

1/11/73

BEFORE THE UNITED STATES
ATOMIC ENERGY COMMISSION

In the Matter of)
)
Consolidated Edison Company) Docket No. 50-247
of New York, Inc.)
(Indian Point Station, Unit No. 2))

BEFORE THE ATOMIC SAFETY
AND LICENSING APPEAL BOARD

APPLICANT'S ANSWER IN OPPOSITION
TO INTERVENOR'S PETITION FOR
RECONSIDERATION OF ALAB-46

On March 10, 1972 the Atomic Safety and Licensing
Appeal Board ("Appeal Board") issued a ruling ^{1/} on the two
questions certified by the Atomic Safety and Licensing Board ^{2/}
in the above-captioned proceeding relating to the Commission's

1/
Consolidated Edison Co. (Indian Point Station, Unit No. 2),
ALAB-46 (March 10, 1972).

2/
Consolidated Edison Co. (Indian Point Station, Unit No. 2),
Certification of Questions to Atomic Safety and Licensing
Appeal Board (Dec. 7, 1972).

interim acceptance criteria for emergency core cooling systems for light-water power reactors ("interim criteria").^{3/} In ruling on the second certified question,^{4/} the Appeal Board stated that "acceptance of the Westinghouse evaluation model under Section IV of the Criteria obviates the necessity for considering fuel clad swelling and rupture and flow channel blockage in licensing proceedings involving Westinghouse PWR reactors."^{5/}

On November 28, 1972 the Citizens Committee for the

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36 Fed. Reg. 12,247 (June 29, 1971).

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The second certified question was stated as follows:

"Does acceptance of the Westinghouse evaluation model under Section IV of the interim criteria without exception to the treatment of fuel clad swelling and rupture and flow channel blockage signify that this phenomenon need not be considered further in evaluating the performance of the emergency core cooling systems for Westinghouse PWRs, or is it intended that fuel clad swelling and rupture and flow channel blockage shall be considered in depth on a case-by-case basis in determining whether there is compliance with Criterion 3 of Section IV of the interim criteria?"

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ALAB-46 at 8.

Protection of the Environment ("CCPE") alleged that "[d]evelopments at the Emergency Core Cooling System Rule Making Hearings (Docket RM 50-1) indicate that the March 10, 1972 decision ... was factually in error."^{6/} The Appeal Board has determined that CCPE's letter dated November 28, 1972 is to be considered as a petition for reconsideration of the Appeal Board's ruling on the second certified question in ALAB-46. Applicant opposes such petition for reconsideration on the grounds that no basis exists for reconsideration of ALAB-46 and requests that the petition be denied.

I.

The Petition For Reconsideration Should
Be Summarily Denied Because No Basis
Exists For Reconsideration of ALAB-46

The petition of CCPE should be denied summarily on the ground that the Commission's Rules of Practice do not provide for such a petition for reconsideration of an Appeal Board ruling. Furthermore, CCPE suggests that the

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Letter from Anthony Z. Roisman to Alan Rosenthal, Nov. 28, 1972.

alleged "factual error" made by the Appeal Board has been illuminated by the testimony of Dr. Hanauer, a witness for the Regulatory Staff at the ECCS rulemaking hearings. The testimony of Dr. Hanauer to which CCPE refers, however, was presented at a session of the ECCS rulemaking hearings held on January 28, 1972. If CCPE had sought to enlighten the Appeal Board in its interpretation of the interim criteria, CCPE should certainly have presented this information prior to November 28, 1972. On March 15, 1972 CCPE requested reconsideration of ALAB-46.^{7/} In its motion, however, CCPE neglected any mention of the January 28, 1972 testimony of Dr. Hanauer. Now, ten months later, CCPE submits this testimony as a basis for yet another request for reconsideration of ALAB-46.

In any event, in its latest petition for reconsideration, CCPE has not presented any basis for its

^{7/} Consolidated Edison Co. (Indian Point Station, Unit No. 2), Motion for Reconsideration and Alternatively to Certify Questions Involved to the Commission (March 15, 1972). This motion was denied by the Appeal Board in its Memorandum and Order, April 14, 1972 (ALAB-48).

allegation that the Appeal Board's decision was "factually in error." Rather, CCPE in its perennial pursuit to persuade a delegate of the Commission to incorporate matters from the ECCS rulemaking proceeding into the Indian Point 2 proceeding has woven a new argument with threads of incomplete testimony, inadequate analysis and unfounded assumptions, coupled with the untimely presentation of a fragmentary statement.

On November 30, 1971 a notice of public rulemaking hearings on the interim criteria was published in the Federal Register. This proceeding, convened in order to review the interim criteria and to determine whether modifications of such criteria were necessary, is now in progress. Until a final determination is made, the interim criteria, as published on June 29, 1971, are to be utilized in all individual licensing proceedings.^{8/} For CCPE to present "indications" from the supplemental testimony of the Regulatory Staff filed on October 26, 1972 as interpretations of the interim criteria is improper. For CCPE to allege that since the Regulatory Staff has not suggested that Criterion 3 be modified, then, a priori, the Regulatory Staff "obviously"

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ALAB-46 at 8.

interprets Criterion 3 "as requiring consideration of flow blockage beyond the consideration within the Westinghouse Evaluation Model" is patently unfounded.

In Chapter 1 of its supplemental testimony, the Regulatory Staff specifically stated that:

"[t]his testimony does not constitute the recommendation of the Regulatory staff for ECCS acceptance criteria. Such recommendations are to be given in the concluding statement of position provided for in the Board's order of August 25, 1972. The reason for the preliminary nature of the present views is the incompleteness of the hearing record at the time of writing this testimony The Staff's intention is to base its recommendations on the entire record, giving full weight to the contributions of other participants, and, therefore, such recommendations must wait until the record has been completed." ^{10/}

The Regulatory Staff's testimony cited by CCPE was submitted in a rulemaking proceeding to determine, among other things, whether additional consideration should be given to flow blockage in the review of ECCS systems

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Supplemental Testimony of the AEC Regulatory Staff, filed Oct. 26, 1972, at 1-2 through 1-3.

for nuclear reactors. But this is a matter to be considered by the Commission in the ECCS rulemaking proceeding in its final determination whether the interim criteria should be modified. Such consideration is not appropriate in individual licensing proceedings. In any event, the Regulatory Staff has recently maintained that "the Appeal Board's interpretation of the Commission's Interim Policy Statement is correct as stated in ALAB-46 and should not be revised in light of the many developments pending in ECCS hearings."^{11/}

II.

The Petition For Reconsideration Should
Be Denied Because No Factual Basis Exists
For Modification of ALAB-46

CCPE's misinterpretation of ALAB-46 coupled with
CCPE's contortion of the Regulatory Staff's testimony

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Letter from Myron Karman to Sidney G. Kingsley, Dec. 19, 1972.

presented in the ECCS rulemaking proceeding lead CCPE to the erroneous conclusion that ALAB-46 should be modified. A review of ALAB-46 and the briefs which were filed by the Applicant and the Regulatory Staff^{12/} in response to the certified question demonstrate that the Appeal Board's determination of the second certified question is correct and in no wise "factually in error." In addition, ALAB-46 and the referenced briefs are consistent with Dr. Hanauer's statement that in order to demonstrate compliance with Criteria 3 and 4, information in addition to that associated with the evaluation models might be required.

CCPE, in its inadequate analysis of ALAB-46, has confused two distinct points. In determining that the acceptance of the Westinghouse evaluation model obviates

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For the convenience of the Appeal Board that portion of the Regulatory Staff's brief, Brief of the AEC Regulatory Staff on Certified Questions Regarding Interim ECCS Criteria, dated Jan. 11, 1972, relating to the second certified question is attached hereto and designated as Appendix A. That portion of Applicant's brief, Applicant's Brief Respecting Questions Certified to Atomic Safety and Licensing Appeal Board and Related Issues, dated Jan. 11, 1972 is attached hereto and designated as Appendix B.

APPENDIX A

the view to possible amendments." Comments received have been placed in the Commission's Public Document Room. Thus, the public's right to participate in agency rule making and to know the views of other parties on the criteria was protected, at the same time as the agency fulfilled its safety responsibilities by immediate action.

For the reasons stated above, the Appeal Board should find the Commission's action in promulgating the June 29 criteria (a) without notice of proposed issuance and public procedure thereon prior to effectiveness, and (b) as effective upon publication, to be consistent with 5 USC 553(b) and (d).

The Board's second question is as follows:

Does acceptance of the Westinghouse evaluation model under Section IV of the interim criteria without exception to the treatment of fuel clad swelling and rupture and flow channel blockage signify that this phenomenon need not be considered further in evaluating the performance of the emergency core cooling systems for Westinghouse PWRs, or is it intended that fuel clad swelling and rupture and flow channel blockage shall be considered in depth on a case-by-case basis in determining whether there is compliance with Criterion 3 of Section IV of the interim criteria?

The first part of the Board's second question is essentially whether acceptance of the evaluation model signifies that fuel clad swelling and rupture and attendant flow channel blockage need not be considered further in evaluating ECCS for a Westinghouse PWR. The answer to that question is "yes." It should be noted that these phenomena were considered by the

senior task force at length in connection with the temperature and metal-water reaction criteria. For background information in this regard, see sections 2.2 - 2.4 of the staff's prepared testimony dated December 28, 1971, in the rule making proceeding on the interim acceptance criteria, a copy of which is enclosed. These phenomena are not required to be dealt with explicitly in the evaluation model for the reasons stated therein.

The results of the evaluation models can be used directly to demonstrate compliance with the first two criteria. These results can also be used in combination with additional information to show compliance with Criterion 3 as to coolable geometry. That is, for reactors of current design, which have been considered generically, if the first two criteria are satisfied, coolable geometry will be maintained if, in addition, the mechanical effects of blowdown are shown to be within acceptable limits. Mechanical effects of blowdown forces are evaluated on a case-by-case basis and are not included in the evaluation model. The effects of blowdown forces are presented in the FFDSAR^{1/} and were discussed at the November 4, 1971, session of the hearing in this matter (Tr. 2299 et seq.).

^{1/}FFDSAR Section 14.3.3 "Core and Internals Integrity Analysis" pp. 14.3.3-1 to 14.3.3-18 and Answer to Question 14.3.6 referring to WCAP 7332-L "Indian Point Unit No. 2 - Topical Report - Reactor Internals Mechanical Analysis for Blowdown Excitation" (February 1970) which refers, in turn, to WCAP 7401, TOPICAL REPORT, "Loss of Coolant Analysis, Comparison Between Blowdown - 2 Code Results and Test Data" (November 1969).

requirement is not the equivalent of findings based upon record evidence which are required in adjudications. To say that an adjudicatory test applies to reasons for emergency rules is not logical since the intention of the APA was to give agencies the flexibility to act quickly where necessary.

II. The interim criteria reflect full consideration by the Commission of the matters of fuel clad swelling and rupture and flow channel blockage in Westinghouse pressurized water reactors, and the Licensing Board need not consider these matters further in evaluating the performance of the emergency core cooling system for Unit No. 2.

The interim criteria, in setting forth what the Commission considers acceptable for emergency core cooling performance, require each reactor to be evaluated in accordance with a suitable evaluation model. One of the evaluation models identified in Appendix A to the interim criteria as being acceptable to the Commission is the Westinghouse evaluation model, found in Part 3 of Appendix A. An examination of Part 3 indicates that it does not set forth the analytical techniques of the evaluation model but rather refers to those described in the topical report "Westinghouse PWR Core Behavior Following a Loss-of-Coolant Accident," WCAP 7422-L, January, 1970 (Proprietary), the supplementary proprietary Westinghouse report "Emergency Core Cooling Performance," received

14/ (continued) 359 F.2d 624, 629 (D.C. Cir. 1966). For additional authority on this point and for the degree of specificity required for statements in support of regulations, see Section III of Applicant's "Memorandum of Law in Support of Applicant's Answer in Opposition to Motion of Hudson River Fishermen's Association and Environmental Defense Fund, Inc., for Discovery" filed in this proceeding on April 22, 1971.

June 1, 1971, and an appropriate non-proprietary report.^{15/} The Appendix states that the techniques described in these documents are to be used with certain listed exceptions and restraints, which comprise the bulk of Part 3.

WCAP 7422-L, in Section 4.1.1.3, Core Cooling, p. 4-14, states:

"The maximum clad temperature vs. time transient on the rods in the core was calculated assuming no change in core geometry."^{16/}

The "Additional Testimony" referred to in Footnote 15 states (p. 3):

"... the peak clad temperature calculated without geometry distortion will be limited to 2300°F."

The supplementary proprietary Westinghouse report, "Emergency Core Cooling Performance," received June 1, 1971, the Additional Testimony and the exceptions listed in Part 3 in no way qualify the clear statement in WCAP 7422-L that the maximum clad temperature is calculated assuming no change in core geometry.

Both WCAP 7422-L (Section 3.4.3, p. 3-13) and the Additional Testimony (p. 3) discuss evaluations of the effect of geometry distortion on peak clad temperature. It is evident that the Commission, in its review leading to promulgation of the

^{15/}In response to the requirement of Part 3 two non-proprietary reports were submitted: the "Additional Testimony of Applicant Concerning Emergency Core Cooling Performance" dated July 13, 1971 (hereinafter "Additional Testimony"), and WCAP-7422, submitted on October 8, 1971.

^{16/}The same statement is found (at the same section number and page number) in WCAP-7422.

interim criteria, had available to it a large amount of information relating to the possibility of fuel clad swelling and rupture and flow channel blockage. In the attachment to its letter to Mr. Roisman of August 25, 1971,^{17/} the Staff listed the documents which were considered by the ECCS Task Force during the course of its review. At least eleven of these documents contain a substantial amount of information on the subject of geometry distortion and flow blockage, and of these eleven at least five have those as their central subjects.^{18/} It would not have been

17/Filed in Docket No. 50-247.

18/The five documents are:

1. R. A. Lorenz, et al, Preliminary Evaluation of the First Fuel Rod Failure Transient Test of a Zircaloy-Clad Fuel Rod Cluster in TREAT, (November 26, 1969).
2. P. L. Rittenhouse, Failure Modes of Zircaloy-Clad Fuel Rods, Part 3: Description of the ORNL Program, ORNL-TM-2742 (January 1970).
3. P. L. Rittenhouse, Progress in Zircaloy Cladding Failure Modes Research, ORNL-TM-3188 (December 1970).
4. Westinghouse Electric Corporation, "Performance of Zircaloy Clad Fuel Rods During a Simulated Loss-of-Coolant Accident, Single Rod Tests," WCAP 7379-L, Vols. 1 and 2, (September 1969).
5. Westinghouse Electric Corporation, "Performance of Zircaloy Clad Fuel Rods During a Simulated Loss-of-Coolant Accident Multi-Rod Tests, Volume I - Test Setup and Results; Volume II - Analyses of Results," WCAP 7495-L (July 1969).

the necessity for the consideration of fuel clad swelling and rupture and flow channel blockage in individual licensing proceedings the Appeal Board stated:

"In establishing the evaluation model for Westinghouse reactors, the Commission had before it data from the FLECHT experiments which indicated the probability that some fuel clad melting and rupture would occur, thereby causing some channel blockage. However, the same experiments indicated that the cladding temperature would not be raised much, if any, by the swelling and partial blockage. That experimental data reinforces our conclusion that in accepting the Westinghouse evaluation model with full cooling flow for use with the Interim Criteria, the Commission intended to obviate the need for further case-by-case consideration by a licensing board of the phenomena of fuel clad swelling and rupture, and attendant flow channel blockage, in evaluating the adequacy of an ECCS." ^{13/}

CCPE interprets this statement to mean "that approval of the Westinghouse Evaluation Model meant that any Westinghouse reactor which met Criteria 1 and 2 using the Evaluation Model automatically met Criteria 3 without further data." ^{14/}

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ALAB-46 at 11-12 (footnotes omitted). For further discussion of this point, see App. B attached hereto.

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CCPE's petition for reconsideration at 1.

But in ALAB-46 the Appeal Board specifically stated:

"As we construe the Criteria, the results of evaluation models, including the Westinghouse model, can be used directly to demonstrate compliance with the first two Criteria and, with certain additional information not covered by the Interim Criteria, can be used to show compliance with Interim Criterion 3, which concerns the amenability of the core geometry to cooling. The structure of the core, of course, must be such as to assure that a coolable geometry is maintained for the core at the end of the blowdown. The various forces operating during the course of the blowdown (without blowdown there is no need for the ECCS) are phenomena which must be considered in a different manner. Accordingly, if a contention is made that the core structure of any given reactor is inadequate to withstand blowdown forces, this contention should be considered by a Licensing Board as a matter separate and apart from the ECCS." 15/

Furthermore, the Regulatory Staff in its brief dated January 11, 1972 stated:

"The results of the evaluation models can be used directly to demonstrate compliance with the first two criteria. These results can also be used in combination with additional information to show compliance with Criterion 3 as to coolable

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ALAB-46 at 9-10 (footnotes omitted).

geometry. That is, for reactors of current design, which have been considered generically, if the first two criteria are satisfied, coolable geometry will be maintained if, in addition, the mechanical effects of blowdown are shown to be within acceptable limits. Mechanical effects of blowdown forces are evaluated on a case-by-case basis and are not included in the evaluation model. The effects of blowdown forces are presented in the FFDSAR and were discussed at the November 4, 1971, session of the hearing in this matter (Tr. 2299, et. seq.). Thus, the evaluation model provides the necessary information, except for effects of blowdown forces, to demonstrate compliance with the first three criteria. Criterion 3 is, with respect to mechanical effects of blowdown forces, comparable to Criterion 4, in that information beyond that provided by the use of the evaluation models is necessary. The evaluation model was not devised to permit an assessment of the long-term heat removal capabilities necessary for satisfactory compliance with Criterion 4. Compliance with Criterion 4 is derived from an evaluation of the systems provided for post accident long-term cooling." 16/

The record of the above-captioned proceeding already contains that additional information which the Regulatory Staff and the Appeal Board has stated may be

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Regulatory Staff's Brief at 7-8 (footnote omitted). For further discussion, see App. A attached hereto.

required to demonstrate compliance with Criteria 3 and 4.^{17/} CCPE's presentation of testimony from the ECCS rulemaking proceeding has no bearing on either the determination of Applicant's compliance with the interim criteria or the Appeal Board's determination in ALAB-46.

III.

Conclusion

The fact that the Regulatory Staff has presented testimony in the ECCS rulemaking proceeding in no way indicates that the interpretation of the Appeal Board was "factually in error." Rather, error would be made if the

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See App. A attached hereto and references cited therein. For Applicant's compliance with Criterion 3, see also Safety Evaluation by the Division of Reactor Licensing, AEC Dkt. No. 50-247, dated Nov. 16, 1970, at 20-21, 38-40 (follows Tr. 405) and Supp. No. 3 to Safety Evaluation by the Division of Reactor Licensing, dated Sept. 3, 1971 (follows Tr. 2715). For Applicant's compliance with Criterion 4, see Final Facility Description and Safety Analysis Report for Indian Point 2 ("FFDSAR"), Section 6, which describes in detail the residual heat removal system which provides long-term heat removal capability.

logical for these documents to have been considered by the ECCS Task Force without the information in them being taken into account by the Commission in the promulgation of the criteria and the determination that maximum clad temperature is calculated assuming no change in core geometry. See also "Testimony of the AEC Regulatory Staff at a Public Rulemaking Hearing on Interim Acceptance Criteria for Emergency Core Cooling Systems for Light-Water Power Reactors" dated January 27, 1972 and issued December 28, 1971, Section 2, with particular reference to pp. 2-11 through 2-25.^{19/}

In its statement of the second certified question the Licensing Board stated:

"The Westinghouse evaluation model provides for calculation of the number of fuel rods that will have rupture [sic] cladding, but the amount of channel blockage is not calculated and the phenomenon is not included in the calculation of the temperature transient. The Applicant contends that any adverse effects of the channel blockage expected will be more than compensated by conservative assumptions used in the model. The Intervenor contend that the channel blockage can be much more severe than is assumed by the Applicant. Both cite experimental data in support of their contentions."

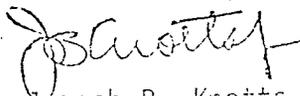
This quotation incorrectly represents the state of the evidence in this proceeding and Applicant's contentions. Westinghouse has calculated the potential adverse effect on peak clad temperature of fuel rod deformation (channel blockage and rod-to-rod contact)

^{19/}AEC Docket No. RM-50-1.

Thus the evaluation model provides the necessary information, except for effects of blowdown forces, to demonstrate compliance with the first three criteria. Criterion 3 is, with respect to mechanical effects of blowdown forces, comparable to Criterion 4, in that information beyond that provided by use of the evaluation models is necessary. The evaluation model was not devised to permit an assessment of the long term heat removal capability necessary for satisfactory compliance with Criterion 4. Compliance with Criterion 4 is derived from an evaluation of the systems provided for post accident long-term cooling.

For further background regarding Criterion 3, see section 2.4 of the enclosed staff testimony in the pending rule making proceeding.

Respectfully submitted,



Joseph B. Knotts, Jr.
Counsel for AEC Regulatory Staff

Dated at Bethesda, Maryland,
this 11th day of January, 1972.

Appeal Board were to distort the purpose and the meaning of the testimony of the Regulatory Staff as suggested by CCPE in its petition for reconsideration. If the Commission in the ECCS rulemaking proceeding determines on the basis of the entire record that the Interim Criteria should be revised so that flow blockage should be considered in individual licensing proceedings, then, at that time, the appropriate requirements would be applicable to the Indian Point 2 facility.^{18/} Until that time, however, the interpretation declared by the Appeal Board in ALAB-46 is

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See ALAB-46 at 8 n.10.

valid and binding in this proceeding and should not be modified. CCPE's petition for reconsideration should, therefore, be denied.

Respectfully submitted,

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Dated: January 5, 1973