Atomic Safety and Licensing Appeal Board, Judges Moore, Buck and Kohl. That decision was a review of the Atomic Safety and Licensing Board decision entitled "Initial Decision (concerning neutron multiplication factor)", dated October 29, 1982. That decision reviewed O'Neill Contention II E-3 which states: "The application has not adequately analyzed the possibility of criticality occurring in the fuel pool because of the increased density of storage without a gross distortion of the racks." This contention survived summary disposition and was the subject of much testimony and cross-examination at the June 1982 hearing. The testimony of the following men was taken: Daniel A. Prolewicz, a thermal hydraulics expert; Rodney Gay, a thermal hydraulics expert; Raymond F. Sacramo; and Yong S. Kim, a criticality expert; as witnesses for the Licensee, and Edward Lantz, a senior reactor engineer in the NRC reactor systems branch. The Board carefully scrutinized the testimony regarding temperatures, void fractions, water flow models and the point at which steam void begins to affect criticality. The crux of the matter is contained in page 17 and 18 of the Licensing Board's decision:

"Despite these arguments, including Mr. Lantz's assurance, the tradition of not analyzing fuel pools for a mist environment, and Dr. Kim's interpretation of the supercriticality article, we believe there is substantial uncertainty about whether K-eff for the limiting fuel design calculated by Dr. Kim for the Big Rock Spent Fuel Pool would be higher or lower than 0.95 at very low water densities. We do not regard the article on supercriticality as providing adequate safety assurance, since the article itself states that its analysis is subject to substantial error and those analyses were: 1) not done on the actual Big Rock Spent Fuel Pool configuration, and 2) have not been subject to a careful safety review by the staff. Nor do we accept Mr. Lantz's intuitions about the shape of a curve that would be generated by analyses that have not yet been performed. Nor do we accept the tradition of overlooking the possibility of a mist environment in a fuel pool as binding, particularly in respect to a plant in which the fuel pool is located within the containment where it might be unaccessible during a TMI-2 type accident.

As applicants argue, very low densities of water could not occur without the pool water boiling-off substantially, but our record leaves us very uncertain about the magnitude of the drop needed to surpass a K-eff of 0.95. For example, a drop of somewhere between a few feet and a drop all the way to the top of the fuel racks is necessary in order to attain a 40% void fraction, according to a 'very wild guess' made by Dr. Prelewicz (Tr. 1854-1855). Since there also is substantial uncertainty concerning K-eff at high void fractions, we are not sure how quickly voids would occur that would raise K-eff above 0.95." (License Board decision pages 17-18)

Thus, the Board ordered Consumers Power Company to amend its petition so that the K-eff in its spent fuel pool will not exceed 0.95 under any conditions, including extremely low densities of water. (Licensing Board Order page 24; Emphasis added)

The Appeal Board ruled on April 27, 1983 that the Licensing Board had incorrectly interpreted staff guidelines and was not required to call for a criticality analysis "for all conditions". The Appeal Board found that the Licensing Board erred in refusing to consider the makeup line as possibly mitigating a boil-off accident. It vacated the Board Order and remanded the matter "with instructions to the Board to make its finding on the accuracy of the applicant's criticality analysis contingent upon the reliability of the makeup line." (Appeal Order page 20) Big Rock is the nation's oldest boiling water reactor. The risk of a serious accident occurring there is considered 10 times more likely than at the NRC 1/10,000/reactor-year goal.¹

EXCEPTIONS

The question that arose concerned possible loss of cooling water from the spent fuel pool and the consequences.

The issue is more complex than stated by the Appeal Board: "Must the applicant's criticality analysis assume the loss of a significant amount of pool coolant?" (Appeal Decision page 8)

More exactly, it concerns two main areas of important uncertainties: First, none of the experts were able to establish at what reduced water level did the lower water pressure allow significant void fractions to occur in the fuel cans; the second concerned the uncertain K-eff values when these void fractions caused optimum moderation conditions to develop. It was these uncertain-

ties and the seriousness of possible consequences that prompted the Licensing Board to require further analysis of criticality under mist conditions.

The Appeal Board erred in its interpretation of the staff guidances. This is a question of law. It noted that the Licensing Board has interpreted the staff guidances as requiring that K-eff should never exceed 0.95 "for all conditions" including a boiling pool in which a mist environment exists. The Appeal Board states that "the Board's interpretation might be plausible were it not that the two principle documents establishing the 0.95 exception criteria clearly state that the criticality calculation is to assume a pool flooded" with unborated water. See SRP §9.1.2, at 9.1.2-4; ANS-57. §5.1.2.12.1. (Decision page 13) It is largely upon this understanding that the Appeal Board dismissed the Licensing Board's ruling. But the Appeal Board has badly misconstrued the import of the staff guidance by not considering the appropriate paragraph in full:

"Criticality information (including the associated assumptions and input parameters) in the SAR must show that the center to center spacing between fuel assemblies and any strong fixed neutron absorbers in the storage racks is sufficient to maintain the array, when fully loaded and flooded with non-borated water, in a sub-critical condition. K-eff not greater than 0.95 for this condition is acceptable." (9.1.2 page 9.1.2-4. Rev. 3-July 1981. Emphasis added)

The critical word here is not flooded; that is merely the condition of the pool at the outset. But rather the word is maintained. The design must be sufficient to maintain the pool's contents in a sub-critical condition. Clearly, if the design allows boiling and mist conditions to develop, it very possibly will be unable to maintain the array below K-eff 0.95. Other staff documents reinforce this interpretation. For example, the staff guidance dated April 14, 1979:

"Realistic initial conditions (e.g. the presence of soluble boron) may be assumed for the fuel pool and fuel assemblies. The postulated accidents shall include:...4) loss of all cooling systems or flow under the accident conditions, unless the cooling system is single failure proof (pages I I I 1-2) The language of initial conditions reinforces the sense that is to be drawn from these documents as I have outlined above. Clearly then to paraphrase the Appeal Board, 'The Licensing Board's interpretation is plausible.'"

The language of general design criterion then begins to make sense. I disagree with the Appeal Board's interpretation of criterion 62. "Criticality in the fuel storage and handling systems shall be prevented by physical systems or processes, preferably by use of geometrically safe configurations." The Appeal Board found that the makeup line could be sufficient as a physical system (page 19), without ever addressing the language of the regulations that clearly favors geometrically safe racks. Absolutely no reasoning is offered by the Appeal Board as to why a physical system (makeup line) is preferred over the geometrically safe rack configuration. This is a serious error of law.

An error of law was made when the Appeal Board ignored 10CFR, Appendix A, Criterion 23:

"Protection systems failure modes. The protection system shall be designed to fail into a safe state or into a state demonstrated to be acceptable on some other defined basis if conditions such as disconnection of the systems, loss of energy (e.g. electric power, instrument error), or postulated adverse environments (e.g. extreme heat or cold, fire, pressure, steam, water, and radiation) are experienced."

For the Appeal Board to ignore the guidances is a serious error of law. A proven, geometrically safe pool offers the best assurance that the pool will fail into a steady state.

The Appeal Board erred in footnote 17 on page 19. There is no claim that the spent fuel pool at Big Rock Point is not designed in a geometrically safe configuration. The preferred method of preventing "criticality" can be seen on page 15 and 16 of my brief before the Appeal Board, January 31, 1983. I also raised similar points in oral argument.

The Appeal Board erred in law when it ignored the only spent fuel pool case cited by any party, Commonwealth Edison Company (Zion Stations, Unit one and two), (proposed amendment to permit storage pool modification) 11 NRC 245) (1980 LPP-80-7). Three points have been drawn from this case. The first is simply that makeup lines to spent fuel pools are simply not required to be single failure proof (page 264). It is important to note in the decision at hand, although the Appeal Board is content to rely upon "the adequacy of a makeup line" it has laid no requirement upon the utility that the line must be single failure proof. At the very least, this decision must be altered to include this requirement.

The Zion Board, while it found that the intervenor has not presented a significantly probable sequence of events by which boiling in the spent fuel pool could lead to a loss of water accidents of the kind described in the Sandia Report or in testimony of its witnesses" page 267, Yet the Board inquired to find out what the consequences of what such boiling would be, however unlikely the event itself. This is the second point, a point that has escaped the Appeal Board. This is an error of law.

The Zion pool differs radically from the Big Rock pool in that under any and all conditions, the Zion pool, in a separate building is always accessible. The Big Rock pool is within reactor containment and would be entirely inaccessible in many accidents. This is especially important in considering the ground upon which the Zion Board dismissed the questions concerning addition of water. Under any conditions

"the pumps and heat exchanges of the spent fuel pool cooling system and the control to the makeup water supply are located in a room in the fuel building which has wall and ceiling of concrete. Such equipment and control are accessible under any circumstances (even if one of the reactors should experience a loca) through a railroad trackway entrance to the fuel building, and this could be done without going past the spent fuel pool." (page 265)

"The Board finds that there are sufficient sources of makeup water and adequate access to such sources to insure the public health and safety is not endangered by boiling in the spent fuel pool." (page 268)

The principle then is clearly established: to exclude consideration of this type of accident the spent fuel pool must be entirely accessible at all times. Big Rock's pool is not accessible; there is only one automatic mode of makeup water available, and thus the line cannot be relied upon. In ignoring the case law here the Board erred in a matter of law. This point was raised in my brief of January 31, 1983 pages 7-14.

The option of discretionary reviews has been improperly and entirely excluded. The Appeal Board noted that while the case of Florida Power and Light Co. (St. Lucie Nuclear Power Plant, Unit No. 2). ALAB-603, 12 NRC 30, 45 (1980) (consideration of loss of all AC power), and others held that a Board may, as a matter of discretion, require consideration of a scenario more stringent than proposed in the Reg. Guides, the Licensing Board failed to provide

sufficient reason to exercise such discretion (page 15, 16). There are compelling reasons to prompt an exercise of discretion, but the Licensing Board felt it unnecessary to fully express these reasons given its understanding of the Reg. Guides and staff guidances.

Given this ruling, mist conditions cannot be analyzed. This poses a serious threat to public health and safety. At the very least, the Commission should amend the decision to allow discretionary review of criticality if it thoroughly enumerates the facts that trigger exercise of such a discretionary judgment.

The Appeal Board erred in relying upon the wrong experts for certain matters. For example, it relied upon Dr. Kim, a criticality expert, for the reliability of remotely controlled makeup line, page 5. It relied upon Dr. Kim concerning extending boil outs in the pool, page 18. Dr. Prelewicz and Dr. Gay are the thermo-dynamics experts. There are other such instances in the Order.

The Board misunderstood the concern of the Licensing Board. The Licensing Board did not find that criticality would become an issue if the water were to boil down to the tops of the racks. The Licensing Board found that significant questions arose once 4 feet of water boiled away. A significant question arose concerning criticality. This error is to be found on page 17, where quoting Mr. Blanchard. The Appeal Board evidently believed that all of the water above the racks must boil away before a significant problem arose. I've raised this point on page 20 of my brief and in oral argument before the Appeal Board. Four feet of water would boil away in about five and one-half days.

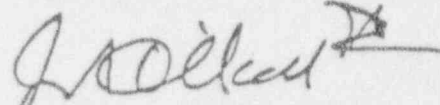
If the makeup line is merely replacing water while boiling occurs, it follows that significant void fractions exist. The effect of these upon criticality must be analyzed. The makeup line will operate off the reactor E.C.C.S., which has been granted a lifetime exemption to the single failure-proof criterion. It cannot be relied upon. I raised this point in oral argument.

The main policy error that the Appeal Board made was in not considering the consequences of makeup water line failure in the Big Rock Pool. The Zion case and the cases that were introduced that dealt with emergency evacuation, Consumers Power Company (Midland Plant Units one and two), ALAB 123, 6AEC 312, 341, (1973), and Duquesne Light Company, carry Nuclear Power Plants Unit one and two, all BP-77-29, JNRC 1121, 1977, show that while engineering safeguards can be considered as ameliorating accidents, their effectiveness must be considered as very limited. The consequences of a makeup line failure at Big Rock would be very grave if the geometry of the racks is not sufficient to prevent criticality. The Licensing Board erred in not adopting a conservative policy that would have precluded these damages.

Summary

The plant is old. The uncertainties are important, and the risks are great. This spent fuel pool, within containment, presents an unforgiving design unless the geometric configuration is safe. This case merits review by my government.

Respectfully submitted,



JOHN O'NEILL II
Intervenor, pro se

Dated: June 2nd, 1983

ATTACHMENT 5

June 2, 1983

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Release

Administrative Judges
Atomic Safety and Licensing Appeal Board
Thomas S. Moore, Chairman
Dr. John H. Busk
Christine N. Kohl

In the Matter of _____
Consumers Power Company _____
(Big Rock Point Nuclear Plant) _____

DOCKET NUMBER 50-155
REG. & UTIL. DIV.

Re: DECISION, April 27, 1983 (ALAB-725)

MOTION TO RECONSIDER

Being presently without counsel, I find myself in the rather awkward position of representing intervenors Christa-Maria, Mills, and Bier in requesting the ASLB to reconsider their April 27, 1983 (ALAB-725) decision. I will speak as simply and directly to the point as possible.

Unresolved Concerns of Intervenors:

1. There is no safety grade equipment associated with spent fuel pool cooling at the Big Rock Facility. The fuel pool is not on the emergency bus, and in the event of an accident or loss of site power, all equipment associated with Spent Fuel Pool Cooling must be assumed to fail. (See Summary Disposition, October 5, 1981 T.M.I. Contention, David Blanchard). Because the Big Rock Spent Fuel Pool is within the containment, this lack of meeting single failure criterion presents special problems.

The Big Rock fuel storage and handling system cannot be considered a geometrically safe configuration as demanded by GDC 62, when fuel pool cooling equipment must be assumed to fail in a high temperature or high humidity environment and when cooling water and fuel pit pumps are located below the maximum permissible water level in containment (Blanchard Summary Disposition at 6). Neither fuel pool cooling equipment nor make up water line can achieve the goal of GDC 61 which states that:

The fuel storage and handling, radioactive waste, and other systems which may contain radioactivity under normal and postulated accident conditions. These systems shall be designed --- (4) with a residual heat removal capability having reliability and testability that reflects the importance to safety of decay heat and other residual heat removal, and (5) to prevent significant reduction in fuel storage coolant inventory under accident conditions.

2. Testimony of N.R.C. Staff experts Dr. Walter L. Brooks and Daniel B. Fieno (See Deposition December 29, 1982 and January 10, 1983) conflicts with testimony of N.R.C. Staff expert Dr. Lantz and Dr. Kim of N.U.S. in three vital areas of calculating K eff. I. Temperature II. Void fraction, and III. Fuel type.

I. Temperature. In Dr. Kim's calculations for K eff, he averaged the temperature of 212° F at the bottom of the assembly and 237° F at the top. He used this average of 224.5° F to perform K eff calculations. Walter Brooks in his January 10 deposition asserts that the temperature should not be averaged. That in the event of a single failure causing boiling, the higher temperature must be used along the whole length of the assembly in order to conservatively calculate K eff (Tr. 151.)

II. Void Fraction. Brooks asserted also that in the event of a single failure causing boiling, the void fraction must be calculated for the entire length of the rod in order to be conservative (Tr. 164). Dr. Kim originally assumed a steam void volume fraction of .206 along the entire rod length, resulting in a K eff increase of .0044. (Kim Testimony at 7-8). Dr. Kim stated in the hearing, however, that boiling would occur only in the upper .276 inches of fuel length, and that when the average void fraction is calculated, it yields an increase in K eff of only .00001, resulting in a net decrease in K eff. of .0044. According to Brooks this may not be conservative.

In addition it was never made clear the relationship of temperature and pressure on voids in overmoderated fuel pools where K eff increases with temperature over 212° F.

III. Fuel. Daniel Fierno asserted in his December 29, 1982 deposition that research fuel and/or highly enriched fuel, might not conform to typical light water reactor fuel assumptions of K eff (ID pg. 50 & 58). Big Rock is a research reactor and participates in fuel research and development, using very highly enriched fuels and recycle plutonium.

3. The Big Rock Spent Fuel Pool is unique in that:

- A. Radiation levels above the Spent Fuel Pool are normally up to ten (10) times higher than at most reactors. Present equipment is inadequate to bring these levels to the norm.
- B. Big Rock is an experimental reactor using highly enriched and recycle plutonium fuels.
- C. The Big Rock Spent Fuel Pool is overmoderated and K eff rises with increasing temperatures.

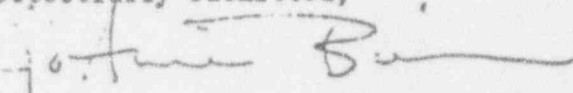
4. Although N.R.C. Staff Expert Dr. Lantz performed an independent analysis of K eff for the Big Rock pool, he was not familiar with Dr. Kim's testimony or underlying assumptions. Because of the lack of scrutiny by Dr. Lantz and the conflicting testimony of experts Fierno and Brooks, the board must request the N.R.C. staff to re-review and clarify for the record their position on K eff analysis of the overmoderated Big Rock Spent Fuel Pool.

Consumers Power Co. has installed a make up water line to the Big Rock Spent Fuel pool and the line is exactly that, a MAKE UP WATER Line. It was never meant to be, nor should it be, allowed to substitute for a cooling system. Consumers Power Co. assumed, for the first 2½ years of this application that in the event of an accident or loss of off site power, that the fuel pool would boil and in the last two (2) years that loss of water would be "significant" enough to warrant a make up water line. Indeed, Licencee has not been able to verify this basic assumption, that the spent fuel pool could withstand boiling temperatures. At present, because of seismic concerns, licencee must keep spent fuel temperature below 111° F in cold shut down.

The Board states in its April 27, 1983 order "The issue before us is a very narrow one; must the applicant's criticality analysis assume the loss of a significant amount of pool coolant?" (P 78) Consumers Power Company admits to the credibility of such an event in its proposal that a MAKE UP water line be installed. For the appeal board to accept licensee's proposal that the make up line be considered a safety grade cooling system sets a very dangerous precedent. To take the situation to its absurd extreme, an applicant could couple an aquarium bubbler with a make up water line and by pleading that the make up water line was safety grade and could adequately cool the pool, the bubbler could escape all investigation by merely asserting as Consumers Power Company has done, that all systems relating to the bubbler must be assumed to fail in the event of an accident. This is obviously not the intent of the Appeal Board.

For the above reasons we ask the Appeal Board to reconsider its decision and request that Consumers Power Company do necessary calculations concerning K eff.

Respectfully submitted,


Ms. JoAnne Bier Intervenor pro se





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DIRECTION TO JUNE 2, 1983 PETITION OF INTERVENORS, JO ANNE BIER AND
CHRISTA-MARIA

"MOTION TO RECONSIDER" SHOULD BE DELETED AND SUBSTITUTED BY "MOTION FOR
COMMISSION REVIEW" OF A.L.A.B.-725, APRIL 27, 1983. THIS MOTION IS
SUBJANT TO 10CFR2.786.

"REQUEST FOR A.L.A.B. TO RECONSIDER THIER DECISION" SHOULD BE
DELETED AND "REQUEST FOR COMMISSION REVIEW" INSERTED. I APOLOGIZE FOR
MY INCONVENIENCE CAUSED BY THIS ERROR. THANK YOU.
JO ANNE BIER, CHRISTA-MARIA

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