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RELATED CORRESPONDENCE

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY
AND LICENSING BOARD



In the matter of)
)
BOSTON EDISON COMPANY, et al.)
)
(Pilgrim Nuclear Generating)
Station, Unit 2))
_____)

Docket No. 50-471

RESPONSE OF BOSTON EDISON COMPANY, et al

TO

COMMONWEALTH OF MASSACHUSETTS'

FIRST SET OF

INTERROGATORIES TO

BOSTON EDISON COMPANY

RELATIVE TO TMI ISSUES



DATED: August 28, 1981

DS03
50/1

INTERROGATORY #1

For each and every information requirement contained in Appendix B to NUREG-0718, Rev. 1, list the requirement and (a) indicate whether, in the Applicants' opinion, their application for a construction permit, including the PSAR and amendments thereto, satisfies said requirement. Whether your response for any given requirement is in the affirmative or negative, (b) explain in detail the reasons for your answer, identifying each fact upon which you rely and each document, and the particular parts thereof, of which you are aware which supports each fact so identified, (c) describe in detail all exceptions from or modifications to the information requirements and all alternative approaches to meeting the requirements requested of and/or allowed by the NRC Staff.

RESPONSE #1

The responses to this interrogatory for each information requirement contained in Appendix B to NUREG-0718, Rev. 1 are as follows.

I.A.4.2 Long-Term Training Simulator Upgrade

Applicants shall describe their program for providing simulator capability for their plants. In addition, they shall describe how they will assure that their proposed simulator will correctly model their control room. Applicants shall provide sufficient information to permit the NRC Staff to verify that they will have the necessary simulator capability to carry out the actions described in this Action Plan item as well as Action Plan Item II.K.3.54. Applicants shall submit, prior to the issuance of construction permits, a general discussion of how the requirements will be met. Sufficient details shall be presented to provide reasonable assurance that the requirements will be implemented properly prior to the issuance of operating licenses.

RESPONSE TO INTERROGATORY

- (A) Yes.
- (B) Please see the response to this item on page 1C-14 of the PSAR (Amendment #43). Boston Edison has committed to provide the required simulator capability. Documents relied upon to support this conclusion are:
 - (1) ANSI/ANS 3.5-1981 "Nuclear Power Plant Simulators for Use in Operator Training."
 - (2) ANS 3.1, 5/19/80 draft "Standard for Qualification and Training of Personnel for Nuclear Power Plants."
 - (3) RG 1.149, 4/80 "Nuclear Power Plant Simulator for Use in Operator Training."
 - (4) 10CFR55, Operators Licenses.
 - (5) 10CFR50.35(a)(2)
- (C) None

I.C.5 Procedures for Feedback of Operating, Design and Construction Experience

Applicants shall submit a description of their administrative procedures for evaluating operating, design, and construction experience and describe how they will assure that applicable important industry experiences originating from both within and outside the applicant's construction organization will be provided in a timely manner to those designing and constructing the plant. Applicants shall submit a general discussion of how the requirements will be met. These procedures shall: (1) Clearly identify organization responsibilities for review and identification of these important experiences and the feedback of pertinent information to those responsible for designing and constructing the plant; (2) Identify the administrative and technical review steps necessary in implementing applicable important experiences; (3) Identify the recipients of various categories of information from these experiences or otherwise provide means through which such information can be readily related to the job functions of the recipients; (4) Assure that applicant and contractor personnel do not routinely receive extraneous and unimportant experience-related information in such volume that it would obscure priority information or otherwise detract from overall job performance and proficiency; (5) Provide suitable checks to assure that conflicting or contradictory information is not conveyed to applicant and contractor personnel for implementation until resolution is reached; and (6) Provide practical interim audits to assure that the feedback program functions effectively at all levels. Sufficient detail shall be presented to provide reasonable assurance that the requirements will be implemented properly prior to the issuance of construction permits or manufacturing license.

RESPONSE TO INTERROGATORY

- (A) Yes
- (B) Please see the response to this item on page 1C-63 of the PSAR (Amendment #43).
- (C) None

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I.C.9 Long-Term Program Plan for Upgrading of Procedures

Applicants shall describe their program plan, which is to begin during construction and follow into operation, for integrating and expanding current efforts to improve plant procedures. The scope of the program shall include emergency procedures, reliability analysis, human factors engineering, crisis management and operator training. Applicants shall also insure that their program will be coordinated, to the extent possible, with INPO and other industry group efforts. Applicants will submit, prior to the issuance of construction permits, a general discussion of how the requirements will be met. Sufficient detail shall be presented to provide reasonable assurance that the requirements will be implemented properly prior to the issuance of operating licenses.

RESPONSE TO INTERROGATORY

- (A) Yes
- (B) Please see response to this item on page 1C-15 of the PSAR (Amendment #43). Boston Edison has committed to establish a formal program for the development of plant operating procedures. Documents relied upon to support this conclusion are:
 - (1) NUREG-0737, Item I.C.1.
 - (2) CEN-128
 - (3) 10CFR50.35(a)(2)
- (C) None

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I.D.1 Control Room Design Reviews

Applicants shall provide preliminary design information at a level consistent with that normally required at the construction permit stage of review. Applicants shall provide a general discussion of their approach to control room designs that reflect human factor principles by specifying the design concept selected and the supporting design bases and criteria. Cosmetic revisions to conventional (1960 technology) designs are unacceptable. Applicants shall also demonstrate that the design concept is technically feasible and within the state of the art, and that there exists reasonable assurance that the requirements will be implemented properly prior to the issuance of operating licenses. Applicants shall commit to control room designs reflecting human factors principles prior to issuance of a CP or ML and shall supply design information for review prior to committing to fabrication or revision of fabricated control room panels and layouts.

RESPONSE TO INTERROGATORY

- (A) Yes
- (B) Please see response to this item on page 1C-17 of the PSAR (Amendment #43). Boston Edison has committed to perform the required control room design review. Documents relied upon to support this conclusion are:
 - (1) "Safety Function & Protection Sequence Analysis," J. E. Howard et al. dated November 1973.
 - (2) Technical Procedure for Performance of Safety Function and Protection Sequence Analysis, dated January 1974.
 - (3) NUREG-0659, Appendix B
 - (4) NUREG/CR-1580
 - (5) 10CFR50.35(a)(2)
- (C) None

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I.D.2 Plant Safety Parameter Display Console

Applicants shall describe how they intend to meet the staff criteria contained in NUREG-0696 for a plant safety parameter display console. The console shall display to operators a minimum set of parameters defining the safety status of the plant, capable of displaying a full range of important plant parameters and data trends on demand, and capable of indicating when process limits are being approached or exceeded. Applicants shall, to the extent possible, provide preliminary design information at a level consistent with that normally required at the construction permit stage of review. Where new designs are involved, applicants shall provide a general discussion of their approach to meeting the requirements by specifying the design concept selected and the supporting design bases and criteria. Applicants shall also demonstrate that the design concept is technically feasible and within the state of the art, and that there exists reasonable assurance that the requirements will be implemented properly prior to the issuance of operating licenses.

RESPONSE TO INTERROGATORY

- (A) Yes.
- (B) Please see the response to this item on page 1C-21 of the PSAR (Amendment #43). Boston Edison has committed to provide the required Safety Parameter Display Console. Documents relied upon to support this conclusion are:
 - (1) NUREG-0696
 - (2) 10CFR50.35(a)(2)
- (C) None.

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I.D.3 Safety System Status Monitoring

Applicants shall describe how their design conforms to Regulatory Guide 1.47, "Bypassed and Inoperable Status Indication for Nuclear Power Plant Safety Systems." Applicants shall, to the extent possible, provide preliminary design information at a level consistent with that normally required at the construction permit stage of review. Where new designs are involved, applicants shall provide a general discussion of their approach to meeting the requirements by specifying the design concept selected and the supporting design bases and criteria. Applicants shall also demonstrate that the design concept is technically feasible and within the state of the art, and that there exists reasonable assurance that the requirements will be implemented properly prior to the issuance of operating licenses.

RESPONSE TO INTERROGATORY

- (A) Yes
- (B) Please see the response to this item on page 1C-22 of the PSAR (Amendment #43). Boston Edison has committed to comply with Regulatory Guide 1.47.
- (C) None.

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I.F.1 Expand QA List

Prior to issuance of the construction permits or manufacturing license, applicants shall revise their QA programs by expanding their QA lists to include all items and activities affecting safety as defined by Regulatory Guide 1.29 and Appendix A to 10CFR Part 50, and shall provide a commitment to apply the revised QA program to all such items and activities.

RESPONSE TO INTERROGATORY

(A) Yes

(B) Please see the response to this item on page C-71 of the PSAR (Amendment #43). Boston Edison has committed to maintain the Pilgrim 2 Q-List in compliance with 10CFR50, Appendix A and Regulatory Guide 1.29. Documents relied upon to support this response are as follows:

- (1) 10CFR50, Appendix A
- (2) 10CFR50, Appendix B
- (3) Regulatory Guide 1.26
- (4) Regulatory Guide 1.29
- (5) "Safety Function & Protection Sequence Analysis," J. E. Howard et als. dated November, 1973.
- (6) "Technical Procedure for Performance of Safety Function & Protection Sequence Analysis," dated January, 1974.

(C) None

I.F.2 Develop More Detailed QA Criteria

Applicants shall describe the changes to their QA programs that have resulted from their review of the accident at TMI-2. In addition, applicants shall address the appropriate matters discussed in this Action Plan item, including the establishment of a quality assurance (QA) program based on consideration of: (a) ensuring independence of the organization performing checking functions from the organization responsible for performing the functions; (b) performing quality assurance/quality control functions at construction sites to the maximum feasible extent; (c) including QA personnel in the documented review of and concurrence in quality related procedures associated with design, construction and installation; (d) establishing criteria for determining QA programmatic requirements; (e) establishing qualification requirements for QA and QC personnel; (f) sizing the QA staff commensurate with its duties and responsibilities; (g) establishing procedures for maintenance of "as-built" documentation; and (h) providing a QA role in design and analysis activities. Applicants shall submit, prior to the issuance of the construction permits or manufacturing license, a revised description of their QA program that includes consideration of these matters.

RESPONSE TO INTERROGATORY

(A) Yes

(B) Please see the response to this item on page 1C-74 of the PSAR (Amendment #43) and in Chapter 14 of the PSAR. The Boston Edison Quality Assurance Program has been established based on consideration of these criteria. Documents relied upon to support this response are as follows:

- (1) Boston Edison Quality Assurance Manual
- (2) Bechtel Nuclear Quality Assurance Manual
- (3) Bechtel Topical Report "Bechtel Quality Assurance Program for Nuclear Power Plants." BQ-TOP-1, Rev. 2A, July 1977.
- (4) Combustion Engineering Quality Assurance Program. CENPD-210A, Revision 3, April 18, 1980.
- (5) Proposed Revision 2 to Standard Review Plan 17.1.

(C) None

II.B.1 Reactor Coolant System Vents

Applicants shall modify their plant designs as necessary to provide the capability of high point venting of noncondensable gases from the reactor coolant system, and other systems that may be required to maintain adequate core cooling. Systems to achieve this capability shall be capable of being operated from the control room and their operation shall not lead to an unacceptable increase in the probability of loss-of-coolant accident or an unacceptable challenge to containment integrity. Applicants shall, to the extent possible, provide preliminary design information at a level consistent with that normally required at the construction permit stage of review. Where new designs are involved, applicants shall provide a general discussion of their approach to meeting these requirements by specifying the design concept selected and the supporting design bases and criteria. Applicants shall also demonstrate that the design concept is technically feasible and within the state of the art, and that there exists reasonable assurance that the requirements will be implemented properly prior to the issuance of operating licenses.

RESPONSE TO INTERROGATORY

- (A) Yes
- (B) Please see the response to this item on page 1C-23 of the PSAR (Amendment #43). Boston Edison has committed to provide the required reactor coolant system vents. Documents relied upon to support this conclusion are:
 - (1) CEN-125, Chapter 9
 - (2) NUREG-0578
 - (3) NRC letter of October 30, 1979
 - (4) 10CFR50.35(a)(2)
- (C) None

II.B.2 Plant Shielding to Provide Access to Vital Areas and Protect Safety Equipment for Post-Accident Operation

Applicants shall (1) perform radiation and shielding design reviews of spaces around systems that may, as a result of an accident, contain TID 14844* source term radioactive material and (2) implement plant design modifications necessary to permit adequate access to important areas and to protect safety equipment from the radiation environment. Applicants shall, to the extent possible, provide preliminary design information at a level consistent with that normally required at the construction permit stage of review. Where new designs are involved, applicants shall provide a general discussion of their approach to meeting the requirements by specifying the design concept selected and the supporting design bases and criteria. Applicants shall also demonstrate that the design concept is technically feasible and within the state of the art, and that there exists reasonable assurance that the requirements will be implemented properly prior to the issuance of operating licenses.

RESPONSE TO INTERROGATORY

(A) Yes

(B) Please see the response to this item on page 1C-24 of the PSAR (Amendment #43). Boston Edison has committed to perform the required Radiation and Shielding design reviews. Documents relied upon to support this conclusion are:

- (1) TID 14844, U.S. Atomic Energy Commission, 1962
- (2) NUREG-0578
- (3) NRC letter of November 9, 1979
- (4) 10CFR50, Appendix A, Criterion 19
- (5) NUREG-0737

(C) None

II.B.3 Post-Accident Sampling

Applicants shall (1) review the reactor coolant and containment atmosphere sampling system designs and the radiological spectrum and chemical analysis facility designs, and (2) modify their plant designs as necessary to provide a capability to promptly obtain and analyze samples from the reactor coolant system and containment that may contain TID 14844 source term radioactive materials without radiation exposures to any individual exceeding 5 rem to the whole-body or 75 rem to the extremities. Materials to be analyzed and quantified include certain radionuclides that are indicators of the degree of core damage (e.g., noble gases, iodines and cesiums, and non-volatile isotopes), hydrogen in the containment atmosphere, dissolved gases, chloride, and boron concentrations. Applicants shall, to the extent possible, provide preliminary design information at a level consistent with that normally required at the construction permit stage of review. Where new designs are involved, applicants shall provide a general discussion of their approach to meeting the requirements by specifying the design concept selected and the supporting design bases and criteria. Applicants shall also demonstrate that the design concept is technically feasible and within the state of the art, and that there exists reasonable assurance that the requirements will be implemented properly prior to the issuance of operating licenses.

RESPONSE TO INTERROGATORY

- (A) Yes
- (B) Please see the response to this item on page 1C-30 of the PSAR (Amendment 43). Boston Edison has committed to perform the required review and to provide the resulting design modifications. Documents relied upon to support this conclusion are:
 - (1) TJD-14844
 - (2) NUREG-0737, Item II.B.3
 - (3) 10CFR50.35(a)(2)
- (C) None

II.B.8 Rulemaking Proceeding on Degraded Core Accidents

Applicants shall:

- (1) commit to performing a site/plant-specific probabilistic risk assessment and incorporating the results of the assessment into the design of the facility. The commitment must include a program plan, acceptable to the staff, that demonstrates how the risk assessment program will be scheduled so as to influence system designs as they are being developed. The assessment shall be completed and submitted to NRC within two years of issuance of the construction permit. The outcome of this study and the NRC review of it will be a determination of specific preventive and mitigative actions to be implemented to reduce these risks. A prevention feature that must be considered is an additional decay heat removal system whose functional requirements and criteria would be derived from the PRA study.

It is the aim of the Commission through these assessments to seek such improvements in the reliability of core and containment heat removal systems as are significant and practical and do not impact excessively on the plant. Applicants are encouraged to take steps that are in harmony with this aim.

RESPONSE TO INTERROGATORY

- (A) Yes
- (B) Please see the response to this item on page 1C-2 of the PSAR (Amendment 43). Boston Edison has committed to perform the required probabilistic risk assessment. Documents relied upon to support this conclusion are:
 - (1) 10CFR50.35(a)(3)
 - (2) Proposal (PLG-123) August, 1980
 - (3) EI-79-23 "Phase I Technical Report on LWR Design Decision Methodology" October 1979
 - (4) Draft IREP Procedures: Sandia Laboratories, December 1980
- (C) None

II.B.8 Rulemaking Proceeding on Degraded Core Accidents

Applicants shall:

- (2) include provisions in the containment design for one or more dedicated penetrations, equivalent in size to a single 3-foot diameter opening. This shall be done in order not to preclude the installation of systems to prevent containment failure, such as filtered vented containment systems.

RESPONSE TO INTERROGATORY

- (A) Yes
- (B) Please see response to this item provided on page 1C-76 of the PSAR (Amendment 43). Boston Edison has committed to provide the required penetration.
- (C) None

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II.B.8 Rulemaking Proceeding on Degraded Core Accidents

Applicants shall:

- (3) provide a system for hydrogen control capable of handling hydrogen generated by the equivalent of a 100% fuel-clad metal water reaction.

RESPONSE TO INTERROGATORY

(A) Yes

(B) Please see response to this item on page 1C-33 of the PSAR (Amendment 43). Boston Edison has committed to provide the required hydrogen control system. Documents relied upon to support this conclusion are:

- (1) April 20, 1981 Bechtel Preliminary Report
- (2) (BLE-6766): Sequoyah Nuclear Plant: Report on the Safety Evaluation of the interim distributed ignition system, dated September 2, 1980.
- (3) 10CFR50.35(a)(3)

(C) None

II.B.8 Rulemaking Proceeding on Degraded Core Accidents

Applicants shall:

- (4) provide preliminary design information at a level consistent with that normally required at the construction permit stage of review sufficient to demonstrate that:
 - (a) Containment integrity will be maintained (i.e., for steel containments by meeting the requirements of the ASME Boiler and Pressure Vessel Code, Division 1, Subsubarticle NE-3220, Service Level C Limits, except that evaluation of instability is not required, considering pressure and dead load alone. For concrete containments by meeting the requirements of the ASME Boiler and Pressure Vessel Code, Division 2, Subsubarticle CC-3720, Factored Load Category, considering pressure and dead load alone) during an accident that releases hydrogen generated from 100% fuel clad metal-water reaction accompanied by either hydrogen burning or the added pressure from post-accident inerting assuming carbon dioxide is the inerting agent, depending upon which option is chosen for control of hydrogen. As a minimum, the specific code requirements set forth above appropriate for each type of containment will be met for a combination of dead load and an internal pressure of 45 psig. Modest deviations from these criteria will be considered by the staff, if good cause is shown by an applicant. Systems necessary to ensure containment integrity shall also be demonstrated to perform their function under these conditions.
 - (b) The containment and associated systems will provide reasonable assurance that uniformly-distributed hydrogen concentrations do not exceed 10% during and following an accident that releases an equivalent amount of hydrogen as would be generated from a 100% fuel clad metal-water reaction, or that the post-accident atmosphere will not support hydrogen combustion.
 - (c) The facility design will provide reasonable assurance that, based on a 100% fuel clad metal-water reaction, combustible concentrations of hydrogen will not collect in areas where unintended combustion or detonation could cause loss of containment integrity or loss of appropriate mitigating features.
 - (d) If the option chosen for hydrogen control is post-accident inerting:
 - (a) Containment structure loadings produced by an inadvertent full inerting (assuming carbon dioxide), but not including seismic or design basis accident loadings, will not produce stresses in steel containments in excess of the limits set forth in the ASME Boiler

and Pressure Vessel Code, Division 1, Subsubarticle NE-3220, Service Level A limits, except that evaluation of instability is not required (for concrete containments the loadings specified above will not produce strains in the containment liner in excess of the limits set forth in the ASME Boiler and Pressure Vessel Code, Division 2, Subsubarticle CC-3720, Service Load Category), (b) demonstrate that a pressure test, which is required, of the containments at 1.10 and 1.15 times for steel and concrete containments, respectively) the pressure calculated to result from carbon dioxide inerting can be safely conducted, (c) demonstrate that inadvertent full inerting of the containment can be safely accommodated during plant operation.

- (e) If the option chosen for hydrogen control is a distributed ignition system, equipment necessary for achieving and maintaining safe shutdown of the plant and maintaining containment integrity shall be designed to perform its function during and after being exposed to the environmental conditions created by activation of the distributed ignition system.

RESPONSE TO INTERROGATORY

(A) Yes

(B) Please see the response to this item on page 1C-7C of the PSAR (Amendment #43). Boston Edison has provided the required information. Documents relied upon to support this conclusion are:

- (1) Bechtel Preliminary Report dated April 20, 1981

(C) None

II.D.1 Testing Requirements

Applicants and their agents shall provide a test program and associated model development and conduct tests to qualify reactor coolant system relief and safety valves and, for PWR's, PORV block valves, for all fluid conditions expected under operating conditions, transients and accidents. Consideration of anticipated transient without scram (ATWS) conditions shall be included in the test program. Actual testing under ATWS conditions need not be carried out until subsequent phases of the test program are developed and not before issuance of an ATWS rule. Applicants shall submit, prior to the issuance of the construction permits or manufacturing license, a general explanation of how the testing requirements will be met. Sufficient detail should be presented to provide reasonable assurance that the requirements will be implemented properly prior to the issuance of operating licenses.

Applicants shall (1) demonstrate the applicability of the generic tests conducted under II.D.1 to their particular plants and (2) modify their plant designs as necessary. Applicants shall commit, prior to the issuance of the construction permits or manufacturing license, to comply with these requirements and shall submit within six months following the completion of the generic tests or the issuance of construction permits, whichever is later, a detailed explanation of how the test results will be incorporated in the plant design. Sufficient detail should be presented to provide reasonable assurance that the requirements resulting from the test will be implemented properly prior to the issuance of operating licenses.

RESPONSE TO INTERROGATORY

(A) Yes

(B) Please see the response to this item provided on page 1C-34 of the PSAR (Amendment 43). Boston Edison has committed to implement the results of the generic EPRI valve testing program. Documents relied upon to support this response are:

(1) 10CFR50.35(a)(3)

(2) CE-TMI-97; "CE Plant Design Input for Safety & Relief Valve Testing." December 10, 1980.

(3) EPRI Document: "PWR Safety & Relief Valve Test Program." December, 1980

(C) None

II.D.3 Relief and Safety Valve Position Indication

Applicants shall modify their plant designs as necessary to provide direct indication of relief and safety valve position in the control room. Applicants shall, to the extent possible, provide preliminary design information at a level consistent with that normally required at the construction permit stage of review. Where new designs are involved, applicants shall provide a general discussion of their approach to meeting the requirements by specifying the design concept selected and the supporting design bases and criteria. Applicants shall also demonstrate that the design concept is technically feasible and within the state-of-the-art, and that there exists reasonable assurance that the requirements will be implemented properly prior to issuance of operating licenses.

RESPONSE TO INTERROGATORY

- (A) Yes
- (B) Please see response to this item provided on page 1C-36 of the PSAR (Amendment 43). Boston Edison has committed to provide direct indication of relief and safety valve position in the control room. Documents relied upon to support this response are:
 - (1) CEN-125
 - (2) NUREG-0737
 - (3) 10CFR50.35(a)(2)
- (C) None

II.E.1.1 Auxiliary Feedwater System Evaluation

Applicants shall perform a reevaluation of their proposed auxiliary feedwater (AFW) system. This reevaluation shall include the following:

- (1) Performance of simplified auxiliary feedwater system reliability analyses using event-tree and fault-tree logic techniques to determine the potential for AFW system failure under various loss of main feedwater transient conditions, with particular emphasis being given to determining potential failures that could result from human errors, common causes, single point vulnerabilities, and test and maintenance outages. The results of this evaluation shall be compared with the results of the NRC staff's generic AFW system evaluation published in Appendix III to NUREG-0611 and Appendix III to NUREG-0635. Applicants with plants with AFW systems with relatively low reliabilities shall submit proposed design changes and/or procedural actions which will improve the relative reliability of the AFW system to above average. Applicants whose plant designs do not include high head high pressure injection system pumps for use in the feed and bleed mode of decay heat removal in case of AFW system failure shall assure that their AFW system has a very high reliability relative to those AFW systems evaluated by the NRC and staff and reported in NUREG-0611 and NUREG-0635 respectively.
- (2) Completion of a deterministic review of the AFW system using the acceptance criteria of Standard Review Plan Section 10.4.9 as principal guidance. This requirement applies to those plants where the Standard Review Plan was not used as criteria during the NRC staff's CP review.
- (3) Reevaluation of the AFW system flow design bases and criteria. Applicants shall provide sufficient information to describe the nature of the studies, how they are to be conducted, the completion dates, and the program to assure that the results of such studies are factored into the final design.

RESPONSE TO INTERROGATORY

- (A) Yes
- (B) Please see the response to this item provided on page 1C-10 of the PSAR (Amendment 43). Boston Edison has committed to perform the required review of the emergency feedwater system. Documents relied upon to support this response are as follows:
 - (1) NUREG-0635
 - (2) SRP Section 10.4.9
 - (3) 10CFR50.35(a)(2)
- (C) None

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II.E.1.2 Auxiliary Feedwater System Automatic Initiation and Flow Indication

Applicants with PWR plants shall provide automatic and manual auxiliary feedwater (AFW) system initiation and auxiliary feedwater system flow indication in the control room. These systems shall be safety grade and meet the requirements specified in NUREG-0737. Applicants shall, to the extent possible, provide preliminary design information at a level consistent with that normally required at the construction permit stage of review. Where new designs are involved, applicants shall provide a general discussion of their approach to meeting the requirements by specifying the design concept selected and the supporting design bases and criteria. Applicants shall also demonstrate that the design concept is technically feasible and within the state-of-the-art, and that there exists reasonable assurance that the requirements will be implemented properly prior to the issuance of operating licenses.

RESPONSE TO INTERROGATORY

- (A) Yes
- (B) Please see the response to this item provided on page 1C-36. Boston Edison has committed to provide automatic and manual initiation of emergency feedwater, and safety-grade auxiliary feedwater flow indication in the control room. Boston Edison has provided analysis of the effect on containment integrity and return to reactor power of automatic emergency feedwater initiation with a postulated main steam line break inside containment. Documents relied upon to support this conclusion are as follows:
 - (1) NUREG-0737 Item II.E.1.2
- (C) None

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II.E.3.1 Reliability of Power Supplies for Natural Circulation

Applicants shall (1) upgrade the power supplies for the pressurizer heaters and associated motive and control power interfaces to meet the applicable requirements specified in NUREG-0737 and (2) establish procedures and training for maintaining the reactor coolant system at hot standby conditions with only onsite power available.

Applicants shall, to the extent possible, provide preliminary design information at a level consistent with that normally required at the construction permit stage of review. Where new designs are involved, applicants shall provide a general discussion of their approach to meeting the requirements by specifying the design concept selected and the supporting design bases and criteria. Applicants shall also demonstrate that the design concept is technically feasible and within the state-of-the-art, and that there exists reasonable assurance that the requirements will be implemented properly prior to the issuance of operating licenses.

RESPONSE TO INTERROGATORY

- (A) Yes
- (B) Please see the response to this item provided on page 1C-38 of the PSAR (Amendment 43). Boston Edison has committed to provide the required pressurizer heater power supply. Documents relied upon to support this conclusion are as follows:
 - (1) "An Approach to Associated Power Circuits" IEEE Transactions on Power Apparatus and Systems, Vol. PAS-97, No. 4, July/August 1978. G. M. McHugh et als.
 - (2) Supplement 3 to NUREG-0022 "Pilgrim 2 Safety Evaluation Report" Section 8.4 August 1979
- (C) Boston Edison has taken exception to items 4, 5, and 7 of NUREG-0737 and recommendation C-1 of Regulatory Guide 1.75. Discussion of these exceptions is provided on page 8.3-26A of the PSAR.

II.E 4.1 Dedicated Penetration

Applicants for plant designs with external hydrogen recombiners shall modify their applications as necessary to include redundant dedicated containment penetrations so that, assuming a single failure, the recombiner systems can be connected to the containment atmosphere. Applicants shall submit, prior to the issuance of construction permits or the manufacturing license, a detailed explanation of how the requirements will be met in order to provide reasonable assurance that the requirements will be implemented properly.

RESPONSE TO INTERROGATORY

- (A) See (B)
- (B) Please see the response to this item provided on page 1C-80 of the PSAR. Since the subject hydrogen recombiners are located inside containment, this requirement does not apply to Pilgrim 2.
- (C) None

II.E.4.2 Isolation Dependability

Containment isolation system designs shall comply with the recommendations of Standard Review Plan Section 6.2.4.

All plants shall give careful consideration to the definition of essential and non-essential systems, identify each system determined to be essential, identify each system determined to be non-essential, and describe the basis for selection of each essential system. All non-essential systems shall be automatically isolated by the containment isolation signal. Revision 2 to Regulatory Guide 1.141 will contain guidance on the classification of essential versus non-essential systems and is due to be issued by June 1981.

For post-accident situations, each non-essential penetration (except instrument lines) is required to have two isolation barriers in series that meet the requirements of General Design Criteria 54, 55, 56, and 57, as clarified by Standard Review Plan, Section 6.2.4. Isolation must be performed automatically (i.e., no credit can be given for operator action). Manual valves must be sealed closed, as defined by Standard Review Plan, Section 6.2.4, to qualify as an isolation barrier. Each automatic isolation valve in a non-essential penetration must receive diverse isolation signals.

The design of control systems for automatic containment isolation valves shall be such that resetting the isolation signal will not result in the automatic reopening of containment isolation valves. Reopening of containment isolation valves shall require deliberate operator action. Administrative provisions to close all isolation valves manually before resetting the isolation signals is not an acceptable method of meeting this requirement.

Ganged reopening of containment isolation valves is not acceptable. Reopening of isolation valves must be performed on a valve-by-valve basis, or on a line-by-line basis, provided that electrical independence and other single-failure criteria continue to be satisfied.

The containment setpoint pressure that initiates containment isolation for non-essential penetrations must be reduced to the minimum compatible with normal operating conditions. The containment pressure history during normal operation for similar operating plants should be used as a basis for arriving at an appropriate minimum pressure setpoint for initiating containment isolation. The pressure setpoint selected should be far enough above the maximum observed (or expected) pressure inside containment during normal operation so that inadvertent containment isolation does not occur during normal operation from instrument draft or fluctuations due to the accuracy of the pressure sensor. A margin of 1 psi above the maximum expected containment pressure should be adequate to account for instrument error. Any proposed values greater than 1 psi will require detailed justification.

All systems that provide a path from the containment to the environs (e.g., containment purge and vent systems) must close on a safety-grade high radiation signal.

Containment purge valves that do not satisfy the operability criteria set forth in Branch Technical Position CSB 6-4 or the Staff Interim Position of October 23, 1979, must be sealed closed as defined in SRP 6.2.4, item II.3f during operational conditions 1, 2, 3, and 4. Furthermore, these valves must be verified to be closed at least every 31 days.

Applicants shall, to the extent possible, provide preliminary design information at a level consistent with that normally required at the cancellation permit stage of review. Where new designs are involved, applicants shall provide a general discussion of their approach to meeting the requirements by specifying the design concept selected and the supporting design bases and criteria. Applicants shall also demonstrate that the design concept is technically feasible and within the state-of-the-art, and that there exists reasonable assurance that the requirements will be implemented properly prior to the issuance of operating licenses.

RESPONSE TO INTERROGATORY

- (A) Yes
- (B) Please see the response to this item provided on page 1C-40 of the PSAR (Amendment 43). The Pilgrim 2 containment isolation system complies with the recommendations of SRP 6.2.4.
- (C) None

II.E.4.4 Purging

Applicants shall (1) provide a capability for containment purging/venting designed to minimize purging time, consistent with ALARA principles for occupational exposure, (2) evaluate the performance of purging and venting isolation valves against accident pressure, (3) address the interim NRC guidance on valve operability, (4) adopt procedures and restrictions consistent with the revised requirements; and (5) provide and demonstrate high assurance that the purge system will be reliably isolated under accident conditions.

Applicants shall, to the extent possible, provide preliminary design information at a level consistent with that normally required at the construction permit stage of review. Where new designs are involved, applicants shall provide a general discussion of their approach to meeting the requirements by specifying the design concept selected and the supporting design bases and criteria. Applicants shall also demonstrate that the design concept is technically feasible and within the state of the art, and that there exists reasonable assurance that the requirements will be implemented properly prior to the issuance of operating licenses.

RESPONSE TO INTERROGATORY

- (A) Yes
- (B) Please see the response to this item provided on page 1C-43 of the PSAR (Amendment 43). Boston Edison has committed to provide a containment purge system which complies with these requirements. Documents relied upon to support this response are:
 - (1) Branch Technical Position 6-4
 - (2) October 3, 1979 NRC letter
 - (3) 10CFR50.35(a)(2)
- (C) None

II.E.5.1 Design Evaluation

Applicants with B&W-designed reactors shall (1) identify the most severe overcooling events (considering both anticipated transients and accidents) that could occur at the facilities, (2) show, in view of the arrival rate for these events, that the design criterion for the number of actuation cycles of the emergency core cooling system and reactor protection system is adequate, (3) recommend changes to systems or procedures that would reduce primary system sensitivity. Applicants with B&W-designed reactors shall, to the extent possible, provide preliminary design information at a level consistent with that normally required at the construction permit stage of review. Where new designs are involved, applicants shall provide a general discussion of their approach to meeting the requirements by specifying the design concept selected and the supporting design bases and criteria. Applicants shall also demonstrate that the design concept is technically feasible and within the state-of-the-art, and that there exists reasonable assurance that the requirements will be implemented properly prior to the issuance of operating licenses.

RESPONSE TO INTERROGATORY

- (A) See (B)
- (B) This requirement is applicable to B&W designed reactors and as such is not applicable to Pilgrim 2 a CE designed reactor
- (C) None

II.F.1 ADDITIONAL ACCIDENT MONITORING INSTRUMENTATION

Applicants shall provide instrumentation to measure, record and readout in the control room: (a) containment pressure, (b) containment water level, (c) containment hydrogen concentration, (d) containment radiation intensity (high level), and (e) noble gas effluents at all potential, accident release points. The requirements for the specific monitors are listed in NUREG-0737. Applicants shall also provide for continuous sampling of radioactive iodines and particulates in gaseous effluents from all potential, accident release points, and for onsite capability to analyze and measure these samples. Applicants shall, to the extent possible, provide preliminary design information at a level consistent with that normally required at the construction permit stage of review. Where new designs are involved, applicants shall provide a general discussion of their approach to meeting the requirements by specifying the design concept selected and the supporting design bases and criteria. Applicants shall also demonstrate that the design concept is technically feasible and within the state of the art, and that there exists reasonable assurance that the requirements will be implemented properly prior to the issuance of operating licenses.

RESPONSE TO INTERROGATORY

- (A) Yes
- (B) Please see the response to this item provided on page 1C-45 of the PSAR (Amendment 43). Boston Edison has committed to provide the required accident monitoring instrumentation. Documents relied upon to support this conclusion are as follows:
 - (1) NUREG-0737, Item II.F.1
 - (2) 10CFR50.35(a)(2)
- (C) None

II.F.2 IDENTIFICATION OF AND RECOVERY FROM CONDITIONS LEADING TO INADEQUATE CORE COOLING

Applicants shall describe their program for developing and implementing procedures to be used by the reactor operators to detect and recover from conditions leading to inadequate core cooling.

Applicants shall provide instruments that provide in the control room an unambiguous indication of inadequate core cooling, such as primary coolant saturation meters in PWR's, and a suitable combination of signals from indicators of coolant level in the reactor vessel and incore thermocouples in PWR's and BWR's.

Applicants shall, to the extent possible, provide preliminary design information at a level consistent with that normally required at the construction permit stage of review. Where new designs are involved, applicants shall provide a general discussion of their approach to meeting the requirements by specifying the design concept selected and the supporting design bases and criteria. Applicants shall also demonstrate that the design concept is technically feasible and within the state of the art, and that there exists reasonable assurance that the requirements will be implemented properly prior to the issuance of operating licenses.

RESPONSE TO INTERROGATORY

(A) Yes

(B) Please see the response to this item provided on page 1C-47 of the PSAR (Amendment 43). Boston Edison has committed to provide the required instrumentation. For the applicants program for developing procedures please see the response to item I.C.9. Documents relied upon to support this conclusion are as follows:

- (1) NUREG-0737
- (2) CFN-125
- (3) 10CFR50.35(a)(2)

II.F.3 INSTRUMENTATION FOR MONITORING ACCIDENT CONDITIONS (REG. GUIDE 1.97)

Applicants shall provide in their facility design instrumentation to monitor plant variables and systems during and following an accident in accordance with defined design bases and Regulatory Guide 1.97, Rev. 2, December 1980. Designs are already established for much of the instrumentation that will be required; some of the requirements, however, may involve state-of-the-art designs or designs which have yet to be developed.

Applicants shall, to the extent possible, provide preliminary design information at a level consistent with that normally required at the construction permit stage of review. Where new designs are involved, applicants shall provide a general discussion of their approach to meeting the requirements by specifying the design concept selected and the supporting design bases and criteria. Applicants shall also demonstrate that the design concept is technically feasible and within the state-of-the-art, and that there exists reasonable assurance that the requirements will be implemented properly prior to the issuance of operating licenses.

RESPONSE TO INTERROGATORY

- (A) Yes
- (B) Please see the response to this item provided on page 1C-48 of the PSAR (Amendment 43). Boston Edison has committed to comply with Regulatory Guide 1.97, Rev. 2. Documents relied upon to support this conclusion are:
 - (1) R.G. 1.97, Rev 2
 - (2) 10CFR50.35(a)(2)
- (C) None

II.G.1 POWER SUPPLIES FOR PRESSURIZER RELIEF VALVES, BLOCK VALVES, AND
LEVEL INDICATION

Applicants with PWR plants shall provide power supplies for the pressurizer relief valves, block valves, and pressurizer level indicators to meet the applicable requirements specified in NUREG-0737. Level indicators shall be powered from vital buses, motive and control power connections to emergency power sources shall be through devices qualified in accordance with requirements applicable to systems important to safety, and electric power shall be provided from emergency sources. Applicants with PWR plants shall, to the extent possible, provide preliminary design information at a level consistent with that normally required at the construction permit stage of review. Where new designs are involved, applicants shall provide a general discussion of their approach to meeting the requirements by specifying the design concept selected and the support design bases and criteria. Applicants shall also demonstrate that the design concept is technically feasible and within the state of the art, and that there exists reasonable assurance that the requirements will be implemented properly prior to the issuance of operating licenses.

RESPONSE TO INTERROGATORY

- (A) Yes
- (B) Please see the response to this item provided on page 1C-49 of the PSAR (Amendment 43). Boston Edison has committed to supply the required power supplies. Documents relied upon to support this conclusion are as follows:
 - (1) NUREG-0737, Item II.G.1
 - (2) 10CFR50.35(a)(2)
- (C) None

II.J.3.1 Organization and Staffing To Oversee Design And Construction

Applicants shall describe their program for the management oversight of design and construction activities. Specific items to be addressed include: (1) the organizational and management structure which is singularly responsible for the direction of the design and construction of the proposed plant, (2) technical resources which are directed by the utility organization, (3) details of the interaction of design and construction within the utility organization and the manner by which the utility will assure close integration of the architect engineer and nuclear steam supply vendor, (4) proposed procedures for handling the transition to operation, and (5) the degree of top level management oversight and technical control to be exercised by the utility during design and construction, including the preparation and implementation of procedures necessary to guide the effort.

Draft NUREG-0731, "Guidelines for Utility Management Structure and Technical Resources" is the keystone for similar development of guidelines for this task. Therefore, the principal applicable elements of NUREG-0731 shall be used by CP and ML applicants in addressing this task.

Applicants shall submit detailed information in order to provide reasonable assurance that the requirements will be implemented properly prior to issuance of the construction permits or manufacturing license.

RESPONSE TO INTERROGATORY

- (A) Yes.
- (B) Please see the response to this item provided on page IC-82 and page 13.1. of the PSAR. Boston Edison's program for management oversight of design and construction activities has addressed the required items.
- (C) None

II.K.1.22 Describe Automatic and Manual Actions for Proper Functioning of Auxiliary Heat Removal Systems when FW System not Operable

Applicants with BWR plants shall design auxiliary heat removal systems such that necessary automatic and manual actions can be taken to ensure proper functioning when the main feedwater system is not operable. A general explanation of how this requirement will be met is required prior to issuance of the construction permits. Sufficient detail shall be presented to provide reasonable assurance that the requirements will be implemented properly.

RESPONSE TO INTERROGATORY

- (A) See (B)
- (B) This requirement is applicable to Boiling Water Reactors only. Pilgrim-2 is a Pressurized Water Reactor.
- (C) N/A

II.K.2.9 Analysis and Upgrading of Integrated Control System

Applicants with B&W-designed plants shall address the requirements set forth in the Commission Orders issued to operating B&W plants in May 1979 regarding the analysis and upgrading of the integrated control system (ICS), and perform a failure modes and effects analysis of the ICS to include considerations of failures and effects of input and output signals to the ICS. Applicants shall, to the extent possible, provide preliminary design information at a level consistent with that normally required at the construction permit stage of review. Where new designs are involved, applicants shall provide a general discussion of their approach to meeting the requirements by specifying the design concept selected and the supporting design bases and criteria. Applicants shall also demonstrate that the design concept is technically feasible and within the state of the art, and that there exists reasonable assurance that the requirements will be implemented properly prior to the issuance of operating licenses.

RESPONSE TO INTERROGATORY

- (A) See (B)
- (B) This requirement is applicable to B&W designed plants. Pilgrim-2 is a CE designed plant.
- (C) N/A

II.K.2.10 Hard-Wired Safety-Grade Anticipatory Reactor Trips

Applicants with B&W-designed plants shall provide, as part of the reactor protection system, an anticipatory reactor trip that would be actuated on loss of main feedwater and on turbine trip. Applicants shall, to the extent possible, provide preliminary design information at a level consistent with that normally required at the construction permit stage of review. Where new designs are involved, applicants shall provide a general discussion of their approach to meeting the requirements by specifying the design concept selected and the supporting design bases and criteria. Applicants shall also demonstrate that the design concept is technically feasible and within the state of the art, and that there exists reasonable assurance that the requirements will be implemented properly prior to the issuance of operating licenses.

RESPONSE TO INTERROGATORY

- (A) See (B)
- (B) This requirement is only applicable to plants designed by B&W. Pilgrim-2 is a plant designed by CE.
- (C) N/A

II.K.2.16 Impact Of RCP Seal Damage Following Small-Break LOCA
With Loss Of Offsite Power

Applicants shall perform an evaluation of the potential for and impact of reactor coolant pump seal damage following small-break LOCA with loss of offsite power. If damage cannot be precluded, provide an analysis of the limiting small-break loss-of-coolant accident with subsequent reactor coolant pump seal damage. Applicants shall provide sufficient information to describe the nature of the studies, how they are to be conducted, the completion dates, and the program to assure that the results of such studies are factored into the final designs.

RESPONSE TO INTERROGATORY

- (A) Yes.
- (B) Please see the response to this item provided on page IC-11 of the PSAR (Amendment 43). Boston Edison has committed to provide the required evaluation. Documents relied upon to support this conclusion are as follows:

- (1) 10CFR50.35(a)(2)

- (C) None

II.K.3.2 Report On Overall Safety Effect Of PORV Isolation System

Applicants with PWR plants shall address the requirements set forth in Item 3.2.4.e and 3.2.4.f of NUREG-0611 and perform an analysis of the probability of a small-break loss-of-coolant accident (LOCA) caused by a stuck-open power-operated relief valve (PORV). If this probability is a significant contributor to the probability of small-break LOCA's from all causes, provide a description and evaluation of the effect on small-break LOCA probability of an automatic PORV isolation system that would operate when the reactor coolant system pressure falls after the PORV has opened. Applicants with PWR plants shall provide sufficient information to describe the nature of the studies, how they are to be conducted, the completion dates, and the program to assure that the results of such studies are factored into the final designs.

RESPONSE TO INTERROGATORY

- (A) Yes
- (B) Please see the responses to this item provided on page IC-12 of the PSAR (Amendment 43). Boston Edison has committed to perform the required analysis. Documents relied upon to support this conclusion are as follows:
 - (1) NUREG-0611, Items 3.2.4.e and 3.2.4.f
 - (2) 10CFR50.35 (a) (2)
- (C) None

II.K.3.13 Separation of HPCI* And RCIC System Initiation
Levels - Analysis And Implementation

Applicants with BWR plants shall address the requirements set forth in Item A.1 of NUREG-0626 as they apply to HPCI and RCIC systems, and perform an evaluation of the safety effectiveness of providing for separation of high pressure coolant injection (HPCI) and reactor core isolation cooling (RCIC) system initiation levels so that the RCIC system initiates at a higher water level than the HPCI system, and of providing that both systems restart on low water level. Applicants shall provide sufficient information to describe the nature of the studies, how they are to be conducted, the completion dates, and the program to assure that the results of such studies are factored into the final designs.

RESPONSE TO INTERROGATORY

- (A) See (B)
- (B) This requirement is only applicable to Boiling Water reactors only. Pilgrim-2 is a Pressurized Water reactor.
- (C) N/A

II.K.3.16 Reduction of Challenges and Failures of Relief Valves -
Feasibility Study and System Modification

Applicants with BWR plants shall address the requirements set forth in Item A.4 of NUREG-0626, and perform a study to identify practicable system modifications that would reduce challenges and failures of relief valves, without compromising the performance of the valves or other systems. Applicants shall provide sufficient information to describe the nature of the studies, how they are to be conducted, the completion dates, and the program to assure that the results of such studies are factored into the final designs.

RESPONSE TO INTERROGATORY

- (A) See (B)
- (B) This requirement is only applicable to Boiling Water reactors only. Pilgrim-2 is a Pressurized Water reactor.
- (C) N/A

II.K.3.18 Modification of ADS Logic - Feasibility Study and Modification
For Increased Diversity For Some Event Sequences

Applicants with BWR plants shall address the requirements set forth in Item A.7 of NUREG-0626 and perform a feasibility and risk assessment study to determine the optimum automatic depressurization system (ADS) design modifications that would eliminate the need for manual activation to ensure adequate core cooling. Applicants shall provide sufficient information to describe the nature of the studies, how they are to be conducted, the completion dates, and the program to assure that the results of such studies are factored into the final designs.

RESPONSE TO INTERROGATORY

- (A) See (B)
- (B) This requirement is only applicable to Boiling Water reactors only. Pilgrim-2 is a Pressurized Water reactor.
- (C) N/A

II.K.3.21 Restart of Core Spray and LPCI Systems on Low Level - Design and Modification

Applicants with BWR plants shall address the requirements set forth in Item A.10 of NUREG-0626 and perform a study of the effect on all core cooling modes under accident conditions of designing the core spray and low pressure coolant injection systems to ensure that the systems will automatically restart on loss of water level, after having been manually stopped, if an initiation signal is still present. Applicants shall provide sufficient information to describe the nature of the studies, how they are to be conducted, the completion dates, and the program to assure that the results of such studies are factored into the final designs.

RESPONSE TO INTERROGATORY

- (A) See (B)
- (B) This requirement is only applicable to Boiling Water reactors only. Pilgrim-2 is a Pressurized Water reactor.
- (C) N/A

II.K.3.23 Central Water Level Recording

Applicants with BWR Plants shall provide the capability to record reactor vessel water level in one location on recorders that meet normal post-accident recording requirements. Applicants shall implement design modifications as necessary to meet the requirements. Applicants shall submit, prior to issuance of construction permits, a general explanation of how the requirements will be met. Sufficient detail shall be presented to provide reasonable assurance that the requirements will be implemented properly prior to the issuance of operating licenses.

RESPONSE TO INTERROGATORY

- (A) See (B)
- (B) This requirement is only applicable to Boiling Water Reactors only. Pilgrim-2 is a Pressurized Water Reactor.
- (C) N/A

II.K.3.24 Confirm Adequacy of Space Cooling for HPCI* and RCIC Systems

Applicants with BWR plants shall address the HPCI and RCIC systems requirements set forth in Item B.3 of NUREG-0626, and perform a study to determine the need for additional space cooling to ensure reliable long-term operation of these systems following a complete loss of offsite power to the plant for at least two hours. Applicants shall provide sufficient information to describe the nature of the studies, how they are to be conducted, the completion dates, and the program to assure that the results of such studies are factored into the final designs.

RESPONSE TO INTERROGATORY

- (A) See (B)
- (B) This requirement is only applicable to Boiling Water Reactors only. Pilgrim-2 is a Pressurized Water Reactor.
- (C) N/A

II.K.3.28 Verify Qualification of Accumulators on ADS Valves

Applicants with BWR plants shall provide information to ensure that the ADS valves, accumulators, and associated equipment and instrumentation will be capable of performing their intended functions during and following an accident situation while taking no credit for non-safety related equipment or instrumentation. Air (or nitrogen) leakage through valves must be accounted for to ensure that enough inventory of compressed air (or nitrogen) will be available to cycle the ADS valves. Applicants shall commit that these requirements will be met in the final design at the OL stage.

In addressing this item prior to CP issuance, applicants should note that safety analysis reports claim that air (or nitrogen) accumulators for the ADS valves provide sufficient capacity (inventory) to cycle these valves open five times at design pressures. Also, General Electric has stated that the emergency core cooling systems are designed to withstand a hostile environment and still perform their functions for 100 days following an accident.

RESPONSE TO INTERROGATORY

- (A) See (B)
- (B) This requirement is only applicable to Boiling Water Reactors only. Pilgrim-2 is a Pressurized Water Reactor.
- (C) N/A

II.K.3.45 Evaluate Depressurization With Other Than Full ADS

Applicants with BWR plants shall address the requirements set forth in Item A.15 of NUREG-0626, and provide an evaluation of depressurization methods, other than by full actuation of the automatic depressurization system, that would reduce the possibility of exceeding vessel integrity limits during rapid cooldown. Applicants shall provide sufficient information to describe the nature of the studies, how they are to be conducted, the completion dates, and the program to assure that the results of such studies are factored into the final designs.

RESPONSE TO INTERPOGATORY

- (A) See (B)
- (B) This requirement is only applicable to Boiling Water reactors only. Pilgrim-2 is a Pressurized Water reactor.
- (C) N/A

III.A.1.2 Upgrade Licensee Emergency Support Facilities

Applicants shall address the requirements for a Technical Support Center, Operational Support Center and the Emergency Operations Facility. Applicants shall provide preliminary design information in accordance with the functional criteria in NUREG-0696 at a level consistent with that normally required at the construction permit stage of review. Where new designs are involved, applicants shall provide a general discussion of their approach to meeting the requirements by specifying the design concept selected and the supporting design bases and criteria. Applicants shall demonstrate that the design concept is technically feasible and within the state of the art, and that there exists reasonable assurance that the requirements will be implemented properly prior to the issuance of operating licenses.

RESPONSE TO INTERROGATORY

- (A) Yes.
- (B) Please see the response to this item provided on page IC-59 of the PSAR. Boston Edison has committed to provide the required facilities. Documents relied upon to support this conclusion are:
 - (1) NUREG-0696
 - (2) 10CFR 50. 35 (a) (2)
- (C) None

III.D.1.1 Primary Coolant Sources Outside The Containment Structure

Applicants shall review the designs of such systems outside containment, and their provisions for leakage control and detection, overpressurization design, discharge points for waste gas venting systems, etc., with the goal of minimizing potential exposures to workers and public following an accident, and providing reasonable assurance that excessive leakage will not prevent the use of systems needed in an emergency. Applicants shall provide for leakage control and detection in the design of systems outside containment that contain (or might contain) TID 14844* source term radio-active materials following an accident, and submit a leakage control program, including an initial test program and a schedule for retesting these systems, and the actions to be taken for minimizing leakage from such systems.

In this regard, applicants shall submit, prior to the issuance of construction permits, a general discussion of their approach to minimizing leakage from such systems outside containment, in sufficient detail to provide reasonable assurance that this objective will be met satisfactorily prior to issuance of operating licenses.

RESPONSE TO INTERROGATORY

- (A) Yes.
- (B) Please see the response to this item provided on page IC-55 of the PSAR. Boston Edison has committed to provide the required leakage control and detection.
- (C) None

III.D.3.3 In-Plant Radiation Monitoring

Applicants shall review their designs to ensure that provisions for monitoring in-plant radiation and airborne radioactivity are appropriate for a broad range of routine and accident conditions. Applicants shall, to the extent possible, provide preliminary design information at a level consistent with that normally required at the construction permit stage of review. Where new designs are involved, applicants shall provide a general discussion of their approach to meeting the requirements by specifying the design concept selected and the supporting design bases and criteria. Applicants shall also demonstrate that the design concept is technically feasible and within the state of the art, and that there exists reasonable assurance that the requirements will be implemented properly prior to the issuance of operating licenses.

RESPONSE TO INTERROGATORY

- (A) Yes.
- (B) Please see the response to this item provided on page IC-54 of the PSAR. Boston Edison has committed to perform the required review and provide the required equipment. Documents relied upon to support this conclusion are:
 - (1) Regulatory Guide 1.97 Rev. 2.
- (C) None

III.D.3.4 Control Room Habitability

Applicants shall review the design of their facilities for conformance to requirements stated in the Action Plan. Applicants shall evaluate potential pathways for radioactivity and radiation that may lead to control room habitability problems under accident conditions resulting in a TID 14844* source term release and make necessary design provisions to preclude such problems.

Applicants shall address prior to the issuance of the construction permits or manufacturing license, how they will implement the existing requirements set forth in this Action Plan item. Applicants shall also address the extent to which improvements have been made to prevent control room contamination via pathways not previously considered. Applicants shall, to the extent possible, provide preliminary design information at a level consistent with that normally required at the construction permit stage of review. Where new designs are involved, applicants shall provide a general discussion of their approach to meeting the requirements by specifying the design concept selected and the supporting design bases and criteria. Applicants shall also demonstrate that the design concept is technically feasible and within the state of the art, and that there exists reasonable assurance that the requirements will be implemented properly prior to the issuance of operating licenses.

RESPONSE TO INTERROGATORY

- (A) Yes.
- (B) Please see the response to this item provided on page IC-b9 of the PSAR (Amendment 42). Boston Edison has performed the required review. Documents relied upon to support this conclusion are as follows:
 - (1) RC 1.78
 - (2) RG 1.95
 - (3) Standard Review Plan Sections 2.2.1, 2.2.2, 2.2.3 and 6.4
 - (4) GDC-19
- (C) None

INTERROGATORY #2

Identify all correspondence, memoranda, comments, transcripts, meeting minutes of summaries, notes or records of conversations, and other documents within the possession, custody, or control of the Applicants, Combustion Engineering ("CE"), or Bechtel which relate in any way to communications between the Applicants, CE or Bechtel and the NRC, between the Applicants and CE, between the Applicants and Bechtel, between the Applicants and CE Owners Group, or between CE and the CE Owners Group regarding any information requirement contained in NUREG-0718, Rev. 1, Appendix B, or in NUREG-0718, Appendix B. For each such document, identify its author(s), addressee(s), if any, subject, and location and provide a brief description of the contents thereof.

RESPONSE

Boston Edison objects to this interrogatory to the extent that it is construed to call for more than the principal documents (and documents referenced therein) relied upon by the Applicants at the time Amendment 43 to the PSAR was prepared.

The principal documents relied upon by the applicants are as follows:

- (1) NRC Internal Memo: "Request for Review of Action Plan Requirement for Pending CP Applications." Dated: April 29, 1980. Author W. F. Kane.
- (2) Bechtel letter (BLE-6495): Draft Responses to Items III.D.11 and II.B.3 as delineated in (1) above. From B. N. Pusheck to R. M. Butler Dated: June 3, 1980.
- (3) Boston Edison letter (ELB-4515 & ELC-883) "Division of Responsibility for Preparation of PSAR Changes in Response to (1) above." W. F. Hickey to B. N. Pusheck and R. E. Newman. Dated: June 9, 1980.
- (4) Draft NRC SECY Paper: Same subject as and supercedes (1) above: W. F. Kane, June 11, 1980.
- (5) Bechtel letter (BLE-6536): Draft Responses to Items III.D.11 and III.D.3.3 as defined in (3) above. From B. N. Pusheck to R. M. Butler dated June 30, 1980.
- (6) NRC SECY-80-348 August 1, 1981 "Proposed Post-TMI Requirements for CP & ML Applications."
- (7) NUREG-0718, August 1980 (Draft)
- (8) Combustion Engineering letter (E-CLE-1097): "Suggested Responses to Items I.C.1, I.C.9, II.B.1, II.D.1, II.D.3, II.F.3.1, II.F.2, II.K.3.2" R. E. Newman to R. M. Butler dated August 5, 1980.

- (9) Combustion Engineering Report (CEN-114): "Review of Small Break Transients on Combustion Engineering Nuclear Steam Supply Systems." Dated: July, 1979.
- (10) Combustion Engineering Report (CEN-115): "Response to NRC IE Bulletin 79-06C." August 1979.
- (11) Combustion Engineering Report (CEN-117): "Inadequate Core Cooling" Dated October 1979.
- (12) Combustion Engineering Report (CEN-125): "Response to NRC Lessons Learned Requirements for CE NSSS." Dated: December 1979.
- (13) Combustion Engineering Report (CEN-128): "Response of CE NSSS to Transients and Accidents." Dated: April 1980.
- (14) Letter from B. J. Garrick (Pickard, Lowe, & Garrick) to J. E. Howard (Boston Edison) "Proposal for Pilgrim Unit 2 Probabilistic Risk Assessment." Dated: August 6, 1980.
- (15) Bechtel letter (BLE-6594) "Draft Responses to Items II.B.2, II.E.1.1, II.E.1.2, II.E.4.1, II.E.4.2, II.E.4.4, III.D.1.3, III.D.3.1, and III.D.3.4 as defined in (3) above." Dated: August 13, 1980.
- (16) Bechtel letter (BLE-6653) "Draft Response to Item II.G.1." Dated: September 26, 1980.
- (17) Energy Incorporated Report to Sandia Laboratories (EI-79-23) "LWR Design Decision Methodology." Dated: October 1979.
- (18) Bechtel letter (BLE-6703): "Control Room Design/Licensing Meeting notes". Dated: October 31, 1980.
- (19) Boston Edison letter (ELB-4815 & ELC-926) "Draft Responses to I.F.1 and I.F.2." Dated: December 4, 1980.
- (20) Bechtel letter (BLE-6792) "Draft Responses to II.E.4.2." Dated: January 29, 1981.
- (21) Bechtel letter (BLE-6799) "Draft Response to II.F.3." Dated: February 5, 1981.
- (22) Bechtel letter (BLE-6812) "Draft Response to I.D.2." Dated: February 20, 1981.
- (23) Boston Edison letter (ELB-4874) "Redrafted Response to I.D.1." Dated: March 5, 1981.
- (24) Bechtel letter (BLE-6842) "Redrafted Response to I.D.1." Dated: March 12, 1981.

- (25) Boston Edison letter (ELB-4882) "Draft Response to II.B.8.1." Dated: March 20, 1981.
- (26) NUREG-0718, Final Report, March 1981.
- (27) NRC letter to all parties to Construction Permit Proceedings "Proposed Post-TMI CP Licensing Rule." Dated: March 18, 1981.
- (28) Fed. Reg./Vol. 46, No. 55, March 29, 1981 "Proposed Post-TMI CP Licensing Rule."
- (29) Boston Edison letter (ELC-955 & ELB-4887) "Post-TMI PSAR Amendment." Dated: March 26, 1981.
- (30) NUREG-0737, November 1980.
- (31) NUREG-0696, February 1981.
- (32) CE-TMI-97; "CE Plant Design Input for Safety & Relief Valve Testing." December 10, 1980.
- (33) EPRI Document: "PWR Safety & Relief Valve Test Program" December, 1980.
- (34) "Safety Function & Protection Sequence Analysis." J. E. Howard et als, November 1973.
- (35) Technical procedure for Performance of Safety Function and Protection Sequence Analysis, dated: January 14, 1974.
- (36) Boston Edison Quality Assurance Manual.
- (37) Bechtel Nuclear Quality Assurance Manual.
- (38) Bechtel Topical Report "Bechtel Quality Assurance Program for Nuclear Power Plants." BQ-TOP-1, Rev. 2A, July 1977.
- (39) Combustion Engineering Quality Assurance Program for Nuclear Power Plants . CENPD-210A Revision 3, April 18, 1980.
- (40) Proposed Revision 2 to Standard Review Plan 17.1.
- (41) April 20, 1981 Bechtel Preliminary Report: "Combustion as a Hydrogen Control Measure for Pilgrim 2."
- (42) Sequoyah Nuclear Plant: Report on the Safety Evaluation of the interim distributed ignition system. Dated: September 2, 1980.
- (43) "An Approach to Associated Power Circuits" IEEE Transactions on Power Apparatus and Systems, Vol. PAS-97, No. 4, July/August 1978. G. M. McHugh, et als.
- (44) NUREG-0635, January 1980.

INTERROGATORY #3

For each and every recommendation and requirement contained in NUREG-0578, at pages 6-20 and Appendix A, list the requirement and indicate whether, in the Applicants' opinion, their application for a construction permit, including the PSAR and amendments thereto, satisfies said requirement. Whether your response for any given requirement is in the affirmative or negative, explain in detail the reasons for your answer, identifying each fact upon which you rely and each document, and the particular parts thereof, of which you are aware which supports each fact so identified. Describe in detail all exceptions from or modifications to the requirements and all alternative approaches to meeting the requirements requested of and/or allowed by the NRC Staff.

RESPONSE

Boston Edison objects to this interrogatory to the extent that NUREG-0578 requirements go beyond those requirements in NUREG-0718, Rev. 1 and the proposed post-TMI rule for construction permit applicants 10CFR50.34(e).

Without waving its objection to this interrogatory Boston Edison is providing the following table which cross references the applicable requirements of NUREG-0578 to the corresponding requirement of NUREG-0718, Rev. 1. Boston Edison response to Interrogatory #1 delineates responses to NUREG-0718, Rev. 1.

TABLE 2

CROSS REFERENCE: NUREG-0578 TO NUREG-0718

<u>NUREG-0578 Section Number</u>	<u>Section Title</u>	<u>NUREG-0718, Rev. 1 Appendix B Item</u>
2.1.1	Emergency power supply requirements for the pressurizer heaters, power-operated relief valves and block valves, and pressurizer level indicators in PWRs.	II.E.3.1 & II.G.1
2.1.2	Performance testing for BWR and PWR relief and safety valves.	II.D.1
2.1.3.a	Direct indication of power-operated relief valve and safety valve position for PWRs and BWRs.	II.D.3
2.1.3.b	Instrumentation for detection of inadequate core cooling in PWRs and BWRs.	II.F.2
2.1.4	Containment isolation provisions for PWRs and BWRs.	II.E.4.2
2.1.5.a	Dedicated penetrations for external recombiners or post-accident purge systems.	II.E.4.1
2.1.5.b	Inerting BWR containments.	Not applicable
2.1.5.c	Capability to install hydrogen recombiner at each light water nuclear power plant.	II.E.4.1
2.1.6.a	Integrity of systems outside containment likely to contain radioactive materials (Engineered Safety Systems and Auxiliary Systems) for PWRs and BWRs.	III.D.1.1
2.1.6.b	Design review of plant shielding of spaces for post-accident operations.	II.B.2
2.1.7.a	Automatic initiation of the auxiliary feedwater system for PWRs.	II.E.1.1
2.1.7.b	Auxiliary feedwater flow indication to steam generators for PWRs.	II.E.1.2

TABLE 2 (Cont'd)

<u>NUREG-0578</u> <u>Section Number</u>	<u>Section Title</u>	<u>NUREG-0718, Rev. 1</u> <u>Appendix B Item</u>
2.1.8.a	Improved post-accident sampling capability	II.B.3
2.1.8.b	Increased range of radiation monitors.	II.F.1
2.1.8.c	Improved in-plant iodine instrumentation.	III.D.3.3
2.1.9	Analysis of design and off-normal transients and accidents.	Not applicable
2.2.1.a	Shift supervisor's responsibilities.	Not applicable
2.2.1.b	Shift Technical Advisor.	Not applicable
2.2.1.c	Shift and relief turnover procedures.	Not applicable
2.2.2.a	Control room access.	Not applicable
2.2.2.b	Onsite Technical Support Center.	III.A.1.2
2.2.2.c	Onsite Operational Support Center.	III.A.1.2
2.2.3	Revised limiting conditions for operation of nuclear power plants based upon safety system availability.	Not applicable

INTERROGATORY #4

Identify all correspondence, memoranda, comments, meeting minutes or summaries, notes or records of conversations, and other documents within the possession, custody, or control of the Applicants, CE, or Bechtel which relate in any way to communications between the Applicants, CE, or Bechtel and the NRC, between the Applicants and CE, between the Applicants and Bechtel, between the Applicants and the CE Owners Group, or between CE and the CE Owners Group regarding any requirement contained in NUREG-0578. For each such document, identify its author(s), addresses(s), if any, subject, and location and provide a brief description of the contents thereof.

RESPONSE

Please see the response to interrogatory #2 & #3.

INTERROGATORY #5

For each Action Plan Item listed in NUREG-0660 and designated therein as applying to construction permit applications which does not appear in NUREG-0578 or NUREG-0718, Rev. 1, Appendix B, please list each requirement set forth in NUREG-0660 under such item and indicate whether, in the Applicants' opinion, their application for a construction permit, including the PSAR and amendments thereto, satisfies said requirement. Whether your response for any given requirement is in the affirmative or negative, explain in detail the reasons for your answer, identifying each fact upon which you rely and each document, and the particular parts thereof, of which you are aware which supports each fact so identified. Describe in detail all exceptions from or modifications to the requirements and all alternative approaches to meeting the requirements requested of and/or allowed by the NRC Staff.

RESPONSE

None of the action plan items in NUREG-0660 are designated as applying to Construction Permit Applications.

As stated at the bottom of Table 1, page 13 of NUREG-0660, Volume 1 "Implementation plans for Construction Permit Applicants are being developed separate from this action plan." That is these requirements are being developed in the proposed post-TMI construction permit rule 10CFR50.34(e) and in NUREG-0718, Rev. 1. Consequently, all items not included in NUREG-0718, Rev. 1 that are given in NUREG-0660 are not applicable to Pilgrim 2.

INTERROGATORY #6

Identify all correspondence, memoranda, comments, meeting minutes or summaries, notes or records of conversations, and other documents within the possession, custody, or control of the Applicants, CE, or Bechtel which relate in any way to communications between the Applicants, CE, or Bechtel and the NRC, between the Applicants and CE, between the Applicants and Bechtel, between the Applicants and the CE Owners Group, or between CE and the CE Owners Group regarding any requirement listed in answer to interrogatory 5 above. For each such document, identify its author(s), addresses(s), if any, subject, and location and provide a brief description of the contents thereof.

RESPONSE

Please see the response to interrogatory #5.

INTERROGATORY #7

For each requirement contained in the Commission's proposed final rule on TMI requirements for construction permit and manufacturing license applications, as set forth in Enclosure 1 to Eisenhower's July 14, 1981 letter to all such applicants, list the requirement and indicate whether, in the Applicants' opinion, their application for a construction permit, including the PSAR and amendments thereto, satisfies said requirement. Whether your response for any given requirement is in the affirmative or negative, explain in detail the reasons for your answer, identifying each fact upon which you rely and each document, and the particular parts thereof, of which you are aware which supports each fact so identified. Describe in detail all exceptions from or modifications to the requirements and all alternative approaches to meeting the requirements requested of and/or allowed by the NRC Staff.

RESPONSE

Appendix 1C of the PSAR (Amendment 43) lists each requirement of the Commission's proposed final rule on post-TMI requirements for Construction Permit applications. It is the opinion of Boston Edison that the response to each requirement of the proposed rule provided in Appendix 1C to the PSAR satisfies the corresponding requirement. The facts relied upon to support this conclusion and the respective source documents are provided with the responses to each item of the proposed rule in Appendix 1C of the PSAR. No exceptions to the requirements of the proposed rule were taken.

INTERROGATORY #8

Identify all correspondence, memoranda, comments, meeting minutes or summaries, notes or records of conversations, and other documents within the possession, custody, or control of the Applicants, CE, or Bechtel which relate in any way to communications between the Applicants, CE, or Bechtel and the NRC, between the Applicants and CE, between the Applicants and Bechtel, between the Applicants and the CE Owners Group, or between CE and the CE Owners Group regarding any requirement listed in your answer to interrogatory 7. For each such document, identify its author(s), addresses(s), if any, subject, and location and provide a brief description of the contents thereof.

RESPONSE

A cross reference of each requirement of the proposed post-CP Construction Permit rule to the corresponding requirement of NUREG-0718 can be found in Appendix 1C of the PSAR.

Please see the response to interrogatory #2.

INTERROGATORY #9

Amendment 43 to the PSAR indicates, at page 1C-8, that the Applicants will perform a site consequence analysis. Please describe in detail the anticipated scope, methodology, and schedule for said analysis, identifying any contracts which the Applicants have entered into for the conduct of the study, and indicating whether the so-called "CRAC" Code will be used.

RESPONSE

As described in PSAR Amendment 43, page 1C-5, the PRA program plan, schedule, organization, responsibilities, and management controls will be developed as part of PRA program element 6 ("PRA Program Initiation"). The scope, methodology, and schedule of the site consequence analysis are all included in the aforementioned items and will be "described in detail" as requested at that time.

Boston Edison has not as yet entered into any contract for accomplishment of this study. The particular computer code(s) to be used in the numerous analyses to be performed, including site consequence analysis, will be selected at a later date in order to utilize the latest and most applicable techniques available in a rapidly evolving area, thus the use or non-use of the "CRAC" Code has not been established.

INTERROGATORY #10

Applicants have committed in PSAR Amendment 43 to performing a site/plant-specific probabilistic risk assessment (PRA). List all key reactor systems contributing to accident initiation or mitigation which will be addressed in the PRA and describe the criteria followed in identifying those systems. In the opinion of the Applicants, will the PRA be scheduled so that it will be feasible to incorporate into the design any modification which might be indicated by the results thereof? If not, list all such modifications which might be precluded or rendered infeasible.

RESPONSE

Boston Edison is developing a schedule which will use the intermediate PRA results, to coordinate the PRA program with the construction schedule. This schedule will ensure that the beneficial changes resulting from the intermediate PRA results can be implemented into the design and construction. These intermediate results will be incorporated prior to the placement of first concrete which is scheduled for ten months after CP issuance. The start of pipe installation is scheduled for 19 months post-CP, raceway installation at 23 months and wire and cable at 34 months post-CP.

As described in PSAR Amendment 43 page 1C-5, the key reactor systems contributing to accident prevention or mitigation will be identified during PRA program element 7 ("Preliminary Analysis"). Since these key systems have not yet been identified, they will be listed at that time. The basis for reflecting these systems will be similar to that used in contemporary PRA's and will focus on systems which potentially prevent or mitigate accidents with unacceptable off-site consequences.

As stated in PSAR Amendment 43 pages 1C-2 and 1C-3, the PRA program has been structured to enhance the practicality of incorporating beneficial design improvements with due regard for the advanced state of design (62% complete) and fabrication (major plant components have been fabricated and placed in storage). Since the PRA has not yet been initiated, the candidate modifications have not yet been identified. Therefore, no listing or predisposition regarding infeasibility of modifications is available.

INTERROGATORY #11

The Applicants have committed in PSAR Amendment 43 to conducting a number of additional studies or evaluations and submitting additional or modified system designs on the basis thereof. With respect to each such commitment, indicate the dates by which the study will be completed and the design submitted and identify any design modifications which might be indicated by said study but which, in the opinion of the Applicants, might be precluded or rendered infeasible by the time the study is completed.

RESPONSE

Each such commitment and the required submittal data are listed on the attached table. For each study, there are no design modifications which might rationally be anticipated to result from that study which will have been precluded from the design by the time the study has been completed.

SUBMITTALS TO NRC PRIOR TO FSAR COMMITTED TO/REQUIRED IN PSAR/SER

PSAR SECTION	PSAR PAGE NO.	SER SECTION	SER PAGE NO.	COMMITMENT/REQUIREMENT
1C-(1)(i)	1C-2	Supp. 6 II.B.8(1)	20	Develop PRA Program plan. Report results to NRC 2 years after CP.
1C-(1)(ii)	1C-10	Supp. 6 II.E.1.1	30	Perform Auxiliary Feedwater Design Review. Report results to NRC 2 years after CP.
1C-(1)(iv)	1C-12	Supp. 6 II.K.3.2	48	Determine probability of small break LOCA due to stuck open PORV. Design isolation system if necessary. Report results to NRC 2 years after CP.
1C-(2)(iii)	1C-17	Supp. 6 I.D.1	10	Perform control room design review. Report to NRC prior to control board fab.
1C-(2)(ix)	1C-23	Supp. 6 II.B.8	23	Develop design for Degraded Core Hydrogen Control System. Provide design to NRC 2 years post-CP.
1C-(2)(xi)	1C-35	Supp. 6 II.D.3	29	Conceptual design information for the Relief Safety Valve Position Indication Channel and justification for the adequacy of the design will be provided to NRC prior to procurement of this equipment.
1C-(2)(xii)	1C-37	Supp. 6 II.E.1.2	32	Analysis of Auto Initiation of AFWS System Interaction effects on Core (Return to Power) and Containment (overpressure) must be provided to NRC 2 years post-CP.
1C-(2)(xix)	1C-47	Supp. 6 II.F.2	40	Conduct study to identify additional core cooling instrumentation. Report to NRC on additional equipment prior to procurement.
1C-(2)(xx)	1C-48	Supp. 6 II.F.3	41	Develop design to comply to RG 1.97. "Suitable Alternate" requires justification to NRC prior to procurement.
1C-(2)(xxvii)	1C-54	Supp. 6 III.A.1.2	49	Designs for essential emergency equipment and instrumentation, including layout, provided to NRC prior to procurement.

INTERROGATORY #12

Identify every individual who contributed to the substance of PSAR Amendment #42 or #43.

RESPONSE

(A) Boston Edison Company

- (1) J. E. Howard - VP-Nuclear
- (2) R. H. Cunningham - Staff Assistant to VP-Nuclear
- (3) R. M. Butler - Pilgrim 2 Project Manager
- (4) W. F. Hickey - Project Licensing Manager
- (5) G. M. McHugh - Project Engineer-BOP
- (6) D. A. Bryant - Project Engineer-NSSS
- (7) J. W. Ashkar - Staff Assistant to Nuclear Engineering Manager
- (8) L. D. Rucker - NE Group Leader S&SA
- (9) R. E. Grazio - Senior Engineer
- (10) J. F. Campanella - Senior Engineer
- (11) H. F. Balfour - Senior Engineer
- (12) R. J. Kennedy - Senior Quality Assurance Engineer
- (13) H. F. Brannan - Quality Assurance Manager
- (14) T. L. Sowdon - NOS Group Leader ERHS

(B) Bechtel

- (1) R. E. Jagels - Project Engineer
- (2) J. Saame - Mechanical Group Supervisor
- (3) T. W. Hutson - Licensing Engineer
- (4) W. T. Kellermann - QA Manager: Programs, Audits & Training

(C) Combustion Engineering

- (1) D. A. Kreps - Assistant Project Manager

INTERROGATORY #13

Identify all individuals whom the Applicants intend to call as witnesses on TMI issues and provide their qualifications. Also provide for each such individual a list of all proceedings of any kind before any tribunal in which said individual has testified and the subject matter of his or her testimony on each such occasion. Also provide for each such individual a list of all reports, studies, papers, articles, and books, whether published or not, and whether a draft or not, relating in any way to the TMI accident, the lessons learned therefrom, or any of the requirements listed in your responses to interrogatories 1, 3, 5, or 7 above, prepared in part or in whole by said individual or by a corporation, partnership, or other organization of which said individual is an employee, officer, director, partner, or agent.

RESPONSE

Boston Edison is unable to identify its witnesses on TMI contentions until specific contentions have been admitted by the board.

INTERROGATORY #14

PSAR Amendment #43 states, at p. 1C-48, that the "present Pilgrim Unit 2 design includes much of the instrumentation that meets the requirements of Rev. 2 of Regulatory Guide 1.97". List every instrument currently within the Unit 2 design which, in the Applicants' opinion meets the requirements of R.G. 1.97, Rev. 2, indicating in each case the particular requirement which it satisfies. Provide a separate list of all requirements of R.G. 1.97, Rev. 2 which are not satisfied by the current design.

RESPONSE

Those variables required by R.G. 1.97, Rev. 2 for which all the requirements of R.G. 1.97, Rev. 2 are met by the current Pilgrim 2 design, are listed in the attached table 14-1 with a corresponding reference to the PSAR.

Those PWR variables, delineated in Table 2 of R.G. 1.97, Rev. 2, for which all the requirements of R.G. 1.97, Rev. 2 are not met by the current Pilgrim 2 design will be the subject of further analysis.

The R.G. 1.97, Rev. 2 table of PWR variables will be developed into a plant specific listing based on the requirements of the Regulatory Guide. This listing will then be compared to the current design to identify which requirements of R.G. 1.97, Rev. 2 are not met. Instrumentation will be incorporated into the Pilgrim 2 design to fulfill the requirements of R.G. 1.97, Rev. 2. If the state-of-the-art is such that a requirement of R.G. 1.97, Rev. 2 cannot be met by commercially available instrumentation, a suitable alternative instrument will be provided. For instrumentation that are suitable alternates to the requirements of R.G. 1.97, Rev. 2, conceptual design information and justification for their adequacy will be submitted to the NRC for review prior to equipment procurement.

The instrumentation to meet the requirements of R.G. 1.97, Rev. 2 will be addressed in the Pilgrim Unit 2 FSAR.

TABLE 14-1

R.G. 1.97, REV. 2 VARIABLES FOR WHICH ALL THE REQUIREMENTS
OF R.G. 1.97, REV. 2 ARE MET BY THE CURRENT DESIGN

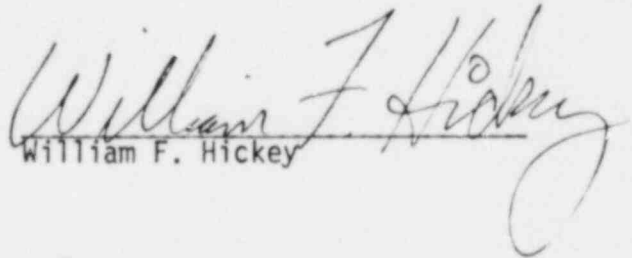
<u>R.G. 1.97, Rev. 2 Variable</u>	<u>PSAR Reference</u>
Neutron Flux	Section 7.2.1.1.3
Control Rod Position	Section 7.2.1.1.2
Core Exit Temperature	Page 1C-47
Coolant Level in Reactor	Page 1C-47
Degrees of Subcooling	Page 1C-47
Containment Sump Water Level	Page 1C-45
Containment Isolation Valve Position	Table 7.5-3 and page 1C-40
Containment Area Radiation	Page 1C-58
Effluent Radioactivity - Noble Gas Effluent from Condenser Air Removal System Exhaust	Table 11.4-1
Containment Hydrogen Concentration	Page 1C-45
Containment Pressure	Page 1C-45
RHR System Flow	6.3.5.4.4
RHR Heat Exchanger Outlet Temperature	Table 7.5-4
Accumulator Tank Pressure and Level	Table 7.5-3
Accumulator Isolation Valve Position	Table 7.5-3
Flow in HPI System	Table 7.5-3
Flow in LPI System	Section 6.3.5.4.4
Refueling Water Storage Tank Level	Table 7.5-1
Reactor Coolant Pump Status	
Primary System Safety Relief Valve Position	Page 1C-35
Pressuriser Level	Table 7.5-1
Quench Tank Level	Section 9.3.4.5.3(G)
Quench Tank Temperature	Section 9.3.4.5.1(J)
Quench Tank Pressure	Section 9.3.4.5.2(M)
Main Feedwater Flow	Section 10.4.7.1.5

TABLE 14-1 (continued)

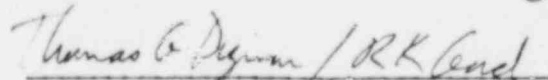
<u>R.G. 1.97, Rev. 2 Variable</u>	<u>PSAR Reference</u>
Emergency Feedwater Flow	Page 1C-36
Condensate Storage Tank Level	Table 7.5.1
High Level Radioactive Liquid Tank Level	Figure 11.2-1
Emergency Ventilation Damper Position	Table 7.5-3
Containment Area Radiation High Range	Page 1C-58
Common Plant Vent of Multipurpose Vent	Page 1C-58
Airborne Radio halogen & Particulates	p 13.3-43
Plant & Environs Radiation	p 13.3-43
Wind Direction	Section 2.3.3 & p 13.3-43
Wind Speed	Section 2.3.3 & p 13.3-43
Estimate of Atmospheric Stability	Section 2.3.3 & p 13.3-43
Accident Sampling Capability	Page 1C-30
Reactor Coolant System Cold Leg Temperature	Table 7.5-1


SIGNATURES

The foregoing answers are true to the best of my knowledge, information and belief, except insofar as they are based on information available to Boston Edison Company but not within my personal knowledge, as to which I, based on such information, believe them to be true.


William F. Hickey

As to objections:


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