

BEFORE THE UNITED STATES

ATOMIC ENERGY COMMISSION

In the Matter of)

Consolidated Edison Company)
of New York, Inc.)

(Indian Point Station, Unit No. 2))

Docket No. 50-247

FFCL

APPLICANT'S REPLY TO PROPOSED
FINDINGS OF FACT AND CONCLUSIONS
OF LAW SUBMITTED BY
CITIZENS COMMITTEE FOR THE
PROTECTION OF THE ENVIRONMENT

Dated: March 10, 1972

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I.
GENERAL REPLY TO CCPE'S PROPOSED FINDINGS
OF FACT AND CONCLUSIONS OF LAW

On February 8, 1972, CCPE filed a 147-page document containing its proposed findings of fact and conclusions of law, together with a supporting memorandum.

CCPE's document is a congeries of mixed factual assertions and legal arguments. These generally fall into three categories. Some of them are correct but immaterial. Other proposed findings, though not necessarily incorrect in themselves, rest on unstated, incorrect premises, e.g. proposed finding 14.

A third, and by far the largest, group of findings are either not supported by the evidence or the evidence supports a contrary finding. Examples of these are numbers 4-7. The lack of evidentiary support for these findings is very often the result of reliance by CCPE on documents which have not been admitted into evidence. CCPE's wholesale reliance in its proposed findings on non-evidentiary material is contrary to the requirements of 10 CFR 2.754.

With respect to the documents not in evidence in this proceeding, Applicant does not agree in most instances with CCPE's characterization of their contents. Since the Board has not yet ruled on CCPE's request to take official

notice of these documents, Applicant considers it inappropriate to dispute CCPE's interpretation in this reply except to state that it is Applicant's position that if the documents had been received into evidence, when viewed in context they would not support CCPE's position. Of course, the Board cannot adopt any of CCPE's proposed findings which rest on these documents. Applicant reserves the right to take any appropriate action following the Board's ruling.

In Section II hereof Applicant addresses the principal legal contentions of CCPE. Applicant has not undertaken to respond to every incorrect statement contained in CCPE's document. Accordingly, silence by no means indicates agreement with CCPE's expressed position and CCPE's findings are generally opposed. Where CCPE's specific proposed findings and conclusions fall into the second and third category described above and thereby attempt to characterize the record of this proceeding in such a way as to mislead the Board, Section III of this reply so states, together with the appropriate evidentiary references.

In general, what CCPE has done is to paint a grossly distorted picture of the evidence that has been presented to this Board concerning the safety of Indian Point Unit 2. It has done this by selectively pointing to isolated portions of the

record and ignoring the rest. CCPE has compounded this fault by calling on the Board to misconstrue the applicable law and regulations. It is also significant that CCPE has called no witnesses of its own to contradict the position of the Applicant, notwithstanding CCPE's very extensive participation herein including the use of technical consultants. Applicant submits to the Board that the proposed findings and conclusions filed by Applicant on January 28 and February 8, 1972 are fully based upon the record herein and justify the issuance of the requested license.

II.
MEMORANDUM OF LAW IN SUPPORT OF
APPLICANT'S REPLY TO CCPE'S PROPOSED
FINDINGS OF FACT AND CONCLUSIONS OF LAW

A. INTRODUCTION

This memorandum addresses the principal legal issues raised by CCPE's proposed findings of fact and conclusions of law and covered in its memorandum in support of those proposed findings. It will be shown that CCPE's attempts to portray legal defects in the record of this proceeding are unpersuasive, and that the record is adequate to support the issuance of an operating license.

CCPE's memorandum should be read with an awareness of its persistent use of false assumptions and innuendoes, misstatements of the positions of other parties to this proceeding, and misuse of legal precedent. For example, in the very first paragraph of its memorandum CCPE states that it is not in dispute that the application for a full power license must be denied if peak clad temperatures in the event of a loss of coolant accident exceed 2300°F by any amount whatever. CCPE is perfectly aware that that proposition is

in dispute and that Applicant's position is that the 2300°F figure is a calculational rather than absolute limit, which need be met only by calculation in accordance with an approved evaluation model such as the Westinghouse evaluation model.^{1/} CCPE's attempts to show that the 2300°F figure will not be met almost invariably involve calculation in some other way than is contemplated by the Interim Acceptance Criteria.

As another example, CCPE argues on page 113 of its memorandum that the level of reliability required in nuclear plants differs from site to site. The Commission's site criteria do require that the engineered safeguards systems be designed to give greater dose reduction at more populated sites. But the proposition that the safety systems at one plant may be less reliable than those at another merely because it is located in a less populated area is utter nonsense with no basis in the law, the regulations or logic.

Yet another example occurs on page 135, where CCPE's language is designed to give the impression that a Con Edison

^{1/} See "Applicant's Brief in Reply to Memorandum Submitted by the Citizens Committee for the Protection of the Environment," January 21, 1972, Section II.

operator disregarded a shutdown required by the technical specifications because of the overriding need for power. The incident referred to had nothing to do with Con Edison, nor was it the need for power which was the reason for the incident.^{2/}

CCPE also accuses the Applicant of irresponsibility in taking the position that the Board may authorize the issuance of a license prior to completion of the rule making proceedings on ECCS. In asserting this position Applicant is reiterating the policy of the Atomic Energy Commission as expressed in its supplemental notice of the public rule making proceeding on ECCS^{3/} that licensing boards are to proceed with the orderly resolution of current proceedings notwithstanding the pendency of the rule making hearing. This position is, moreover, perfectly reasonable since the ECCS Interim Acceptance Criteria are regulations of the Commission currently in effect.

^{2/} CCPE is presumably referring to the Atomic Energy Commission document ROE: 71-4, dated March 31, 1971. As shown in that document the incident referred to occurred in a boiling water reactor, and the reactor was already shut down when the alleged technical specification violation by the operators occurred with respect to high pressures. According to the report, no measurable radioactivity was released to the site or environs.

^{3/} 37 Fed. Reg. 288 (1972).

Finally, the thread running through CCPE's entire argument is that "safety has been compromised" by decisions or actions of the Applicant or the Staff. CCPE never states the circumstances under which it believes Indian Point Unit No. 2 could operate without improperly compromising safety. In fact, the record demonstrates that from CCPE's point of view no such circumstances exist, because CCPE is fanatically devoted to the principle that this plant should not be permitted to operate regardless of how much evidence is introduced concerning its safety.

Only if this plant never operates will it present no radiological risks -- no "compromise of safety" in CCPE's terminology. This Board, however, has been charged by the Commission to consider the application for an operating license for Unit No. 2 in the frame of reference of the Atomic Energy Act and the AEC's regulations. Contrary to the position of CCPE, both the Act and the regulations implicitly recognize that the utilization of nuclear reactors for the purpose of producing electric power is in the public interest and that such plants are not inherently too dangerous to be allowed to operate, if prescribed safety requirements are satisfied. It is the function of this Board to determine, through the

exercise of its informed judgment, whether those requirements have been satisfied.

B. ADEQUACY OF REGULATORY STAFF RADIOLOGICAL SAFETY REVIEW

CCPE devotes a major portion of its memorandum in support of its proposed findings to the assertion that the Regulatory Staff review in this proceeding has been inadequate and that therefore Applicant is not entitled to a license.^{4/} The Staff review of Indian Point 2 was fully adequate. However, CCPE's entire argument is based on a mistaken and unfounded assumption about what the role of the Regulatory Staff is in a proceeding such as this one. The adequacy of the Staff review is not an issue in this hearing. The notice of hearing published on November 17, 1970, specifies the issues to be considered in this hearing, and those issues do not include the adequacy of the Staff review.^{5/}

^{4/} This argument, incidentally, springs full blown in CCPE's proposed findings filed on February 8, 1972 and was not identified in any of CCPE's statements of contentions during over a year of hearings. There is no reason why CCPE could not have raised this legal argument long before now.

^{5/} Furthermore, those issues correspond to those required to be considered under the Commission's regulations. See 10 CFR Section 50.57(a).

CCPE cites no statutory or constitutional authority for the proposition that the adequacy of the Staff review must be an issue, for no such authority exists. The only authority to which CCPE refers is Section 2.104 of the Commission's Rules of Practice. CCPE is presumably referring to subsection (b) of that section, which specifies the adequacy of the Staff review as an issue in uncontested construction permit hearings.^{6/} This provision is totally inapplicable to a proceeding such as ours, which is neither on

^{6/}10 CFR Section 2.104(b) reads as follows:

* * *

"(b) In the case of an application for a construction permit for a facility on which the Act requires a hearing, the notice of hearing will, unless the Commission determines otherwise, state, in implementation of paragraph (a) (3) of this section:

(1) That, if the proceeding is a contested proceeding, the presiding officer will consider the following issues:

(i) Whether in accordance with the provisions of Sec. 50.35(a) of this chapter;

(a) The applicant has described the proposed design of the facility, including, but not limited to, the principal architectural and engineering criteria for the design, and has identified the major features or components incorporated therein for the protection of the health and safety of the public;

(b) Such further technical or design information as may be required to complete the safety analysis, and which can reasonably be left for later consideration will be supplied in the final safety analysis report;

a construction permit nor uncontested. The regulations provide completely different issues for a contested operating license hearing such as ours.

6/ (Continued)

(c) Safety features or components, if any, which require research and development, have been described by the applicant and the applicant has identified, and there will be conducted, a research and development program reasonably designed to resolve any safety questions associated with such features or components; and

(d) On the basis of the foregoing, there is reasonable assurance that (1) such safety questions will be satisfactorily resolved at or before the latest date stated in the application for completion of the proposed facility; and (2) taking into consideration the site criteria contained in Part 100 of this chapter, the proposed facility can be constructed and operated at the proposed location without undue risk to the health and safety of the public;

(ii) Whether the applicant is technically qualified to design and construct the proposed facility;

(iii) Whether the applicant is financially qualified to design and construct the proposed facility;

(iv) Whether the issuance of a permit for the construction of the facility will be inimical to the common defense and security or to the health and safety of the public.

(2) That, if the proceeding is not a contested proceeding, the presiding officer will, without conducting a de novo evaluation of the application, determine whether the application and the record of the proceeding contain sufficient information, and the review of the application by the Commission's regulatory staff has been adequate, to support affirmative findings on subdivisions (i) through (iii) specified in subparagraph (1) of this paragraph (b) and a negative finding on subdivision (iv) specified in subparagraph (1) of this paragraph (b) proposed to be made and the issuance of the construction permit proposed by the Director of Regulation."

The difference with respect to the issue of adequacy of Staff review is no accident. In the uncontested construction permit situation it is the Staff which makes the ultimate safety findings, and the role of the Board is more limited than in a contested hearing. The adequacy of the Staff review to support its own findings therefore becomes important. However, in a contested proceeding, where it is the Licensing Board which makes the ultimate safety findings, it is the adequacy of the record before the Board (of which information developed by the Staff is only a part) which is crucial in determining the correctness of a decision by the Board. The Staff's duties are to review the application, to publish a safety evaluation, to be a party to the proceeding, and actually to issue any licenses which it is authorized or directed to issue.^{7/}

^{7/}See 10 CFR §§ 1.12, 1.120, 2.4(1), 2.102, 2.701(b), Part 2 Appendix A, ¶¶ II.(e) and III.(c) (2). See particularly 10 CFR § 1.12 which delegates the licensing functions of the Commission to the Director of Regulation except where final decisions rest with a hearing examiner, a licensing board, or the Commission after hearing.

As shown in more detail below, the Staff review has been in fact adequate in every respect. Nevertheless, even assuming that it were not, any deficiency in the Staff review leading to its conclusions may be remedied for the purposes of the Board decision by supplementary evidence in the hearing. To illustrate, CCPE considers that the Staff review of the New York State Emergency Plan was not sufficiently detailed. Applicant's position is that it was, but even if it were not, the Board is entitled to conduct its own review and to rely upon the extensive additional testimony presented by the Applicant and New York State during the hearings to support a finding that the emergency plan meets regulatory requirements. It would be absurd if the Board, faced with an adequate record of information to support a safety finding, could not make that finding merely because all the information had not been considered by the Staff in the review and brought out in the Staff's testimony. To the contrary, a major purpose of the hearing process in a contested case is to enable the Board to explore and independently develop information not considered by other parties to the proceeding.^{8/} That, indeed, is what this Board has done.

^{8/} The Staff is a party to each proceeding under 10 CFR § 2.701(b).

CCPE cites a number of court decisions purportedly in support of its theory that the Staff has failed to do its duty. Each of these decisions places significant responsibilities on the shoulders of an administrative agency as a whole. But none of them bears upon the role of the Staff in particular in conducting its radiological review. Office of Communication of the United Church of Christ v. FCC^{9/} dealt primarily with a question of standing and held that representatives of the listening public were entitled to a hearing on a television broadcast license renewal application. Shannon v. United States Department of Housing and Urban Development^{10/} held that the agency erred in not considering the factor of racial concentration in its financial support for aspects of an urban renewal plan. Scenic Hudson Preservation Conference v. FPC^{11/} and Michigan Consolidated Gas Co. v. FPC^{12/} stand for the proposition that where an agency has a planning function under its statute and where it is required by its statute to consider alternatives, it must consider and develop an adequate record on all alternatives regardless of

^{9/} 359 F.2d 994 (1966).

^{10/} 436 F.2d 809, 819 (3d Cir. 1970).

^{11/} 354 F.2d 608, 621 (2d Cir. 1965), cert. denied, 384 U.S. 941 (1966).

^{12/} 283 F.2d 204, 224 (D.C. Cir. 1960).

whether the alternatives are proposed by the parties. Greene County Planning Board v. FPC^{13/} held that under the National Environmental Policy Act an agency has a duty to prepare its own detailed environmental statement (rather than relying entirely on an applicant's submittal) in time for it to be subject to scrutiny during the hearing process. That case did bear upon the role of an agency staff in preparing a detailed environmental statement under the National Environmental Policy Act, to the extent that the Staff had been delegated the responsibility to do so by the agency. But no detailed environmental statement is involved or required for the limited operation license under consideration here. 10 CFR 50 Appendix D, Section D.2.

Implicit in the Scenic Hudson and Michigan Consolidated decisions is the idea that the agency (or Board) may authorize issuance of a license after seeking out and considering factors not raised by a party. It follows that the Staff review in particular is not crucial under these decisions so long as the decisions and findings of the agency are based upon an adequate record.

The record before this Board includes over 6,000 pages of written material submitted to the AEC commencing with

^{13/} Docket Nos. 71-1991, 71-1996 (2d Cir., Jan. 17, 1972).

filing of the Final Facility Description and Safety Analysis Report and before the hearing began; over 4,700 pages of transcript of hearings which represent 25 days of hearing held over the past fourteen months; and hundreds of pages of additional prepared testimony and exhibits. This record adequately airs the principal technical questions associated with the safety of operation of Unit No. 2.

In any event, the review of the application by the Regulatory Staff has fully satisfied the requirements of law. CCPE attempts to paint a picture of the Staff participation in this proceeding as pro-applicant and preoccupied with getting the plant licensed rather than representing the public interest. A review of the entire record makes it evident that this is not the case. Since October 14, 1966, when a provisional construction permit was issued for Unit No. 2, the plant under construction and the application for an operating license have been subjected to multiple independent reviews by the AEC Regulatory Staff and by the independent Advisory Committee on Reactor Safeguards. The technical review of the application prior to the hearing alone included a total of about 1,300 man-days of technical effort. It extended over a period of about two years prior to the commencement of the hearing, during which over 30 meetings were

held by the Staff with representatives of the Applicant and its principal contractors. In addition, the Applicant met with the Advisory Committee on Reactor Safeguards on a number of occasions, which conducted an independent review of the application. The application was also reviewed by consultants to the AEC Staff on site-related subjects and on plant structural design. These consultants included the Environmental Sciences Services Administration, the U. S. Geological Survey and Coastal Engineers Research Center, the U. S. Department of the Interior, and Nathan M. Newmark, Consulting Engineering Services.

The Staff review was conducted informally in accordance with Section 2.102 of the Commission's regulations. It resulted in hundreds of formal questions and requests for information from the Staff, which in time resulted in a total of twenty-five amendments to the application. The chronology of meetings, submittal of amendments and other aspects of the regulatory review are set forth in detail in the Staff Safety Evaluation.^{14/} Involved in these amendments were numerous changes in mechanical design, structural design, construction practices, reactor protection system design, electrical system

^{14/} Safety Evaluation by the Division of Reactor Licensing [hereinafter Staff Safety Evaluation], Nov. 16, 1970, pp. 81-87 (follows Tr. 405).

design, and administrative practices.^{15/}

Furthermore, the Regulatory Staff through its Division of Compliance has throughout the entire period of construction conducted extensive inspections to insure that the plant as built conforms with the application, the rules and regulations of the Commission, and the terms of the construction permit.^{16/} These inspections have on occasion uncovered items of noncompliance, which Applicant has been required to correct.

As a result of the review process the Applicant was able, by supplying information and making design changes to demonstrate to the Staff the safety of the plant. The Staff determination is reflected in its initial evaluation dated November 16, 1970.^{17/} This evaluation is 116 pages long and represents a thorough review of the application. The conclusions of the ACRS also support the safety of the plant.^{18/}

^{15/} For a more detailed description of the Staff review, see Tr. 296-305.

^{16/} These inspections are reported in the record of this proceeding. Supplement Nos. 1 and 2 to Staff Safety Evaluation (follows Tr. 405 and 914 respectively).

^{17/} Staff Safety Evaluation, supra note 14.

^{18/} The chronology of meetings with the ACRS, as well as its conclusions, are found in the Staff Safety Evaluation at 88.

This process is exactly what is contemplated by the Commission's regulations. By no stretch of the imagination can it be characterized as the Staff adopting the Applicant's position. It could correctly be described as the Applicant adopting the Staff's position. Such an extensive process would not have occurred if the Staff were interested only in getting the plant on the line, as CCPE suggests.

The Staff is ordinarily required to publish its safety evaluation containing its position on the application well before the hearing begins.^{19/} As a natural consequence of this requirement, the Staff and the Applicant almost invariably approach an AEC licensing hearing taking essentially the same position on the safety issues involved. While it is theoretically possible for this not to happen, it would ordinarily be foolhardy for an applicant to request approval of a design in the hearing which the Staff had reviewed and determined not to be safe.^{20/}

^{19/} 10 CFR Part 2, Appendix A, Sections II(e) and III(c)(2).

^{20/} There is nothing reprehensible about requiring the Staff review to be completed before the hearing. Because of the complex technical areas which must be considered at length it is logical that the application should meet some threshold of approval by an arm of the Commission before it is entitled to enter the hearing process.

Once the hearing begins the Staff ordinarily plays a rather limited role, that of supporting its safety evaluation with witnesses as necessary. The Staff may give the appearance of supporting the Applicant simply because it has already completed its review and has satisfied itself as to the adequacy of the application. In fact, both the Staff and the Applicant are supporting a position that the plant is safe, a decision arrived at only after a long and arduous review process. Another reason for the relatively limited role of the Staff in the hearing is that Applicant, as CCPE repeatedly points out, has the burden of proof to satisfy the Board with respect to the issues in the hearing. If a question arises as to the adequacy of the record on a given point, it is ordinarily the Applicant which must come forward with testimony to satisfy whatever concern the Board may have. The additional evidentiary presentation made by Applicant with respect to reactor vessel integrity is an example of such a situation.

Of course, new information or requirements may arise during the course of the hearing which may require further review or participation by the Staff. This has happened during the course of this proceeding and in each instance the Staff has conducted a thorough review and has reported the

results to the Board. For example, a supplement to the Safety Evaluation has been provided which updated the current status of the inspections by the Division of Compliance.^{21/} Also, following promulgation of the ECCS Interim Acceptance Criteria, the Staff conducted a review of over two months' duration, during which it considered information supplied by the Applicant as to compliance with the Criteria. The result was another supplement to the Staff Safety Evaluation, dated September 3, 1971.^{22/} A further example was the supplemental Staff testimony submitted on December 14, 1971, evaluating certain aspects of Applicant's newly proposed changes in its security plan.^{23/}

Turning to the specific instances of Staff performance cited by CCPE, it becomes evident that CCPE's insinuations bear little relation to reality:

1. CCPE for some time has been seeking to have the Board take official notice of a large number of background documents relating to nuclear technology, particularly the question of emergency core cooling system performance. The

^{21/} Supplement No. 2 to Staff Safety Evaluation, dated July, 1971 (follows Tr. 914).

^{22/} Supplement No. 3 to Staff Safety Evaluation (introduced into evidence at Tr. 2715).

^{23/} Follows Tr. 6, Dec. 14, 1971, in camera.

question of whether official notice should be taken is still under consideration by the Board. CCPE criticizes the Staff's position opposing official notice and argues that in any event the Staff should obtain witnesses and sponsor all these documents in evidence.

First, in most instances the documents form a part of the background of the Commission's promulgation of the June 29, 1971 Interim Acceptance Criteria on emergency core cooling systems, rather than bearing on any issue of compliance with the Criteria. As such, they would be most relevant to CCPE's Calvert Cliffs challenge of the Interim Criteria. In a Calvert Cliffs challenge the intervenors have the burden of coming forward with evidence which they believe justifies reconsideration by the Commission of a regulation. The Staff's duties cannot possibly be interpreted to include the duty to make a Calvert Cliffs challenge at the suggestion of an intervenor.^{24/}

In this connection CCPE's assertion that everything which was considered by the ECCS Task Force is relevant to the issues in this proceeding is absurd. On the contrary, thorough consideration of a matter in the promulgation of a rule generally makes case-by-case consideration of that matter

^{24/} In the Matter of Trustees of Columbia University, Dkt. No. 50-208, Memorandum and Order, ASLAB, Oct. 15, 1971.

unnecessary. This also explains the understandable reluctance of Staff counsel to permit extensive and detailed cross-examination in this proceeding on the day-by-day events leading to the promulgation of the ECCS Interim Criteria. Such questioning is appropriate at most in a rule making proceeding.

CCPE claims that the Staff must introduce into evidence "all relevant data". The Staff in its review actively investigates and passes upon questions concerning the safety of Unit No. 2 which in its expert judgment it feels are significant. There are hundreds of thousands of pages of technical information in the literature which one person or another might think is relevant to the safety of Indian Point No. 2. The Staff review must necessarily involve a sorting process to determine what it feels worthy of substantial review. What the public interest requires is that the Staff state on the record what the results of this extensive investigation are. There is no requirement that the Staff also serve as an information gathering body and inundate the public record with "all relevant data" as suggested by CCPE. Selectivity is the function of both the Staff and the Board.

The Staff has read documents cited by CCPE and has considered them in its review to the extent it feels this is required. Similarly, if the Board in reading these documents

as a part of its general background and expertise is troubled by information in such documents it can insist that a specific matter be explored in the hearing. But, beyond this the duties of the Board and the Staff do not go. Of course CCPE is entitled to present any competent evidence it may have in order to persuade the Board that a significant safety question does exist. CCPE has failed to do this. The Staff's duties do not extend to producing information which CCPE feels is relevant and significant when the Staff believes otherwise.

CCPE describes the Staff's position on CCPE's documents as an attempt to "conceal" relevant data. The Staff is concealing nothing. These documents are in the open literature and undoubtedly most or all have been read by CCPE, the Applicant, the Staff, and the Board. Copies of them have been supplied to CCPE and, where requested, to the Board. CCPE has been afforded liberal opportunities to cross-examine the Applicant's and the Staff's witnesses on the basis of these documents and could have introduced direct testimony relating to them. The question is not one of concealment but of whether these documents deserve evidentiary status in this proceeding.

2. CCPE asserts that the Staff's review of the Applicant's and New York State's emergency plans was inadequate. In fact, there was an extensive review by the Staff of emergency planning for Unit No. 2 which resulted in a considerably revised and upgraded plan being submitted by Applicant by amendment to the application.^{25/}

The Staff further discussed the substance of emergency planning by New York State in a series of meetings with representatives of the State (reflected in the July 7, 1971 Supplementary Testimony of Sherwood Davies, page 8, follows Tr. 1754) which resulted in the submission of New York State's emergency plan (New York State Exhibit 2) and related testimony by State representatives. The Staff reflected its conclusions as they pertain to the appropriateness of New York State's emergency planning in the document sponsored by Mr. Thompson entitled "Extent of Advance Emergency Planning for Coping With Potential Accidents" (follows Tr. 3802). The fact that during the hearing the Staff suggested no changes in New York's plan as submitted means only that the plan was felt to be adequate. Moreover, Mr. Thompson's remarks concerning his informal review of New York State's emergency planning were obviously meant to convey the thought that the Atomic Energy

^{25/} See FSAR, Response to Question 12.5.

Commission has no authority to regulate the manner in which the State's responsibilities are carried out (Tr. 3804).

3. CCPE argues that the Staff in a number of respects failed to consider alternatives which would result in the "safest possible plant". This is a misconstruction of the regulatory requirements. The Atomic Energy Act and the Commission's regulations set standards of safety, and an applicant is entitled to a license if it meets those standards. In this respect the Atomic Energy Act requirements differ from those of other Federal agencies which have broader standards of regulation which require consideration of alternatives.^{26/} There is no basis for requiring the Staff to recommend approval only of the "safest possible plant."

In this connection it is impossible to have absolute safety in a nuclear plant. The Commission in promulgating its regulations and establishing regulatory requirements defines the degree of safety which is required. This was recognized by Congress when it authorized the Atomic Energy Commission to license nuclear power reactors and this concept was confirmed in Power Reactor Development Co. v. IUEW.^{27/} In

^{26/} E.g. the Federal Power Commission standard for licensed hydroelectric projects states that they "...will be best adapted to a comprehensive plan for improving or developing a waterway or waterways..." Federal Power Act, Section 10 (a). 16 U.S.C. § 803(a).

^{27/} 367 U.S. 396 (1961).

that case the Supreme Court overturned a lower court decision which held that a reactor could not be located near a large population center except for "compelling reasons".

(In effect, the lower court decision would have required consideration of the alternative of siting the plant elsewhere.)

The Supreme Court said:

"The statute and regulations say nothing about 'compelling reasons'. Of course Congress (and the Commission, too, for that matter) had the problem of safety uppermost in mind, and of course that problem is most acute when a reactor, potentially dangerous, is located near a large city. But the Commission found reasonable assurance, for present purposes, that the reactor could be safely operated at the proposed location, and that is enough to satisfy the requirements of law."^{28/}

It is always possible to take any plant design, no matter how safe, and submit a hundred ways in which it could be made "safer". The trouble is that there is no end to this process. The AEC has correctly exercised its expert judgment in drawing the line as to "how safe is safe".

4. CCPE argues that Staff judgments are illegally affected by considerations of need for power from the plant. It cites the fact that certain design features are not required by the Staff (or by the ACRS) to be installed until

^{28/} Id. at 414.

some period of time after operation of the reactor begins. On the basis of this fact, CCPE constructs out of whole cloth the theory that the reason the Staff agreed to this delay was because of its "pre-occupation with the electric output of this plant." CCPE cites no evidence whatsoever that the Staff considered the need for power in reaching these determinations. In fact the evidence is to the contrary (Tr. 904). The Staff's decision that operation is acceptable for a limited period without certain features is based upon its judgment that such operation will be safe and will meet regulatory requirements. This is no more a "compromise of safety" as CCPE puts it than is the decision to allow the plant to operate at all. Every Staff determination authorizing the safe operation of this plant, whether it involves a decision to authorize operation under certain conditions, or under these conditions for a limited period of time, necessarily involves an informed judgment of the potential risks involved. That is the job which has been properly entrusted to the Staff by the Atomic Energy Act and the Commission's regulations.

Similarly, CCPE makes much of the fact that the technical specifications imposed by the Staff provide Applicant the operational flexibility to continue operating under

certain circumstances when levels of radioactive releases exceed those normally considered "as low as practicable." CCPE characterizes this as a compromise of the public health and safety for the sake of satisfying power demands. First, this feature of the technical specifications was not invented by the Regulatory Staff for the Unit No. 2 license but is taken directly from the rules and regulations of the Commission (10 CFR 50.36a.). Second, radioactive releases must in any event be within the levels specified by Part 20 of the Commission's regulations. Use of the operational flexibility provided in these regulations, and the consequent release of fractions of the levels of radioactivity permitted by Part 20, does not represent an unsafe condition in any sense.

Finally, CCPE criticizes the technical specifications which permit continued operation of the plant for limited periods of time (generally a matter of hours) with certain components or portions of safety systems out of service. Contrary to the impression CCPE would like to create, Applicant is not riding on the brink of disaster during these periods. Redundant systems are involved, and in all cases there are sufficient safeguards operable to perform the intended function.

These safeguards are intended to protect against extremely low probability occurrences which are simply not expected to happen. The concept of a reduction in redundancy for a relatively insignificant portion of the plant lifetime is perfectly consistent with the concept of a safe plant.

To conclude, the public interest in having a safe plant which meets regulatory requirements has been well represented and protected by the Regulatory Staff review. CCPE is a party to the proceeding which has a different point of view from that of the Applicant, the Staff, and the ACRS as to the safety of operation of Indian Point No. 2. It has produced no witnesses at all in support of its views. Instead, it asserts that the Staff failed in its duty in not taking up CCPE's cudgel. Nothing short of full adoption by the Staff of CCPE's position would satisfy CCPE that the Staff had done its job. But CCPE's implacable determination to prevent this plant from operating and the Staff's duty are not the same. With respect to the determination whether Unit No. 2 is safe enough to operate CCPE certainly has no more justification in claiming to represent the public interest than any other party to this proceeding. It has a right to be heard as to its views but, if those views are unpersuasive, it has no right to have those views adopted either by the Staff or by this Board.

C. BALANCING OF FACTORS UNDER 10 CFR 50 APPENDIX D SECTION D.2

On pages 140 through 145 of its memorandum in support of its findings CCPE asserts that the Staff's testimony^{29/} with respect to the factors to be considered under 10 CFR 50, Appendix D, Section D.2 was legally inadequate. CCPE argues that the Staff improperly evaluated certain benefits and costs, that it failed to include an adequate discussion of alternatives as allegedly required by NRDC v. Morton,^{30/} and that it failed to circulate its statement to the various Federal and state agencies for comment.

CCPE conveniently overlooks the fact that the procedure provided by Appendix D, Section D.2 is a strictly interim one which applies explicitly to the situation pending completion of the full NEPA review where the requirement that a detailed environmental statement be prepared and circulated among the agencies has not yet been met.^{31/} For a 50% testing license being considered under that procedure, there is no requirement for circulation of any document among the various

^{29/} Discussion and Conclusions by the Division of Reactor Licensing U. S. Atomic Energy Commission Pursuant to Appendix D of 10 CFR Part 50 Supporting the Issuance of a License to Consolidated Edison Company of New York, Inc. Authorizing Limited Operation of Indian Point Unit No. 2, December 30, 1971 (follows Tr. 4412).

^{30/} No. 71-2031, D.C. Cir., Jan. 13, 1971.

^{31/} 10 CFR 50, Appendix D, Sections A.1 through A.11, D.2.

agencies. Second, a benefit-cost analysis is not required in the same sense as it is for a full NEPA review. What is required is a balancing by the Board of certain factors, among which is the effect of delay of facility operation upon the public interest.

Throughout CCPE's discussion of this point are repeated assertions that the Staff's balancing of factors and other aspects of the Staff presentation are inadequate. Again, there is no requirement that the Staff's balancing of factors be correct or, indeed, that it balance the factors at all. NRDC v. Morton is inapplicable to the Staff role here because no detailed environmental statement is required for a 50% testing license. The legally important consideration is that the Board (or Commission) balance certain factors based upon the record before it. That record includes, in addition to the Staff's position, testimony by Applicant on all aspects of the factors which must be considered by the Board, including extensive information on the need to have Indian Point No. 2 available and the lack of adequate alternative sources of supply to fill that need. For references to the record, see "Applicant's Proposed Findings of Fact and Conclusions of Law in the Form of a Proposed Initial Decision - Part II", filed on February 8, 1972.

Since some of CCPE's criticisms of the Staff's balancing of factors may bear upon the manner in which the Board (or Commission) carries out its balancing, we address them here. CCPE argues that the Staff in assessing the radiological impact of the facility should have used the same conservatively calculated accident consequences as it uses in its basic safety evaluation, rather than using realistic calculations. The conservative calculations are appropriate where one is attempting to achieve a design which will insure that accident consequences will be within acceptable limits. But the balancing of factors required by Section D.2 has an entirely different purpose. Under this section the probable environmental impact of plant operation is to be assessed. Realistic calculations are the only appropriate way where the objective is to assess the environmental burden upon society represented by the accident potential of Unit No. 2. Otherwise, a meaningful balancing could never be performed. Furthermore, the Staff is entitled to follow a proposed regulation as an expression of Commission policy and practice.^{32/} CCPE's confused argument at the latter part of page 141 of

^{32/} Proposed Annex to 10 CFR 50 Appendix D: Discussion of Accidents in Applicants' Environmental Reports: Assumptions, 36 Fed. Reg. 22,851 (1971).

its memorandum has no merit. The fact that the probability of an incident (such as pipe break) must be considered as well as its consequences in assessing the risk has no bearing on the manner of calculation of the consequences.

CCPE also claims that the Staff erred in its presentation of the benefits of the proposed 50% testing license. According to CCPE the potential benefits of operation should not be considered as benefits of the testing license. As noted earlier, it is the adequacy of the record before the Board rather than the adequacy of the Staff's review which is important. In any event, the principal benefit to be obtained from a testing license is the availability of Unit No. 2 to supply power on a timely basis assuming that as a result of a NEPA review it is determined that the plant should operate. Evidence in the record supports a finding that issuance of the requested testing license would enable the plant to be ready to produce power reliably at a time when there will be a vital need for the output of the plant (Tr. 4704-4707). In other words, the benefit of the plant's availability to meet demand will be achieved by issuing the testing license even though the license to operate at steady-state levels has not been issued. It is perfectly proper to put the need for the testing license in perspective by

discussing the need for power from the plant, as the Staff did on pages 44-47 of its December 30, 1971 environmental impact statement. Such evidence assists the Board to determine the effect on the public interest of delay in issuing the testing license. However, the costs of steady-state operation need not be dealt with in the record since such costs cannot occur until after the review required by NEPA and the Commission's regulations has been completed and a license to operate the plant for steady-state power production has been issued.

In summary, as demonstrated by Part II of Applicant's Proposed Findings and Conclusions filed February 8, 1972, the record in this proceeding has been developed adequately for purposes of the balancing to be performed by the Board (or the Commission) under 10 CFR 50, Appendix D, Section D.2. Moreover, the record supports the issuance of the requested testing license.

D. EFFECT OF NEED FOR POWER FROM INDIAN POINT NO. 2 UPON
SAFE OPERATION OF THE FACILITY

As a part of its evidentiary presentation in support of a testing license up to 50% of full power, Applicant was required to present evidence to the Board on the effect of delay in facility operation upon the public interest,

including the need for power from the facility and the availability of alternative means of supplying that power. Under 10 CFR 50, Appendix D, this factor must be considered along with environmental and other factors in determining whether such a license should be issued.^{33/} In response to this requirement Applicant presented evidence on the continuing power crisis which has afflicted the New York metropolitan area and its predictions as to the extent of this crisis in the near future should Indian Point No. 2 be unavailable to produce power.

CCPE has presented a commendable summary of the need for power from Indian Point No. 2 at pages 129 through 133 of its memorandum in support of its proposed findings. By pointing to Applicant's statements CCPE is attempting to show that Applicant is so preoccupied with satisfying

^{33/}

Such evidence on need for power does not, of course, bear upon the degree of safety which is required for the plant under the Commission's regulations.

power demands that it will operate Unit No. 2 in an unsafe manner in order to meet these demands.^{34/}

Applicant cannot pretend that it is not concerned about the consequences of an insufficient supply of electric power to the people of the New York area. These consequences can be serious, as shown in Applicant's testimony. And Indian Point No. 2 is in fact an essential part of the comprehensive construction program being carried out by Applicant to bring to an end the recurring power shortages in its service area.

But it is another matter to conclude from this situation that the Applicant will not operate the plant safely. CCPE's tired assertions to this effect have no basis in the record. In fact, the record shows^{35/} that

^{34/} It is noteworthy that CCPE in the early part of the hearing was arguing that there was no need of power from the plant and that therefore the Board should deny a license because the risks of operation outweighed its benefits. This about-face obviously was the result of a decision by CCPE to beat a strategic retreat from its earlier position while still satisfying an unswerving devotion to the principle that Indian Point 2 shall not operate. Notwithstanding the "shifting sands" tactics of CCPE in reversing itself to follow whatever legal argument appears appealing at the time, CCPE's position is still indefensible.

^{35/} See Applicant's Proposed Findings No. 15 through 20 and references cited therein.

notwithstanding any demands for power the Applicant will not operate the plant in an unsafe condition.^{36/} This is confirmed by Applicant's performance in connection with operation of its Unit No. 1, and by the fact that all operators will be AEC licensed and have training which emphasizes the paramount importance of the public health and safety. If from a safety standpoint the reactor should be shut down during a power crisis, the reactor will be shut down. A review of the testimony of Applicant's witnesses responsible for operation will confirm the seriousness of their commitment to the public health and safety.^{37/}

^{36/} In this connection, Con Edison does not "have all its light bulbs in one reactor." The effect of licensing of Unit No. 2 will be to increase the reserve margin of Con Edison to a more nearly acceptable level, thus providing leeway for the unanticipated shutdown of Indian Point No. 2 or any other unit on the system.

^{37/} Additional Testimony of Applicant, Part II, dated July 8, 1971, pp. 1-2 (follows Tr. 894); Tr. 1386-89, 1417-19, 1426-30.

III.
APPLICANT'S REPLY TO CCPE'S
SPECIFIC PROPOSED FINDINGS OF FACT
AND CONCLUSIONS OF LAW

1. through 1.e

The sequence of events hinted at in paragraphs a. through e. will not occur in Unit No. 2 since there are provisions to prevent the highly unlikely loss of coolant accident as well as the means to prevent a major meltdown of the core following a postulated loss-of-coolant accident. (Applicant's Proposed Findings of Fact and Conclusions of Law in the Form of a Proposed Initial Decision with Respect to Motion for 50 Percent Testing License, Part I, dated January 28, 1972 ["Applicant's Proposed Findings"], Finding No. 44 and references cited therein.) With respect to CCPE's Finding 1.c., the hypothetical reactor accident analyzed in WASH-740 and referred to by CCPE did not take into account the containment such as that surrounding Unit No. 2 nor the engineered safeguards incorporated therein. In addition the references cited in CCPE's finding No. 1.e. do not support the conclusion that "[t]he consequences of a major meltdown of the core while not fully understood would be clearly catastrophic." CCPE Exhibit A, pages 139-148, does not indicate a clearly catastrophic event but rather emphasizes the

considerable length of time for core meltdown to reach the containment. The testimony cited at Tr. 3983-85 indicates uncertainties concerning the consequences of core meltdown but does not draw the conclusions that clearly catastrophic consequences would occur.

2.

Applicant agrees that the engineered safeguards provide "assured protection" to the public from the consequences of a postulated accident.

2.a.

Finding 2.a. does not contradict Applicant's proposed finding that the facility is designed so that the health and safety of the public is protected. In the highly unlikely event of a loss-of-coolant accident, the emergency core cooling system will protect against a meltdown of the core, and it is this design which results in the Applicant's and the Staff's determination that Applicant need not design against the consequences of a major meltdown of the core. (Applicant's Proposed Finding No. 44 and references cited therein.)

2.b.

With the ECCS functioning properly the guidelines set forth in 10 CFR Part 100 will be met even if the other

engineered safeguards are functioning in a severely degraded condition. (FSAR, Section 14.3.5, Question 14.1.)

3.

Applicant has demonstrated that the engineered safeguards for Unit No. 2 have been adequately tested to assure that they will fulfill their designed function in the event of all accidents up to and including the design basis accident. (Applicant's Proposed Findings No. 46-79 and references cited therein.)

3.a.2.

Applicant has included in the design of the facility reasonable and adequate consideration of any uncertainties associated with predicting the effectiveness of the spray system. (Applicant's Proposed Findings No. 50-53 and references cited therein.)

3.a.2.a.

In addition to tests on drop size conducted by the manufacturers of spray nozzles, reliable tests have also been conducted by Westinghouse and by Oak Ridge National Laboratory. (FSAR, App. 6A; Question 6.2; Tr. 1326-27; 1478.)

3.a.2.b.

The reference cited does not support the finding. The transcript refers to data from tests on uniformity of

nozzles rather than tests on performance.

3.a.2.c.

The effect of interaction between adjacent spray nozzles was included in plant performance analyses by adding the contribution of multiple nozzles to the interactive droplet population. (FSAR, App. 6A; Question 6.2.)

3.a.2.d. through 3.a.2.e.

Tests of nozzles included simulation of post-LOCA containment pressure and analysis of drop trajectory. (FSAR, App. 6A; Question 6.2.) Conservative allowances have been made for these effects in the design of the containment spray system. (Applicant's Proposed Finding No. 53 and references cited therein.)

3.a.2.f.

Tests described in FSAR, App. 6A provide general verification of drop size.

3.a.2.g.

Applicant in determining the spray effectiveness has not disregarded the factors set forth by CCPE but rather has considered these factors and has determined that the assumption of uniform mixing is conservative. (Applicant's Proposed Finding No. 53(d) and references cited therein.)

3.a.2.h.

The effectiveness of the sprays is calculated by using the worst case, i.e. the initial conditions, where the incoming spray water is cold and the reactor atmosphere is at its peak temperature and pressure. The calculations do not consider the precise temperature in the containment the moment the sprays are activated because it has been determined that there is no significant quantitative effect resulting from such variation during the initial phase of the LOCA. (Tr. 1528-34.)

3.a.2.i. through 3.a.2.k.

Adequate margins have been provided for the effects of these phenomena on the performance of the spray system. (Applicant's Proposed Finding No. 53 and references cited therein; Tr. 1507.)

3.a.2.l. through 3.a.2.m.

The differences between sodium hydroxide and sodium thiosulfate as spray additives in removing elemental iodine, organic iodides and hypiodous acid are not significant. (Tr. 1616-17; 1625-31; 1634-35.) In addition, the difference in reaction reversal between the two additives produces only a negligible effect on net iodine removal rate.

(Tr. 1632-33.) During its review Applicant also considered the negative factors attributed to sodium thiosulfate, such as stability and reliability. (Tr. 1637-45; 1649-50.) In any event, Applicant is not required to demonstrate that it has selected the spray additive with the highest iodine removal capacity. See p. 25 of Memorandum of Law in Support of Applicant's Reply to CCPE's Proposed Findings of Fact and Conclusions of Law ("Applicant's Memorandum of Law") supra.

3.a.2.n.

The references cited by CCPE do not support this conclusion. (See FSAR, App. 6A; Tr. 1546-52.)

3.b.1.

Test conditions for which filter efficiency was 12% do not obtain in the case of the postulated design basis accident. (See Applicant's Proposed Finding No. 50(b) and references cited therein.)

3.b.2.

The statement by CCPE is misleading in that during the first two hours the filters are operating although during this period the filters do not account for a significant reduction of iodine. In determining that Part 100 limits are met this phenomenon is adequately considered.

3.b.3.

CCPE incorrectly contends that Applicant's assumed 70% rate of efficiency has not been justified as conservative by experimental data. (Applicant's Proposed Findings No. 49-50 and references cited therein.)

3.b.4.

CCPE is incorrect in its contention that there is no additional experimental data to justify the Staff's assumption concerning filter efficiency. (Applicant's Proposed Findings No. 49-50 and references cited therein; Tr. 1547-50.)

3.c.1. through 3.c.2.

Applicant has fully described the hydrogen control system for Unit No. 2. Adequate evidence is in the record to determine that the pressure in the containment subsequent to a LOCA will exceed 5 psig for only a short period and that the hydrogen control system is not needed or intended to operate during this time. (Applicant's Proposed Findings No. 46-47 and references cited therein.)

3.c.3.a. through 3.c.3.d.

The references cited therein indicate that these proposed findings are inconsequential. For example, the

additional hydrogen produced under the ECCS interim criteria assumptions is much less than that used in the hydrogen analysis (2%). (See Tr. 2153 and 2279 for Indian Point calculation for zirconium water reaction less than .07%.)

3.c.3.e.

The references cited by CCPE do not indicate that an explosion would occur. In addition, information contained in the FSAR does indicate that the containment structure and the fan coolers are able to dissipate any additional heat resulting from the recombination of hydrogen. (FSAR, page 14.3.4-3; Additional Testimony of Applicant, Part I, July 6, 1971, follows Tr. 892, pp. 1-2.)

3.d.1.

A containment leak rate of 0 or no more than 0.1% for one minute following a LOCA was assumed only for the specific accident analysis in which the weld channel pressurization system and isolation valve seal water system were assumed available. Conformance to Part 100 guidelines is shown without the assumption of one minute limitation on containment leak in the FSAR, page 14.3.5-18. The allowance of 0.2% leakage of weld channel does not represent leakage of containment atmosphere out of containment, since

it accounts for leak paths both from containment to weld channel and from weld channel to the outside ambient. (FSAR, page 6.6-2.)

4.

CCPE's assertions do not properly apply to the requested testing license since the maximum iodine inventory in the reactor during the testing activity will at most be 50% of that assumed in the Staff's Safety Evaluation. Moreover, CCPE's contention that the Applicant's and Staff's assumption that 2.5% of the total iodine core inventory is organic is not sufficiently conservative and, therefore, that Applicant has failed to meet the requirements of 10 CFR Part 100 is neither supported by any evidence in the record nor by the reports cited by CCPE. The Staff's analysis in this respect is in accordance with Safety Guide 4. All evidence in the record on this subject fully supports the position that Applicant has satisfied the requirements of Part 100. (Applicant's Findings No. 50-53 and references cited therein; Tr. 2130-31. The Board should also note Question 1, AEC Staff Answers to Questions 1, 3, 14, 20 and 29 Contained in Intervenors Inquiry of October 11, 1971 Consisting of 39 Questions which was transmitted by letter dated October 30,

1971 to Mr. Roisman from Mr. Karman with copies supplied to the Board and all parties.)

CCPE's finding relies on two reports which deal with the question of organic iodine formation: ORNL-4635 and BNWL-319. Neither of these reports have been introduced into evidence in this proceeding. Furthermore, none of the other statements contained in CCPE's proposed finding No. 4 has any evidentiary weight in this proceeding.

Applicant vigorously protests to the Board CCPE's use of the device of a proposed finding in an effort to submit evidence in the form of an unsworn statement by a technical consultant of CCPE, Richard Cruger. Counsel for CCPE has had every opportunity to have Mr. Cruger sworn and be subjected to cross-examination. For reasons best known to himself, counsel for CCPE chose not to follow this course. Such stratagems deserve to be condemned by this Board.

Applicant has been and remains prepared to stipulate with other parties that the following letters may be received into evidence: Letter from Dr. Morris to Mr. Cruger dated October 4, 1971, with attachment; the attachment to the letter from Mr. Karman to Mr. Roisman dated December 13, 1971; and the letter from Mr. Karman to Mr. Trosten dated February 3, 1972, with attachment.

5.

With respect to CCPE's proposed findings and conclusions

numbered 5, 6, and 7 generally, Applicant reiterates its position that the Interim Acceptance Criteria for emergency core cooling systems are presently effective regulations and that Applicant has adequately satisfied its burden of proof by showing that the calculated performance of the ECCS for Unit No. 2 will comply with these criteria, using an acceptable evaluation model. The basis for Applicant's position is set forth in briefs to the Atomic Safety and Licensing Appeal Board dated January 11 and 21, 1972, and Applicant's letter to Chairman Wells dated January 31, 1972, copies of which have been served upon this Board. Compliance with the Interim Acceptance Criteria is demonstrated by Applicant's Proposed Findings No. 56-79 and references cited therein. In particular, compliance with criterion 3 is shown by Applicant's Proposed Findings No. 71-74.

With respect to CCPE's attempted challenge to the validity of the Interim Acceptance Criteria under the so-called Calvert Cliffs doctrine, Applicant's position is that the evidence in the record of this proceeding does not present a substantial question as to their validity.

In any event it is not proper for the Board to adopt in its Initial Decision any of CCPE's proposed findings 5, 6, and 7 to the extent that they relate to the validity of the Interim Acceptance Criteria. Rather, the Board's function is to make findings with respect to compliance with the Interim Acceptance Criteria. If the Board considers that a substantial question exists with respect to the validity of these criteria,

the Board should certify any such question to the ASLAB for guidance prior to rendering an Initial Decision.

CCPE again makes repeated use of documents not in evidence.* As indicated in Section I of this Reply, Applicant does not agree with CCPE's interpretation of most or all of the non-evidentiary documents cited. Applicant is not addressing itself to the substance of these documents at this time since the Board has not ruled on CCPE's request to take official notice of the documents. Because of their possible influence on the evidentiary record which will form the basis of the Board's decision on the issues in this

*The following documents cited by CCPE throughout CCPE's proposed findings 5, 6 and 7 are not in evidence in this proceeding: IN-1382; IN 1386; IN-1387; ORNL-4647; ORNL-4727; ORNL 4752; ORNL-4758; ORNL-TM-2742; ORNL-TM-3188; ORNL-TM-3289; Committee on Reactor Safety Technology Water Cooled Reactor Safety, European Nuclear Energy Agency, OECD, Paris, May, 1970; Rittenhouse, Nuclear Safety, Vol. 12, No. 5; Monthly Progress Report, Nuclear Safety Division, Aerojet Nuclear Company, April, 1971; Monthly Progress Report, Nuclear Safety Division, Aerojet Nuclear Company, June, 1971; WCAP-7379L, Vol. 1; WCAP-7495L, Vol. 1; WCAP-7495L, Vol. 2; WCAP-7665; Presentation to ASLB on Water Reactor Safety Research Program, July 1, 1971. Applicant has not changed its position as set forth in its brief opposing CCPE's request for official notice dated December 10, 1971 concerning the documents prepared by Westinghouse Electric Corporation. At 12 n.6 of its brief Applicant stated that it had no objection to the admission into evidence of these Westinghouse documents provided that the proprietary ones were treated as such. These documents, however, still are not in evidence in this proceeding.

proceeding, Applicant reserves the right to take any appropriate action following the ASLAB's ruling on this Board's certified questions, dated December 7, 1971, and this Board's ruling on CCPE's request to take official notice of documents.

5.a.

This finding is not supported by evidence in the record. ORNL-NSIC-24 written in October, 1968 simply states that further research in this area is needed. The only transcript reference applicable (Tr. 3060) supports Applicant's position that flow blockage will not significantly impair ECCS effectiveness in Unit No. 2. (Applicant's Proposed Finding No. 67 and references cited therein.)

5.b.

This finding is not supported by evidence in the record. Applicant's Proposed Findings No. 67a-67d and references cited therein correctly demonstrate that the effects on core geometry of fuel rod failure are considered in determining ECCS effectiveness.

5.c.2.

This finding is not supported by evidence in the record. The evidence in the record supports Applicant's

position. (Applicant's Proposed Findings No. 67a-67b and references cited therein; Tr. 2510-18.)

5.d.

This finding is not supported by evidence in the record.

5.e.

This statement is incorrect and not supported by evidence in the record. The single rod burst tests were used as scoping data for multi-rod burst tests which demonstrated that extensive flow blockage does not occur.

(Applicant's Proposed Findings No. 67a-67b and references cited therein.)

5.e.2. through 5.f.2.

These findings are not supported by evidence in the record.

5.g.

The finding is not supported by evidence in the record.

5.h.

The calculations to which CCPE refers are not in evidence. Applicant has demonstrated that clad swelling and resulting flow blockage will not result in the core

being uncoolable. (Applicant's Proposed Findings No. 67 and 73 and references contained therein, particularly footnotes 103, 107, 108, 117.)

5.i.1. through 5.i.2.

These findings are not supported by evidence in the record.

5.j.1.

The heating rate itself is not relevant with respect to clad embrittlement and quenching failure. It is the percent metal water reaction which is significant in determining the degree of embrittlement. (Tr. 2187-88, 2190; Applicant's Proposed Finding No. 72 and references cited therein.)

5.j.2.

The references cited do not support this incorrect statement. The quenching test did include allowance for zirconium water reaction in that a zirconium air reaction, i.e., zirconium oxide formation, was permitted to occur during the heatup period. (CCPE Exhibit N, pp. 3-11 to 3-12; CCPE Exhibit P pp. 4, 16, 20; Additional Testimony of Applicant Concerning ECCS Performance, July 13, 1971, follows Tr. 1931, page 3 and Fig. 1.)

5.j.3.

The evidence cited does not support the finding.

5.k.1.

The finding as stated is incorrect. The correct evaluation of the relationship between the single and multi-rod burst tests is found in Applicant's Proposed Findings No. 67a-67b and references cited therein.

5.k.2. through 5.k.2.a.

The findings are not supported by evidence in the record.

5.k.2.b.

This finding is irrelevant. The single rod burst tests provided scoping data for the multi-rod burst tests. (Applicant's Proposed Finding No. 67a and references cited therein, particularly footnote 104.)

5.k.2.c. through 5.k.2.e.

These findings are not supported by evidence in the record.

5.k.3.a.

The finding is misleading. The references refer to tests performed to demonstrate the similarity between irradiated and unirradiated rod behavior. For this purpose

it is not necessary that the rods be exactly the same as the rods used in the facility. (Applicant's Proposed Finding No. 67a and references cited therein.)

5.k.3.b.

The referenced results were burst temperatures. These are not germane to flow blockage.

5.k.3.c.

This finding illustrates that irradiated tubes swell less than unirradiated tubes and, therefore, the use of non-irradiated data is conservative.

5.k.4.a.B.

The finding is irrelevant. The record demonstrates that increased flow blockage enhances heat transfer. (Applicant's Proposed Findings No. 67c and 67d and references cited therein.)

5.k.4.b.A.

The finding is irrelevant. See Applicant's Proposed Findings No. 67, 67c and 67d, particularly footnotes 103, 106 and 107.

5.k.4.c.

The finding is not supported by evidence in the record.

5.k.4.d.

The testimony at Tr. 66 (November 10, 1971, in camera) (Tr. 60 is not relevant) is that the influence of grid spacers on the randomness of fuel failures was not specifically determined, not that grid spacers were not on the test bundles. The Board should note that there were two grid spacers in all Westinghouse multi-rod burst test assemblies used in these tests.

5.k.4.e.

The referenced transcript pages indicate that the effects of either rod failure or rod bowing are insignificant. (Tr. 2126-28.)

5.1.1.

The finding is irrelevant. See Applicant's response to CCPE's finding No. 5.k.4.a.B. Applicant's findings did not take into consideration the improved heat transfer associated with flow blockage.

5.1.2.

The finding is not supported by evidence in the record.

5.1.3.

Tr. 3051 does not support this finding.

5.m.1.a.

This finding is irrelevant. Heating rate and internal pressure among other things determine the extent of rod swelling. This was determined by the multi-rod burst tests. The purpose of the PWR-FLECHT blockage tests was to determine the effect of blockage on heat transfer. Therefore, the flow blockage was simulated in the test. (Applicant's Proposed Finding No. 67c and references cited therein.)

5.m.1.c.

The record demonstrates that the simulation of blockage with plates has been verified. (Tr. 2119-20.)

5.m.2.b.

The finding is not supported by evidence in the record.

5.m.3.a. through 5.m.3.d.

The findings are not supported by evidence in the record.

5.o.

The finding is not supported by evidence in the record.

5.p.2.

The 2300°F figure is a calculational rather than an absolute limit. Applicant's computation is performed in accordance with the Westinghouse evaluation model approved by the Commission which assumes no distortion of the core. The effects of core distortion were instead taken into account in the formulation of the Criteria themselves. These effects were separately calculated and determined to be adequately compensated for by the conservatism in the 2300°F limit.

For a more detailed discussion of Applicant's position on this point, see Applicant's brief to the Atomic Safety and Licensing Appeal Board dated January 11, 1972 (Part II) and Applicant's supplemental brief dated January 21, 1972 (Part II). See also Applicant's Proposed Finding No. 67a-d and references cited therein.

6.

This finding is generally denied as not supported by evidence in the record.

6.e.

The effect of any difference in heat at the bottom of the fuel assembly on inlet flow to the assembly would be insignificant. (Tr. 2828.)

6.f.

The cited reference does not support the finding.

6.h. through 6.i.

Applicant's use of 20% as the amount of flow redistribution is conservative. The transcript references cited by CCPE indicate that calculations have been performed using the THINC Code which demonstrate that flow distribution during blowdown is 10-15%. Therefore, a figure above 20% would not be appropriate.

7.

CCPE's contention that the analysis of the post-LOCA blowdown is based upon incomplete and unreliable data is not supported by the record.

7.a.1. through 7.a.2.

As indicated at Tr. 2773 the Battelle test is a confirmation of the BLODWN Code and not a check of reactor internals. One predicts the behavior of the Battelle test with the BLODWN Code and then compares that prediction with the measured result.

7.a.3.

During the course of the hearing several semi-scale tests have been discussed: The semi-scale test performed at Idaho and the semi-scale internal tests performed by Battelle. The semi-scale test to which the witness referred at Tr. 2775 was the Idaho semi-scale test.

7.b.

The number 2230 is a transcript error and should read 20-30 pounds. (On January 21, 1972 Applicant requested that this correction be made in the transcript.)

7.b.1.

"Ricochet forces" per se do not exist. As indicated at Tr. 2759 these forces are slight friction or drag forces on the grid and are included in the force computed by the Applicant.

7.b.2.

This phenomenon is not ignored. As clearly stated at Tr. 2761 the maximum loads that occur during loss-of-coolant on the rods occur in a time period of less than 50 milliseconds. There is no time for heat or temperature variation in the rods to cause differences in spring forces.

7.c.1. through 7.c.3.

CCPE postulates non-mechanistic blowdown with initial fast blowdown followed by a reduction in blowdown flow. Although these calculations have not been specifically

performed the record indicates that longer blowdown means better core heat transfer, which compensates for greater accumulator water loss. (Additional Testimony of Applicant Concerning Emergency Core Cooling System Performance, July 13, 1971, follows Tr. 1931, page 20; Tr. 2872-73, 2875.)

8.

CCPE has not cited any evidence in the record which refutes the opinion of the Applicant, the Staff and the Advisory Committee on Reactor Safeguards that Unit No. 2 need not be designed against the meltdown of the reactor core. (See Applicant's Proposed Finding No. 44 and references cited therein for a statement of the evidentiary basis for Applicant's position.)

8.a.

Applicant has demonstrated that the emergency core cooling system provides adequate assurance that a major meltdown of the core will not occur in the event of a design basis accident. At this point in time sufficient experimental data is available to conclude that the ECCS will perform adequately. (Applicant's Proposed Findings No. 31 n.36, 44 and 56-79 and references cited therein.)

8.b.

Core disassembly would not be caused by "excessive bursting of irradiated fuel rods." Shattering from quenching is conceivable for large zirconium water reactions; however, Applicant's Proposed Finding No. 72 and references cited therein demonstrate that the core will retain its integrity when subjected to more severe thermal transients than would occur during an accident.

8.c.

Applicant and Staff have provided adequate evidence that rupture of the reactor vessel for Unit No. 2 will not occur. (Applicant's Proposed Finding No. 36 and references cited therein.) CCPE has presented no evidence which demonstrates that the opinion of the Applicant, the Staff and the Advisory Committee on Reactor Safeguards is incorrect.

8.d.1. through 8.d.3.

Unit No. 2 need not be designed against core meltdown and, therefore, these proposed findings are inconsequential. (See Applicant's response to CCPE's findings No. 1 through 1.e., 2.a., 11.f.1. supra.)

9.

Applicant has established by sufficient evidence in this proceeding that a rupture of the reactor pressure

vessel for Unit No. 2 will not occur. (Applicant's Proposed Findings No. 36-42 and references cited therein.)

9.a. through 9.b.

The most severe loss-of-coolant accident which must be accommodated by the design for Unit No. 2 is the postulated double-ended rupture of the largest reactor coolant pipe. This position is implicit in the AEC's regulations and has been recognized by the consistent regulatory practices of the AEC. Criterion 35 of Appendix A to Part 50 requires an emergency core cooling system which will cope with any loss-of-coolant accident. "Loss-of-coolant accidents" are defined in this Appendix to mean breaks in the reactor coolant pressure boundary up to and including a break equivalent in size to the double-ended rupture of the largest reactor coolant pipe. Looking at the language of this definition alone, it appears somewhat ambiguous. But it is not interpreted to include ruptures of the reactor vessel itself. The omission from this definition of a larger reactor coolant system rupture, taken with the extensive criteria to insure reactor coolant pressure boundary integrity, lead to the conclusion that design against the consequences of such a rupture is not as a general matter necessary. It is logical to require design against a coolant break size in terms of the largest pipe to the reactor only

if breaks in the pressure boundary outside the reactor are the ones of concern. If design against actual reactor vessel rupture were to be required there would be no rationale by which the size of the break to be designed against could be limited to any particular pipe size. The Staff concurs in this interpretation, as shown by its application of the criteria to this design.

As indicated in Applicant's response to CCPE's Finding No. 9 supra, Applicant has provided adequate evidence to demonstrate that in the case of Unit No. 2 a rupture of the reactor vessel will not occur.

9.e.

Items of concern outlined by the ACRS relative to the reactor vessel have been the subject of extensive research and development undertaken since then. These are discussed in the answers of Applicant to ASLB questions 2 (Part I, follows Tr. 728) and 11 (Part II, follows Tr. 888) of March 24, 1971 and represent advances beyond the 1965 Code requirements. Among these advances are:

1. Additional materials toughness testing was performed. (Additional Testimony of Applicant Concerning Reactor Vessel Integrity Testimony, September 17, 1971 ["Reactor Vessel"], follows Tr. 1931, pp. A-2, A-7.)

2. Additional inspections were performed.

(Reactor Vessel, page 3-2.)

3. More stringent inspections were required.

(Reactor Vessel, page 3-3.)

4. Additional fatigue and brittle fracture analyses were performed. (Reactor Vessel, pp. 5-1 to 5-9, 7-1, 5A-1 to 5A-5.)

5. Independent stress analysis work was performed.

(Reactor Vessel, pp. 5-1 to 5-9, 5-A-1 to 5-A-5; Tr. 2032-33.)

9.f.

Section 50.55a(g) of the Commission's regulations provides that for construction permits issued on or after January 1, 1971, systems and components shall meet the requirements of section XI of the ASME Code. Although this regulation does not embrace Unit No. 2, the inservice inspection program for Unit No. 2 has been updated to incorporate the inservice inspection program of section XI. The references cited by CCPE adequately explain the manner in which the requirements of section XI have been met for Unit No. 2.

9.f.1. through 9.f.2.

The Staff response cited by CCPE sets forth an adequate basis for the Staff determination that particular

inspections for which equipment has not yet been developed should be conditioned upon the development of such equipment. The code provision referenced by CCPE is not subject to the interpretation CCPE suggests, since in that event there would have been no reason to condition the inspections at all.

9.f.3.

The areas for which inspection equipment has not yet been developed are areas of very low stress. The inservice inspection program for Unit No. 2 assures that areas of concern with regard to flaw growth or propagation will be inspected in accordance with section XI. (Answers of Applicant to Questions Raised by ASLB on March 24, 1971, Part I, follows Tr. 728, Question 2; Answers of Applicant to Questions Raised by ASLB on May 13, 1971, July 6, 1971, follows Tr. 890, Question 9; Report by Staff in Response to ASLB Questions Concerning Reactor Vessel Integrity and "Additional Testimony of Applicant Concerning Reactor Vessel Integrity," October 26, 1971, pp. 29-31; Tr. 3960-63.)

9.g.

The major portions of the work planned for the Heavy Section Steel Technology Program have already been completed. The completed work already adequately addresses the concerns set forth by the ACRS. (Answers of Applicant to Questions

Raised by ASLB on March 24, 1971, Part II, follows Tr. 888, Question 11.)

9.h.2.

Vertical cracks which are less than 2% of the thickness (less than .2 inches) will not compromise the integrity of the vessel. Design bases and the conservative allowable stresses, both static and fatigue, consider and account for flaws of this magnitude. In order for the safe operating limits to be exceeded a defect at least 25 times larger than 2% of the thickness in linear dimensions or 500 to 1000 times larger in area would have to be present. (Additional Testimony of Applicant Concerning Reactor Vessel Integrity, September 17, 1971, follows Tr. 1931, pp. 5-4 to 5-6, Appendix C.)

9.h.3.

Testimony concerning these indications is included in the record (Tr. 3934-44).

9.h.4.

Applicant has stated that it has already committed considerable resources to develop equipment to inspect those areas to which CCPE refers. (Answers of Applicant to Questions Raised by ASLB on May 13, 1971 dated July 6, 1971,

follows Tr. 890, Question 9.) The regulations of the Commission do not require that the Applicant meet the requirements of section XI; however, as discussed in Applicant's response to CCPE's Finding 9.f. Applicant has undertaken to do so to the extent feasible. As also discussed above the areas in question are low-stressed areas so that the safety of the plant is not compromised.

9.i.1.

The testimony cited by CCPE indicates that there have been through-wall piping cracks in steam piping in boiling water reactors. The testimony also indicates that there have been no failures in primary system piping in any pressurized water reactors.

9.i.2. through 9.i.4.

There is no evidence in the record to support these findings.

10.

CCPE has misconstrued the provisions of 10 CFR 50.57 (a)(1). The regulation provides that this Board is required to make a finding that construction of Unit No. 2 has been ". . . substantially completed, in conformity with the construction permit" The wording of the regulation

clearly expresses the intention of the Commission that the record in this proceeding would be closed and an Initial Decision would be issued prior to full completion of the facility. The detailed work being performed to repair the damage caused by the November 4, 1971 fire is unrelated to the question whether completion of the facility will be in accordance with the construction permit.

The Division of Compliance has the responsibility to verify the completeness of construction prior to actual operation, including review of the detailed work being performed to repair the damage caused by the November 4, 1971 fire. (Staff Safety Evaluation, follows Tr. 405, page 80.) It is not necessary for the Board to conduct such a detailed review as CCPE suggests. Applicant has provided considerable testimony as to the extent of damage and the procedures to be followed to restore the Primary Auxiliary Building and its equipment to conform to the design contained in the Application as amended (Applicant's Proposed Finding No. 22 and references cited therein.) As this testimony shows, all restoration work will be completed prior to criticality.

By letter dated October 8, 1971, from Mr. Cahill to Dr. Morris, Applicant advised the Staff of 12 design changes

in the facility. None of these is a major modification in the design of Unit No. 2 at the construction permit stage. The Staff advised the Board formally of its approval of these changes by letter dated February 28, 1972. (Such formal notification is not, in any event, a prerequisite to the Board's finding under 10 CFR 50.57(a)(1).) There is no requirement that CCPE be able to determine that construction of Unit No. 2 has been completed in conformity with the construction permit.

Accordingly, the evidence in the record is adequate for the Board to make an affirmative finding under 10 CFR 50.57(a)(1).

11.

CCPE opposes the use of "subjective" terms such as conservative, probable and incredible in safety analyses of Indian Point 2 for which no "objective" standard is available. This objection seems to be based to some degree upon CCPE's obsession with the idea that a mathematical analysis is the only or best way to determine the adequacy from the point of view of safety of a design, procedure or other feature of this plant. There are certain technical areas in which a mathematical analysis is an appropriate tool, but there is

literally nothing in the Atomic Energy Act, the regulations of the AEC or the record of this proceeding which supports CCPE's theory as a general principle, nor does common sense. In an industry in which statistics on accidents and failures have fortunately been very difficult to accumulate because of the excellent safety record, the only rational way in which to proceed is to apply the expert judgment of trained persons to the available information. The basis for making this expert judgment is contained in the voluminous record of this proceeding.

More importantly, even where a valid mathematical analysis can be made of the probability of an event this in itself cannot determine whether a design is "safe enough." This is inevitably the function of the Staff and the Board when they determine whether there is reasonable assurance that the public health and safety will be protected.

11.a.

CCPE's finding is not supported by the evidence in the record. Applicant testified that failure of one accumulator is incredible because there is nothing in the system capable of preventing the accumulator water from entering the reactor coolant system (Tr. 1026, 1033-34); as to why failure

of more than one accumulator is incredible (Tr. 1010-16); and that the utility of the mathematical or other analysis advocated by CCPE is not in the demonstration of incredibility but as a means for comparing one system with another (Tr. 1043-44).

11.b.

CCPE's finding is inconsequential. Statistics are required for analyses leading to numerical assessment of the probability of an event occurring. Applicant testified that the absence of statistics can be associated with the fact that an event did not occur (and a system that is reliable) (Tr. 1048-49), and testified further that unreliability would be associated with frequent failure (and the existence of statistics) (Tr. 1050). As indicated with respect to Finding 11.c., statistics are not required for other types of analyses by which determinations can be and are made that certain events need not be considered in a design.

11.c.

As stated above, there is nothing in the Atomic Energy Act or the AEC's regulations which supports this finding, nor is it supported by the record. A mathematical analysis leading to a numerical assessment of probability

has only limited usefulness (Tr. 1043-44). Applicant's testimony shows that there is another method that is used (Tr. 986-87, 1001, 1004), and that decisions as to what is credible and incredible come from an evaluation based on engineering analyses, experience, and judgment as to events which do or do not need to be considered in the design (Tr. 1026, 1033-34).

11.d.

In deciding that the plant can operate safely without the hydrogen purge system for a limited period of time the Staff determined that such operation would be safe and would meet regulatory requirements. (Staff Safety Evaluation, Section 7.4, follows Tr. 405; Tr. 1187.) The ACRS concurred in this judgment (Appendix B to Staff Safety Evaluation). Assigning a numerical value to the probability of the need to utilize the hydrogen purge system during such a limited period is not meaningful (Tr. 1181-83).

11.e.

The testimony does indicate that design margins and conservative assumption are employed where incomplete knowledge exists. However, the testimony also indicates that this is a perfectly acceptable procedure, and in no way

detracts from the safety of a plant, when based on sufficient information and competent engineering judgment. It is reasonable to rely on the judgment of the many people who have worked on the problems (Tr. 1120), taking into account the information which is available (Tr. 1120-24) in order to compensate adequately for any lack of detailed knowledge.

11.f.

As an abstraction, CCPE's proposed finding is inconsequential. However, the thrust of CCPE's finding is that the decision as to whether a factor is to be considered in the design of this plant is unreasonable. Applicant has testified as to the methods employed in performing safety evaluations (Tr. 986-87, 1001-02, 1004-06), and the Staff as to the standards used in deciding whether an event need be considered in the design (Tr. 1112-13). Some of these determinations are based upon the AEC's regulations (10 CFR 50, Appendix A). It is on the basis of these methods which involve the professional judgments of people responsible for design, and a prior consideration of the consequences of failure, that decisions as to design provisions are reached. None of the evidence cited by CCPE controverts the position of Applicant and the Staff that the public health and safety will not be endangered by the operation of Indian Point 2.

11.f.1.

The evidence does not support this finding. The INC Report on Semi-scale Tests 845-851 is not in evidence.

11.f.2.

The reasons for the elimination of the crucible are fully documented in the record of this proceeding (Summary of Application, Section VII.A.2. and references cited in footnote 6 (Applicant's Exhibit No. 1C); Staff Safety Evaluation, page 40, follows Tr. 405; Answer to ASLB Question 10 and 13, January 19, 1971, Part I, follows Tr. 665; Answer to ASLB Questions 3 and 4, March 24, 1971, Part II, follows Tr. 888; Responses of DRL to the Questions of the ASLB at the Hearing Session dated March 24, 1971, introduced into evidence Tr. 917, Response to Question at Tr. 681-685; Tr. 1148-57, 1159-62, 4024-31; Applicant's Proposed Finding No. 44 and references cited therein.) This feature was eliminated on the basis of a determination of the Applicant, the Staff and the ACRS that it was not needed in order to provide assurance that the plant could operate safely. The evidence cited by CCPE in no way shows that this judgment was in error.

11.g.

CCPE states what it believes to be the only appropriate basis for establishing a conservative assumption to

compensate for lack of knowledge. CCPE's position is not supported by the regulations of the AEC or the record in this proceeding. Moreover, such a hypothesis is useless to the Board with respect to analyzing a specific design.

11.g.1. through 11.g.2.

The evidence in the record does not support CCPE's proposed findings.

12.

The record in this proceeding clearly illustrates the adequacy of codes and tests to analyze the reliability of engineered safeguards. (Applicant's Proposed Findings No. 60-65, 70 and references cited therein.)

12.a.1.

The references cited do not support this finding. CCPE Exhibit M, page 136 is an unsubstantiated reference to simplification of codes "to keep the computer running times reasonable." CCPE Exhibit M, page 4 also contains the following statement:

"Mention is made of the methods and computer programs being used to calculate this information, along with discussions of some of their merits and possible shortcomings; however, a critical review of these methods and programs was beyond the scope of this study."

12.a.3.

FLECHT is not a code but rather is a series of experiments. CCPE has referenced a discussion of Group I in the series of FLECHT tests. Group II and III of the FLECHT tests considered temperatures in excess of 2000°F.

(Additional Testimony of Applicant Concerning ECCS Performance, July 13, 1971, follows Tr. 1931, page 30.)

12.a.4.

See Applicant's response to CCPE's Finding 12.a.1. Codes are simplified consistent with existing theoretical and experimental knowledge together with computer capability. Computer running time is not the standard.

12.a.6.

The referenced comparisons between analytical and experimental results demonstrate good agreement.

(CCPE Exhibit N, page 3-3, Figures 3-8 to 3-10.)

The references to CCPE Exhibit Q do not relate to code analysis.

12.a.7.

The finding is not supported by any evidence.

Nucleonics Week is not in evidence in this proceeding.

12.a.1.a.

The reference cited does not support this finding. Applicant's blowdown analyses do consider the effect of proximity of break to the reactor. (FSAR, PP. 14.3.1-4 and 14B-3.)

12.a.1.b.

The effects of fuel rod swelling have been adequately considered for Unit No. 2. (Applicant's Proposed Finding No. 67a-67d and references cited therein.)

12.a.1.c.

SATAN-V Code considers all four loops by grouping unbroken loops together with proper sealing. (CCPE Exhibit N, pages 2-7.)

12.a.2.

Sensitivity studies demonstrate that the result of the calculation is not sensitive to greater than 70 elements. (Additional Testimony of Applicant Concerning ECCS Performance, follows Tr. 1931, pages 5-6.) The reference cited by CCPE also illustrates the adequacy of the SATAN-V Code. (CCPE Exhibit N, pp. 3-2 to 3-4.)

12.b.1.

Tests for Unit No. 2 have considered all necessary variables which will occur when the tested system will be needed.

12.b.2.

References cited do not support this finding.

13.

The references cited which relate to this subject do not support this finding. The staff response dated June 20, 1969 cited by CCPE is not in evidence in this proceeding. Applicant and staff have presented several analyses of postulated accident conditions utilizing a variety of assumptions. All analyses demonstrate that in the event of any accident postulated for Unit No. 2 the guidelines set forth in 10 CFR 100 will not be exceeded. (Applicant's Proposed Finding No. 35-35a and references cited therein.)

14.

The many design features and operating procedures which are provided for this plant, and which have been adequately evaluated, make it extremely unlikely that an accident will occur causing exposure of the public to radioactivity. The AEC's regulations (10 CFR 50, Appendix E) take this fact into account.

The regulations require that the Applicant describe in its FSAR plans for coping with emergencies during plant operation. Details of these plans and the details of their implementation need not be included. The plans must include a description of the elements set out in Appendix E only "to an extent sufficient to demonstrate that the plans provide reasonable assurance that measures will be taken to protect the public health and safety and prevent damage to property." To the extent appropriate the plans must involve officials of State organizations.

The AEC's regulations do not require that the Applicant demonstrate that the emergency plans "will function in such a way as to keep public exposures "as low as practicable" in the unlikely event of a major accident. To the extent the evidence cited by CCPE is intended to demonstrate that in such a situation public exposures may not be kept as low as practicable, these references are immaterial.

The evidence cited by CCPE under 14.a. and 14.b. does not support the conclusion that there has not been adequate advance planning for radiation emergencies by Applicant and the State of New York. More specifically, the record demonstrates adequate advance planning for evacuation or other protective measures, including necessary notification to the public, and that the evacuation plans are reasonably conceived.

Certain of the findings proposed by the CCPE must also be denied for the following specific reasons:

14.a.1.

Those responsible for emergency planning on behalf of New York State have considered the type of instructions to be given to the public in the event of an accidental release of radioactivity and are prepared to provide necessary notifications to the public. (Supplementary Testimony of Sherwood Davies, July 7, 1971, follows Tr. 1754, pp. 14-16; Supplementary Testimony of Edward H. L. Smith, September 15, 1971, follows Tr. 1996, pp. 3-6.)

14.a.2.

The evidence cited by CCPE does not support the conclusion that the emergency plans of New York State are deficient in that the matters referred to have not been adequately considered by responsible State officials. Moreover,

other evidence in the record demonstrates that State officials have given appropriate consideration to the various factors necessary for carrying out evacuation or other protective measures. (Supplementary Testimony of Sherwood Davies, July 7, 1971, follows Tr. 1754, particularly pp. 19-21; Supplementary Testimony of Sherwood Davies and Edward H. L. Smith, September 15, 1971, follows Tr. 1996; Testimony of Dudley Thompson on "Extent of Advance Emergency Planning for Coping with Potential Accidents," follows Tr. 3802.)

14.a.3.

The rationale for New York State's preplanning of emergency actions is fully justified. (Applicant's Proposed Finding 89 and references cited therein.)

14.a.4.

There is no evidence in the record of this proceeding to support this finding.

14.b.

The criteria for determining actions, as well as implementing plans, to prevent exposure of the public to accidental releases of radioactivity have been sufficiently set forth by New York State officials. These criteria and plans take into account not only the desirability of reducing exposures to radioactivity but the avoidance of other risks as well, such as exposure to inclement weather conditions.

(Supplementary Testimony of Sherwood Davies, July 7, 1971, follows Tr. p. 1754, pp. 7-8a; Supplementary Testimony of Sherwood Davies, September 15, 1971, follows Tr. 1996, pp. 1-2; Supplementary Testimony of Edward H. L. Smith, follows Tr. 1996, pp. 3-8.) Drills by New York State officials beyond a communication drill are not a necessary element of adequate emergency plans. (Tr. 3779-80, 3807-09.)

In general, the emergency plans of Applicant and the State of New York have been spelled out in extraordinary detail, as evidenced in Applicant's Proposed Findings No. 85-94 and the references cited therein. The State's plans were the subject of two days of testimony at the hearing. CCPE's disagreement with the professional judgment of the responsible officials of the State of New York on these matters in no way detracts from the adequacy of this record.

16.

Applicant is required by the regulations of the Commission to operate Unit No. 2 in compliance with the technical specifications for this facility. Applicant has given extensive testimony that it cannot and will not permit considerations of the need for power to compromise the health and safety of the public and CCPE's contentions in this regard are not supported by any evidence in the record. (Applicant's Proposed Findings No. 15-20 and references cited therein; See Memorandum of Law in Support of Applicant's Reply to CCPE's Proposed Findings of Fact and Conclusions of Law ["Applicant's Memorandum of Law"], Part B supra.)

16.a.

The technical specifications which are in evidence in this proceeding and which will be incorporated into the operating license for Unit No. 2 provide the limiting parameters for operation of the facility. Although the technical specifications allow flexibility of operation within these parameters, under no circumstances does this support CCPE's contention that the Applicant will exceed those parameters based on any consideration of the need for power. (See Applicant's Memorandum of Law, Part B supra.)

16.b.

The evidence in the record does not support this finding. The Reactor Operating Experience Report, March 31, 1971 cited by CCPE is not in evidence in this proceeding. The transcript references cited by CCPE do not support this finding. For a discussion concerning the other documents cited by CCPE, see Applicant's Memorandum of Law, Part D supra. The record demonstrates that extensive operator training is directed toward operation of Unit No. 2 in a safe condition regardless of other considerations. (Applicant's Proposed Finding No. 17 and references cited therein.) In addition, the reactor protection system will automatically shut down the plant if unsafe operating conditions are approached. (Applicant's Proposed Finding No. 19 and references cited therein.)

17.

The finding is not supported by any evidence in the record.

17.a. through 17.b.

The evidence in the record indicates, contrary to CCPE's unfounded contentions, that the Staff has found that the facility will operate in an acceptable manner and in

accordance with the Commission's regulations without these additional safety features and without full implementation of the security plan. (Staff Safety Evaluation, November 16, 1970, follows Tr. 405, pp. 45, 79-80; Supplemental Staff Testimony, Indian Point Hearing, follows Tr. 6, December 14, 1971, in camera; see Applicant's Memorandum of Law, Part B, paragraph 4 supra.)

17.c.

As discussed in Applicant's response to CCPE's finding No. 9.f. the incorporation of the inspection program of section XI of the ASME Code into the inspection program for Unit No. 2 demonstrates the Staff's continuing concern with regard to safety. CCPE incorrectly characterizes the provisions of Tech. Spec. No. 4.2 as "postponed compliance."

18.

This finding is irrelevant to the Board's decision since the adequacy of the Staff review is not an issue in this proceeding as set forth in the Notice of Hearing published on November 17, 1970. In Applicant's Memorandum of Law, Part B supra, there is a full discussion concerning the contentions set forth by CCPE in this finding as well as the inapplicability of 10 CFR Section 2.104 to this proceeding.

19.

Applicant has presented adequate testimony to demonstrate that Unit No. 2 will function at 50% of full power in such a manner that the Interim Acceptance Criteria will be satisfied and the public health and safety will not be endangered. (Applicant's Proposed Findings No. 56-79 and references cited therein, particularly findings No. 69 and 78.) CCPE has not presented a substantial question as to the validity of the Interim Acceptance Criteria within the meaning of the Calvert Cliffs doctrine, in so far as the operation of the facility for testing purposes at 50% of full power is concerned.

19.a.

The answer to the Board's question referred to on Tr. 4163 indicates that the calculated peak clad temperature subsequent to an assumed double-ended break loss-of-coolant accident at 50% of full power (1400 Mwt) would be less than 1200°F. Mr. Moore's testimony at Tr. 4166-4167 indicates that if peak clad temperature were less than 1200°F the peak internal rod pressure would be less than 1000 psi. There is no evidence in the record to controvert the testimony and expert opinion of Mr. Moore.

The documents cited by CCPE in finding 19.a.1.C. are not in evidence.

19.b.

The peak clad temperatures following a loss-of-coolant accident were calculated in accordance with the Interim Acceptance Criteria and were shown to be less than 1200°F. The evidence cited by CCPE does not controvert this. With respect to finding 19.b.2. there is no evidence in the record to support the theory that the accumulators will fail to operate. (See Applicant's response to CCPE's finding No. 11.a.) CCPE's contentions demonstrate that no matter what evidence is presented CCPE will invariably argue that it is insufficient to show that the emergency core cooling system will perform adequately. This is another instance in which CCPE's preconception that Indian Point No. 2 is too dangerous to be allowed to operate has led it to conclude, a priori, that a safety system is inadequate.

20.

This finding is based on a misapprehension as to the nature of the Staff role in evaluating the factors under Appendix D.2 and of the legal requirements bearing on this evaluation. A full discussion of CCPE's contentions is contained in Applicant's Memorandum of Law, Part C supra.

The Staff correctly used realistic assumptions in calculating accident consequences for Appendix D purposes,

and correctly took into account the beneficial effect on the public interest of readiness for continuous operation of Unit 2 following the testing license. Contrary to the implication of CCPE's finding 20.b., the Staff's judgment as to the likelihood of accidents was nowhere based upon the projected short term operation of Unit No. 2 for testing purposes.

In view of the low probability and minor expected impact of the postulated accidents, further analysis on the record of possible costs associated with such accidents is unnecessary (Supplement 2 to Applicant's Environmental Report, dated October 15, 1971, and Applicant's October 19, 1971 testimony in support of motion for issuance of a license authorizing limited operation, pp. 19-20, follows Tr. 4013.)

Responses to CCPE's Specific Opposition
To Applicant's Proposed Findings
Of Fact and Conclusions of Law*

Finding No. 30, Footnote 35 (page 77)

The final preoperational integrated leak rate test of the reactor containment building for Unit No. 2 is included in the Staff's Supplement No. 1 to Joint Exhibit A (Tr. 4150).

*Page references are to CCPE's proposed findings.

Finding No. 31, Footnote 36 (page 78)

The document cited by CCPE is not in evidence in this proceeding.

Finding No. 34 (page 78)

The determination of the adequacy of environmental monitoring need not await the full presentation of evidence on environmental issues.

Finding No. 24 (page 85 - CCPE presumably is referring to Applicant's proposed finding 35a.)

Fission product inventory is proportional to power level and, therefore, since iodine is a fission product, 50% power means 50% iodine inventory. Time to reach saturation has nothing to do with saturation value.

Respectfully submitted,

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Dated: March 10, 1972

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))

CERTIFICATE OF SERVICE

I hereby certify that I have served a document entitled "Applicant's Reply to Proposed Findings of Fact and Conclusions of Law Submitted by Citizens Committee for the Protection of the Environment" and a letter to the Atomic Safety and Licensing Board in the above-captioned proceeding from LeBoeuf, Lamb, Leiby & MacRae dated March 10, 1972 by mailing copies thereof first class and postage prepaid, to each of the following persons this 10th day of March 1972:

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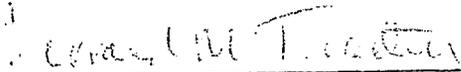
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