

UNITED STATES NUCLEAR REGULATORY COMMISSIONDOCKET NO. 50-293BOSTON EDISON COMPANY

(PILGRIM NUCLEAR POWER STATION)

ISSUANCE OF INTERIM DIRECTOR'S DECISION

Notice is hereby given that the Director, Office of Nuclear Reactor Regulation, has issued an interim decision concerning a request filed pursuant to 10 CFR 2.206 by Governor Michael S. Dukakis and Attorney General James M. Shannon on behalf of the Commonwealth of Massachusetts and its citizens (Petitioners). On October 15, 1987 the Petitioners requested the Director of the Office of Nuclear Reactor Regulation to institute a proceeding to modify, suspend, or revoke the operating license held by Boston Edison Company (BECo) for its Pilgrim Nuclear Power Station (Pilgrim). In particular, the Petitioners requested the NRC to (1) modify the Pilgrim license to bar restart of the facility until a plant-specific probabilistic risk assessment (PRA) is performed and all indicated safety modifications are implemented; (2) modify the license to extend the current shutdown pending the outcome of a full hearing on the significant outstanding safety issues and the development and certification by the Governor of Massachusetts of adequate emergency plans; and (3) issue an Order, effective immediately, to modify the Pilgrim license to preclude the licensee from taking steps in its power ascension program until a formal adjudicatory hearing is held and findings of fact are made concerning safety questions raised.

The Director of the Office of Nuclear Reactor Regulation has determined that the Petition, with the exception of the management and emergency preparedness issues is denied. The portion of the Petition concerning licensee management and emergency preparedness will be addressed in a subsequent response.

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The reasons for this decision are explained in the "Interim Director's Decision Under 10 CFR 2.206, "DD-88-7", which is available for public inspection in the Commission's Public Document Room, 1717 H Street, N.W., Washington, D.C. 20555 and the Local Public Document Room at the Plymouth Public Library, 11 North Street, Plymouth, Massachusetts 02360.

A copy of the Decision will be filed with the Secretary for the Commission's review in accordance with 10 CFR 2.206(c). As provided in this regulation, the Decision will constitute the final action of the Commission twenty-five days (25) after issuance, unless the Commission, on its own motion, institutes review of the Decision within that time period.

Dated at Rockville, Maryland, this ^{27th} day of May 1988.

FOR THE NUCLEAR REGULATORY COMMISSION

Morton B. Fairtile

Morton B. Fairtile, Acting Director
Project Directorate I-3
Division of Reactor Projects I/II

The reasons for this decision are explained in the "Interim Director's Decision Under 10 CFR 2.206, "DD-88- , which is available for public inspection in the Commission's Public Document Room, 1717 H Street, N.W., Washington, D.C. and the Local Public Document Room at the Plymouth Public Library, 11 North Street, Plymouth, Massachusetts 02360. That portion of the Petition concerning management and emergency preparedness will be addressed in a subsequent response.

A copy of the Decision will be filed with the Secretary for the Commission's review in accordance with 10 CFR 2.206(c). As provided in this regulation, the Decision will constitute the final action of the Commission twenty-five days (25) after issuance, unless the Commission, on its own motion, institutes review of the Decision within that time period.

Dated at Rockville, Maryland, this day of March 1988.

FOR THE NUCLEAR REGULATORY COMMISSION

Richard H. Wessman, Director
Project Directorate I-3
Division of Reactor Projects I/II

*See previous concurrence

OFC	:PDI-3 *	:PDI-3:	:DIR/PDI-3	:	:	:
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The reasons for this decision are explained in the "Interim Director's Decision Under 10 CFR 2.206, "DD-88-7", which is available for public inspection in the Commission's Public Document Room, 1717 H Street, N.W., Washington, D.C. and the Local Public Document Room at the Plymouth Public Library, 11 North Street, Plymouth, Massachusetts 02360. That portion of the Petition concerning management and emergency preparedness will be addressed in a subsequent response.

A copy of the Decision will be filed with the Secretary for the Commission's review in accordance with 10 CFR 2.206(c). As provided in this regulation, the Decision will constitute the final action of the Commission twenty-five days (25) after issuance, unless the Commission, on its own motion, institutes review of the Decision within that time period.

Dated at Rockville, Maryland, this 27th day of March 1988.

FOR THE NUCLEAR REGULATORY COMMISSION

15/
Morton B. Fairtile, Acting Director
Project Directorate I-3
Division of Reactor Projects I/II

*See previous concurrence

OFC	: PDI-3 *	: PDI-3:	: DIR/PDI-3	:	:
NAME	: MRushbrook	: DMcDonald	: RWessman	:	:
DATE	: 03/09/88	: 03/24/88	: 03/27/88	:	:

OFFICIAL RECORD COPY

Director's Decision - 10 CFR 2.206 - Attorney General James M. Shannon,
Commonwealth of Massachusetts

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

August 21, 1987

Docket No.: 50-293

The Honorable William B. Golden
Massachusetts State Senate
Boston, Massachusetts 02133

Dear Mr. Golden:

This letter is in further response to your Petition of July 15, 1986, requesting that the Nuclear Regulatory Commission (NRC) order the Boston Edison Company to show cause why the Pilgrim Nuclear Power Station should not remain closed or have its operating license suspended by NRC. The basis for this request was (1) numerous deficiencies in licensee management, (2) inadequacy of the existing radiological emergency response plan, and (3) inherent deficiencies in the facility's containment structure.

As you may recall, you were notified in a letter dated August 12, 1986, that your Petition would be treated as a request of action pursuant to 10 CFR 2.206 of the Commission's regulations. The staff has concluded its evaluation of the information contained in the Petition concerning items (2) and (3) and for the reasons stated in the enclosed "Interim Director's Decision under 10 CFR 2.206," your Petition, with the exception of the management issue, has been denied. That portion of the Petition covering the management issues will be addressed in a subsequent response.

A copy of this decision will be filed with the Secretary for the Commission's review in accordance with 10 CFR 2.206(c). As provided in 10 CFR 2.206(c), this decision will become the final action of the Commission in 25 days, unless the Commission determines to review the decision within that time. I have also enclosed a copy of a notice that is being filed with the Office of the Federal Register for publication.

Sincerely,

A handwritten signature in cursive script that reads "Thomas E. Murley".

Thomas E. Murley, Director
Office of Nuclear Reactor Regulation

Enclosures:

1. Director's Decision 87-14
2. Federal Register Notice

cc: See next page

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cc:

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U. S. Nuclear Regulatory Commission
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Chairman, Board of Selectmen
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Plymouth, Massachusetts 02360

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Massachusetts Department of
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Mr. Robert M. Hallisey, Director
Radiation Control Program
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UNITED STATES NUCLEAR REGULATORY COMMISSIONBOSTON EDISON COMPANYPILGRIM NUCLEAR POWER STATIONDOCKET NO. 50-293NOTICE OF ISSUANCE OF INTERIM DIRECTOR'S DECISION

Notice is hereby given that the Director, Office of Nuclear Reactor Regulation, has issued an interim decision concerning a request filed pursuant to 10 CFR 2.206 by the Honorable William B. Golden which requested that the Pilgrim Nuclear Power Station remain shut down or have its license suspended because of (1) deficiencies in the licensee management, (2) inadequacies in the emergency radiological plan, and (3) inherent deficiencies in the containment structure.

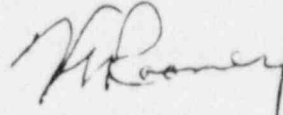
The Director of the Office of Nuclear Reactor Regulation has determined that the Petition, with the exception of the license management issue, should be denied. The reasons for this decision are explained in the "Interim Director's Decision Under 10 CFR 2.206," DD-87-14, which is available for public inspection in the Commission's Public Document Room, 1717 H Street, N.W., Washington, DC and at the Local Public Document Room at the Plymouth Public Library, 11 North Street, Plymouth, Massachusetts 02360. That portion of the Petition concerning licensee management will be addressed in a subsequent response.

A copy of the Decision will be filed with the Secretary for the Commission's review in accordance with 10 CFR 2.206(c). As provided in this regulation, the Decision will constitute the final action of the Commission twenty-five

(2⁵) days after issuance, unless the Commission, on its own motion, institutes review of the Decision within that time period.

Dated at Bethesda, Maryland, this 21st day of August 1987.

FOR THE NUCLEAR REGULATORY COMMISSION

A handwritten signature in dark ink, appearing to read "M. Rooney". The signature is written in a cursive style with a large initial "M" and a long, sweeping underline.

Project Directorate I-3
Division of Reactor Projects I/II

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

OFFICE OF NUCLEAR REACTOR REGULATION
Dr. Thomas E. Murley, Director

In the Matter of)	
BOSTON EDISON COMPANY)	Docket No. 50-293
(Pilgrim Nuclear Power Station))	(10 C.F.R. §2.206)

INTERIM DIRECTOR'S DECISION UNDER 10 C.F.R. § 2.206

INTRODUCTION

On July 15, 1986, Massachusetts State Senator William B. Golden and others (Petitioners) filed with the Nuclear Regulatory Commission a Petition requesting that the Director require Boston Edison Company (BECO, the licensee) to show cause why the Pilgrim Nuclear Power Station should not remain closed or have its operating license suspended by NRC until the licensee demonstrates that the issues raised by the Petitioners have been resolved. The Petitioners also requested that NRC require the licensee to submit a feasibility study related to certain structural modifications and that the NRC schedule a public hearing to address the issues raised by the Petitioners.

The Petitioners assert as grounds for their request (1) numerous deficiencies in the licensee's management, (2) inadequacies in the existing radiological emergency response plan, and (3) inherent deficiencies in the facility's containment structure. The Petitioners assert that "the deficiencies cut a broad swath across the spectrum of safety requirements" and that, in the aggregate, these deficiencies compromise the reliability of the most important safety systems in the plant. Further, the Petitioners assert that the licensee and the NRC have failed to resolve these safety issues.

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On August 12, 1986, James M. Taylor, then Director of the Office of Inspection and Enforcement, acknowledged receipt of the Petition. He informed the Petitioners that the Petition would be treated under 10 CFR 2.206 of the Commission's regulations and that a formal decision would be issued within a reasonable time. Notice of receipt of the petition was published in the Federal Register (51 FR 29728).

On December 19, 1986, Mr. Taylor provided further response to the Petitioners in a letter to Senator Golden. He stated it would be more meaningful to formally respond to the Petition after (1) the licensee has had an opportunity to address the issues outlined in the Petition and (2) the NRC has had an opportunity to review the licensee's actions. He also stated (1) that the Pilgrim Station will not be permitted to restart until the NRC determines that there is reasonable assurance that the public health and safety will be protected and (2) that the staff will consider the management, emergency planning, and containment issues raised by the Petition.

Dr. Thomas E. Murley, then Regional Administrator of NRC Region I, sent additional letters regarding the Petition to Senator Golden on February 20, and April 1, 1987. The February 20 letter acknowledged that a meeting with the Petitioners had been delayed because the NRC first wanted to have available the licensee's report documenting why the licensee believes the Pilgrim Station can be restarted. The April 1 letter was in response to the Petitioners' letter of February 25, 1987, regarding a meeting between NRC and the Petitioners. Dr. Murley's April 1 letter provided clarification regarding the proposed meeting with Petitioners; it also noted that the plant has remained shut down

and that considerable changes had occurred, and continue to occur, in the substantive areas outlined in the Petition.

On August 5, 1987, Massachusetts Public Interest Research Group (MASSPIRG) submitted "Health Surveillance of the Pilgrim Area" as an addendum to the Petition. This report provides results of the Massachusetts Department of Public Health (MDPH) study to determine whether there is excess risk of certain adverse health outcomes among residents in the communities surrounding the Pilgrim Station. The data revealed no disturbing trends in either the patterns of cancer mortality or in the expression of low birthrate and infant mortality, but indicated higher than expected incidence of leukemia. As stated in the MDPH study, radiation monitoring records did not suggest any significant levels of radiation that could have potentially exposed the residents in the communities surrounding the Pilgrim Station. The report was the result of a descriptive, first step epidemiological study which acknowledged major gaps in understanding the relationship, if any, between the occurrence of leukemia and the Pilgrim Station. Consequently, no further consideration of this report by the NRC is merited at this time.

For the reasons discussed below, Petitioners' request insofar as it relates to the emergency preparedness and containment issues is denied. A final decision with respect to the management issues is deferred. However, to the extent Petitioners are requesting that Pilgrim remain shut down until the NRC is satisfied that management and emergency preparedness issues are dealt with to the Commission's satisfaction, the Petition is granted.

Petitioners also request that "the NRC, prior to making a decision pursuant to issuing an operating license suspension, schedule a comprehensive public hearing to address the issues raised by the Petitioners herein" (Petition at 39). In response to that request, the NRC staff has agreed to

meet with Senator Golden and other petitioners to discuss the issues raised in the Petition as well as the overall status of NRC regulatory activities at Pilgrim when the licensee has completed those actions necessary for restart of the plant.

In addition, the Commission intends to hold a public meeting to be briefed by the Staff on the readiness of Pilgrim to resume operations before allowing restart. The filing of a 2.206 Petition, however, does not require the NRC to hold formal evidentiary hearings with respect to issues raised by the Petition. Illinois v. U.S. Nuclear Regulatory Commission, 591 F.2d 12, 14 (7th Cir. 1979); Porter County Chapter of the Izaak Walton League of America, Inc. v. Nuclear Regulatory Commission, 606 F.2d 1363 (D.C. Cir. 1979); Wells Eddleman, et al. v. Nuclear Regulatory Commission, No. 87-1018, slip op. at 5 (4th Cir. August 10, 1987); Lorion v. Nuclear Regulatory Commission, 785 F.2d 1038 (D.C. Cir. 1986). See also Florida Power & Light Co. v. Lorion, et al., 740 U.S. 729 (1985).

BACKGROUND

The NRC staff found the overall performance at the Pilgrim Station acceptable during the assessment period covered by the Systematic Assessment

of Licensee Performance (SALP No. 85-99). ^{1/} There was sufficient concern, however, about the facility's performance that Region I conducted a special in-depth Diagnostic Team inspection from February 18 to March 7, 1986 (Inspection Report No. 50-293/86-06, issued April 2, 1986). The team found that improvements were inhibited by (1) incomplete staffing, particularly operators and key mid-level supervisory personnel; (2) a prevailing (but incorrect) view in the organization that the improvements made to date had corrected the problems; (3) reluctance, on the part of the licensee's management, to acknowledge some problems identified by the NRC; and (4) the licensee's dependence on third parties to identify problems rather than implementing an effective program for self-identification of weaknesses. Nonetheless, in a letter from Region I to the licensee dated May 23, 1986, the Diagnostic Team inspection results confirmed the SALP Board conclusions for SALP No. 85-99. In that letter, Region I restated its belief that "...performance in the operation of the facility was found acceptable although some areas were only minimally acceptable."

^{1/} This Decision refers to two SALPs. The first is identified as SALP No. 85-99 and relates to the licensee's performance during the period October 1, 1984 - October 31, 1985. The report of this SALP was initially issued by Region I on February 18, 1986. It was the subject of further correspondence dated May 23, 1986, between Region I and BECo. The second SALP is identified as SALP No. 86-99 and relates to the licensee's performance during the period November 1, 1985 - January 31, 1987. The report of this SALP was initially issued April 8, 1987. It was issued as a final report on June 17, 1987.

On April 12, 1986, the licensee shut down the Pilgrim Station because of equipment problems and operational difficulties. The NRC Regional Administrator acknowledged this shutdown in Confirmatory Action Letter (CAL) 86-10, which was issued that same date. On July 25, 1986, the licensee stated that the facility would remain shut down for the completion of various modifications and for refueling. In an August 27, 1986, letter to Mr. J. Lydon of BECo, Dr. Murley stated that, although the licensee's actions in response to CAL 86-10 appeared to be thorough, additional issues had been identified that had to be resolved before restart of the facility. These issues included certain technical issues (overdue surveillances, malfunction of recirculation pump motor generator field breakers, seismic qualification of emergency diesel operator differential relays, and completion of Appendix R modifications) and programmatic matters (the licensee's action plan for improvements, the role of the licensee's safety review committees, and the readiness of the plant and corporate staffs to support restart). Further, Dr. Murley stated in the same letter, "In light of the number and scope of the outstanding issues, I am not prepared to approve restart of the Pilgrim facility until you provide a written report that documents BECo's formal assessment of the readiness for restart operation."

At this time, the Pilgrim Station remains shut down. The staff recently issued SALP Report No. 86-99 (April 8, 1987). Although this report identifies a number of performance problems (as did the previous SALP report), the staff believes the licensee is beginning to effectively deal with these

problems and is making progress toward improving their performance. For example, changes have been made to the radiological controls program, decontamination is in progress, fire protection modifications are being completed, and various surveillance, maintenance, and modification issues are being resolved. Offsite emergency planning issues have been evaluated by the Federal Emergency Management Agency (FEMA). These are reported in a FEMA report entitled, "Self-Initiated Review and Interim Finding for the Pilgrim Nuclear Power Station," dated August 4, 1987. The licensee has stated that the facility is not expected to be ready for restart before the end of September 1987.

NRC has asked the licensee to submit a readiness assessment report at least 45 days before the planned restart of the plant. On July 30, 1987, the licensee submitted a report entitled "Pilgrim Nuclear Power Station Restart Plan." This Plan describes a portion of the programs, plans and actions considered necessary by BECo management for safe and reliable restart and operation of Pilgrim. Portions of the Plan will be updated six weeks before BECo's proposed restart and final results will be submitted three weeks before the proposed restart. The Plan is currently under staff review.

A specific discussion of each of the three areas addressed in the Petition follows.

DISCUSSION

A. Management

The Petitioners allege numerous deficiencies in the licensee's management. The Petition essentially states that (1) competent management is critical to ensure the safe operation of any nuclear power facility; (2) the licensee's management of the Pilgrim Station is deficient; and (3) long-standing management deficiencies at Pilgrim Station have not been corrected.

As a basis for their Petition, the Petitioners have provided an extensive list of management deficiencies that have been documented in NRC inspection and SALP reports. The areas of concern include: plant operations, radiological controls, onsite emergency preparedness, maintenance and modifications, surveillance testing, security and safeguards, refueling and outage management, licensing activities and fire protection. The basic documents relied on by the Petitioners were SALP Report No. 85-99, issued February 18, 1986, and the Special NRC Diagnostic Team Inspection Report issued on April 2, 1986. In addition, the Petitioners referred to the 1982 Civil Penalty and Order modifying the Pilgrim license, and to news accounts of statements by Commissioner James Asselstine to the effect that Pilgrim is one of the worst run and least safe plants in the nation.

At the time the Petition was filed, the NRC felt the licensee had not successfully dealt with the problems that were identified in (1) the enforcement actions taken in 1982, as evidenced by SALP No. 85-99, and (2) the

Diagnostic Team inspection findings. Although the licensee had instituted programs intended to improve management and had made progress at certain times and in specific areas (such as in engineering and technical support), the letter transmitting SALP No. 85-99 expressed NRC's concern about the licensee's apparent "inability to improve performance, or sustain improved performance once achieved."

Several management changes have taken place in the licensee's organization since early 1986. The station manager was replaced on May 1, 1986, and was replaced again on February 1, 1987. On July 1, 1986, the Senior Vice President-Nuclear was transferred. At that time, the Chief Operating Officer assumed the responsibilities of the Senior Vice President-Nuclear, which he held until February 20, 1987, when the current Senior Vice President-Nuclear (Ralph G. Bird) assumed the responsibilities of this position. On March 26, 1987, the Chief Operating Officer and the Executive Vice President/Chief Financial Officer announced their intent to retire within the next year. On April 10, 1987, the Vice President for Nuclear Operations resigned; his responsibilities are being managed by the Senior Vice President-Nuclear, and a replacement has not been hired at this date.

The NRC has monitored management issues at Pilgrim Station since SALP No. 85-99 and the Diagnostic Team inspection. The most recent SALP evaluation, SALP No. 86-99, issued April 8, 1987, states: "The lack of a clear

organizational structure, recurring management changes, and chronic staffing vacancies delayed the establishment of a stable licensee management team at the plant and inhibited progress during the assessment period."

Starting with CAL 86-10, issued April 12, 1986, the NRC has taken steps to ensure the Pilgrim Station will not restart until adequate corrective actions have been taken. On July 30, 1986, Dr. Murley, at a meeting with the licensee, informed the licensee that, even when the technical issues set forth in CAL 86-10 were resolved, he would not approve restart of the plant until the management issues discussed in SALP No. 85-99 also were resolved. In addition, on August 27, 1986, in a letter to the licensee, Dr. Murley stated that restart of the Pilgrim Station would not be approved until the licensee formally documented and NRC reviewed (1) an assessment of the licensee's readiness for plant restart and (2) a restart program and schedule including well-defined hold-points at discrete milestones.

The NRC agrees with the Petitioners that significant management deficiencies have existed at Pilgrim Station. The NRC is continuing to observe and evaluate the licensee's performance through ongoing inspections, bimonthly management meetings with the licensee, and the SALP process. The NRC will conduct an independent team review of the licensee's actions in response to the SALP findings and the findings of the Diagnostic Team inspection of February-March 1986. The NRC will evaluate the Pilgrim Restart Plan and other information to determine whether the issues raised by the Petitioners, including management issues, have been adequately resolved.

Because the Pilgrim Station is currently shut down and will not be allowed to restart until authorized to do so by the NRC, there is no additional safety assurance to be gained by granting Petitioners' request. Thus, the management deficiencies at the Pilgrim Station do not warrant a Show Cause Order for the facility to remain closed or have its operating license suspended.

A final Director's Decision regarding management issues cannot be rendered until the management deficiencies have been suitably addressed by the licensee and the staff completes its assessment. This portion of the Petition will therefore be addressed in a subsequent final decision.

B. Radiological Emergency Response Plan

The Petitioners allege inadequacies in the existing Radiological Emergency Response Plan (RERP) for the Pilgrim Station. The Petitioners essentially state that there are deficiencies in (1) the RERP, (2) the procedures for providing advance information to the public, (3) the systems for notification of the public during an accident, (4) the evacuation plans, (5) available medical facilities, (6) the size of the emergency planning zone, and (7) the coordination and prioritization of the RERP.

The emergency response plans for Pilgrim Station were submitted in response to the NRC requirements that resulted from the issuance of a revised emergency preparedness rule on August 19, 1980 (45 FR 55402). After the

revised rule was issued, FEMA reviewed the State and local response plans for the Pilgrim site and evaluated the March 3, 1982 joint full-participation exercise. On the basis of this review and evaluation, FEMA's Region I office issued interim findings in a report entitled, "Joint State and Local Radiological Emergency Response Capabilities for the Pilgrim Power Station, Plymouth, Massachusetts," dated September 29, 1982. In this report, FEMA concluded that the Massachusetts State and local emergency plans and preparedness for coping with the offsite effects of radiological emergencies that may occur at the Pilgrim Station were adequate to protect the public. With regard to the onsite portion of the March 3, 1982 exercise, the NRC determined that the emergency response actions taken by the licensee were adequate to protect the health and safety of the public. Since that time, the licensee has participated in additional emergency preparedness exercises where onsite and offsite response capabilities were demonstrated and evaluated by the NRC and FEMA. The most recent full-participation exercise was conducted on September 5, 1985. A remedial exercise, held on October 29, 1985, demonstrated that four deficiencies identified during the September exercise had been corrected. As a result, FEMA Region I concluded that there was reasonable assurance that appropriate offsite action can be taken in the event of a radiological emergency to adequately protect the public health and safety.

The relevant portions of the Petition relating to emergency preparedness were transmitted to the FEMA staff on August 4, 1986, and the NRC requested on August 11, 1986, that FEMA review offsite emergency planning

and preparedness issues raised in the Petition. On December 22, 1986, the Secretary of Public Safety of the Commonwealth of Massachusetts sent FEMA a copy of the Office of Public Safety report entitled, "Report to the Governor on Emergency Preparedness for an Accident at the Pilgrim Nuclear Power Station," dated December 1986. The Secretary of Public Safety also asked FEMA Region I to review a report entitled, "Evaluation of Offsite Emergency Preparedness in the Area Surrounding the Pilgrim Nuclear Power Station," dated January 1987, which was prepared for the licensee by the Impell Corporation.

On January 14, 1987, FEMA informed the NRC that the requests for a review of these reports might delay the completion of the FEMA evaluation of the issues raised in the Petition. In a memorandum to NRC dated March 31, 1987, FEMA stated that it was also conducting a self-initiated review of the overall state of emergency preparedness at Pilgrim Station. FEMA said that it would prepare a consolidated evaluation that would address the Petition issues, the report submitted by the Office of Public Safety, the Impell report, FEMA's self-initiated review, and other relevant available information. FEMA committed to make the production of their evaluation report a priority task. By memorandum dated April 29, 1987, the NRC provided FEMA with a copy of a report prepared by the Town of Plymouth Nuclear Committee entitled, "Report to the Selectmen on the Plymouth Radiological Emergency Response Plan," dated March 1987, and asked FEMA to include this report in the ongoing review.

On June 4, 1987, BECo prepared reports regarding Evacuation Time Estimates and Beach Population Sheltering, Mobility Impaired, and Special

Facilities. On June 12, 1987, BECo prepared a report regarding a Northern Reception Center. NRC forwarded these reports to FEMA on July 1, 1987.

On August 6, 1987, FEMA forwarded their August report entitled, "Self-Initiated Review and Interim Finding for the Pilgrim Nuclear Power Station, Plymouth, MA," to the NRC. This report included FEMA's July 29, 1987, analysis of the issues raised in the subject petition entitled, "Analysis of Emergency Preparedness Issues at Pilgrim Nuclear Power Station Raised in a Petition to the NRC Dated July 15, 1985." In their analysis FEMA individually addressed each of the seven issues in offsite emergency planning raised in the subject Petition and one-by-one found that the information in the Petition did not sustain the Petitioners' contentions when compared to the record at the time the Petition was reviewed. For convenience, FEMA's detailed analysis is provided as Attachment A to this Director's Decision. On the basis that FEMA's analysis of the Petition's specific issues did not sustain the contentions, this portion of Petitioners' request is denied. This denial notwithstanding, the Commission acknowledges that FEMA agrees with the general thrust of some of the conclusions of the Petition for reasons cited in FEMA's Self-Initiated Review and Interim Finding dated August 4, 1987. Based on this latter report, FEMA has concluded that offsite radiological emergency planning and preparedness for Massachusetts are inadequate to protect the public health and safety in the event of an accident at the Pilgrim Nuclear Power Station. The issues that FEMA identified as a basis for this conclusion were:

1. Lack of evacuation plans for public and private schools and daycare centers.

2. Lack of a reception center for people evacuating to the north.
3. Lack of identifiable public shelters for the beach population.
4. Inadequate planning for the evacuation of the special needs population.
5. Inadequate planning for the evacuation of the transportation dependent population.
6. Overall lack of progress in planning and apparent diminution in emergency preparedness.

In summary, while this portion of Petitioners' request is denied, the emergency planning issues identified by FEMA are a matter of serious concern. The determination whether to restart the Pilgrim plant will involve, in necessary part, consideration of the resolution of emergency planning issues identified by FEMA.

C. Containment Structure

The Petitioners allege that there are numerous deficiencies in the General Electric (GE) Company Mark I containment structure. The Petitioners assert that the GE Mark I pressure-suppression system employed by the Pilgrim reactor contains inherent design flaws that raise questions about its ability to withstand accidents. Generally, the concerns relate to (1) design issues raised by Dr. S. H. Hanauer in the early 1970s, (2) the Chernobyl accident, and (3) the capability of the Pilgrim containment to withstand severe accidents. These are addressed below. However, before discussing the adequacy of the Pilgrim containment it would be useful to describe the design philosophy and licensing requirements, which are the basis for reactor containments in the United States.

1. BACKGROUND

Containment structures are an integral part of the US reactor designs in that they form one part of a structured tiered approach to public safety known as defense in depth. Concisely put, defense in depth is the process implemented by the AEC (later NRC) to ensure that multiple levels of assurance and safety exist to minimize risk to the public from nuclear plant operation.

A primary level of assurance are those activities to ensure that the plant is designed and constructed to high quality standards. Guidance on plant design is provided in the Code of Federal Regulations and specified in the General Design Criteria (GDC). Specific information is provided in the NRC's Standard Review Plan (SRP) which details acceptable methods for complying with the requirements established in the GDC.

Early in the development of commercial nuclear power it was recognized that these complex systems could not be expected to be immune from various failures and malfunctions, regardless of the quality of design, construction, and operation. Therefore, a further level of defense was established in that the plants were required to be designed for successfully coping with various equipment failures, transients and postulated accidents. The scenarios for postulated accidents, to which all plants are designed to adequately respond, are known as design basis accidents and are detailed in the NRC's Standard Review Plan, which is used to evaluate the design of each nuclear power plant prior to the granting of a construction permit or operating license.

Design basis accidents were chosen to represent a wide spectrum of plant problems, some of which were expected to be experienced in the plant lifetime (such as failure of power systems), as well as events considered to be quite infrequent (such as major ruptures of piping systems).

Details of these design basis accidents are found in Chapter 15 of the NRC Standard Review Plan, which also identifies acceptable plant protection standards for each postulated plant accident. The requirements and capabilities of plant safety systems necessary to prevent these design basis accidents from leading to unacceptable radiological releases are specifically identified. Guidelines for judging the acceptability of the analytical results in response to these hypothetical scenarios are specified in NRC regulations. The plant design guidance required as a result of this approach results in the incorporation of multiple and backup safety systems which will protect the reactor during the postulated failures of these various protection devices.

Notwithstanding the above, additional margins are required in the plant design to protect the public even in the event of very unlikely accidents. The reactor containment provides an additional level of safety. Design basis accidents for containment reflect a number of arbitrary accident sequences developed from postulated events. For example, the containment structural design is based upon the effects of a concurrent earthquake and a rupture of major reactor coolant system piping. Concurrently, in order to assess the effectiveness of leaktightness, the safety systems are presumed to not be effective in cooling the reactor core resulting in the release of fission products from the reactor core. Although the design basis accidents discussed above are allowed to result in some failed fuel (less than one percent), they do not result in core damage. For the containment design, some independent failures of the protection systems are assumed to occur simultaneously with the occurrence of the accident they are intended to control. While the purpose of other safety systems is to shut down the reactor fission process and provide

emergency cooling water to the reactor core, the containment has a required function of providing an essentially leaktight barrier to "bottle up" any radioactive material released to the containment through any rupture or break in the reactor coolant system. Given the release of the radioactive material and cooling water, the containment is required to retain this material and prevent significant releases to the environment. Consequently, the assessment of containment design adequacy assumes the postulated release of fission products to the containment irrespective of the performance of the core cooling safety systems.

While design basis accidents are used to determine the adequacy of plant systems' design and performance, a set of additional assumptions is imposed to further presume that these systems will not work as designed. The containment design basis reflects a combination of parameters incorporating several design basis accidents for structural considerations coupled with an assumed release of radioactive material to containment for assessing leaktightness.

In summary, the original design purpose of the reactor containment was to protect against postulated radioactive releases from hypothetical reactor accidents up to and including major ruptures of reactor coolant piping, where such events resulted in some degree of core damage. These hypothetical events postulated a release of fission products from the reactor core to the reactor coolant system and subsequently into the containment through the pipe break. This was considered one of the less likely, but possible accidents and provided a straightforward means of providing additional margins for containment design.

One must also consider the concept of severe nuclear accidents and how they fit within the framework of protection from design basis accidents.^{2/} For the last several years, as part of the NRC's efforts to continually evaluate and increase power plant safety, we have been studying the likelihood and consequences of extremely low probability incidents with attendant higher estimates of core damage and higher radiological releases from the core. This class of accidents is beyond the existing design basis and is known generally as severe accidents. This was first done comprehensively by the Reactor Safety Study (WASH 1400), which is known as a probabilistic risk assessment (PRA). The type of accidents studied in this evaluation are basically those where multiple backup safety systems fail, eventually resulting in damage to the nuclear fuel and considerable releases of radioactive material outside of the reactor cooling system. Depending on other failures and containment behavior, significant radiological releases into the environment could conceivably occur. Implicit in these scenarios is the development of a better understanding of containment performance and its failure mechanisms.

More detailed PRA studies have been conducted since the publication of WASH 1400 to better understand the probability of these unlikely events and also to better predict the magnitude of potential radiological releases into the environment, given a containment failure and attendant consequences. Considerable work has also focused on the behavior of reactor containments following a severe accident where molten reactor fuel could potentially melt through the reactor vessel. Results of such studies have generally confirmed

^{2/} Severe accidents are defined as those "in which substantial damage is done to the reactor core, whether or not there are serious offsite consequences." This definition is extracted from the "Policy Statement on Severe Reactor Accidents Regarding Future Designs and Existing Plants," 50 Fed. Reg. 32138, August 8, 1985.

the very low likelihood of such accidents and relatively low risk to the public even if such very low probability accidents were to occur. While not originally designed to protect against some of the severe accidents, reactor containments provide considerable benefit from their ability to reduce radiological releases to the public from such accidents. For example, the results of research work indicate that the actual pressure retaining capability of most containments is well above their original design pressures. Studies also indicate that the massive containment structures may provide considerable retention of radioactive material even if they were to fail following a core melt event. As discussed in Section C.4, there exists considerable uncertainty regarding a Mark I containment's behavior during a core melt accident. A recent study judged the probability of some form of containment failure, assuming a core melt had occurred, to be between 10 and 90 percent. ^{3/}

Due to the very complex processes involved in a severe reactor accident, exact predictions of accident consequences are difficult. Considerable research is underway to give us additional information in this area. Results from such studies allow us to focus our attention in areas where improvements can be made to provide increased levels of safety from these very unlikely events. The purpose of these projects is to conduct hypothetical "what if" studies, to understand ways public risk from nuclear operations can be justifiably reduced. Even though we strive to reduce public risk further, results of our studies indicate that risk from these severe accidents are very low and do not warrant

^{3/} The Reactor Risk Reference Document - Draft (NUREG-1150).

immediate actions. More information on the adequacy of the Pilgrim containment and its adequacy with respect to severe reactor accidents is provided in Section C.4.

For background information purposes, a brief description of the Pilgrim Mark I Containment Design is provided in Attachment B. A discussion of the historical problems and the specific three assertions regarding deficiencies in the Mark I design is provided below. Section C.2 will address the Hanauer issues, Section C.3 will address the Chernobyl issues and Section C.4 will provide additional information on the Pilgrim containment's acceptability from a perspective of severe accident risk.

2. Hanauer Issues

The Petitioners have expressed concerns that are based on memoranda written before 1978 by the staff of the Atomic Energy Commission (AEC) and the NPC (which succeeded the AEC in 1975). These concerns relate to the ability of the Mark I containment to respond adequately to its original design function (i.e., deal with a large loss of coolant accident). The key document cited is a memorandum written by Dr. S. H. Hanauer on September 20, 1972. This document raised seven concerns, all of which centered on the viability of the pressure-suppression containment concept. Portions of four of those concerns have been either directly or indirectly quoted in the Petition; they relate to steam-bypass susceptibility, valve reliability, lack of adequate testing, and volume limitations causing overcrowding.

When Dr. Hanauer's seven concerns were raised, the staff evaluated each of them to determine whether adequate safety margins were being maintained on existing plants. Subsequently, the NRC staff concluded that Dr. Hanauer's concerns had been properly considered, and documented its findings in NUREG-0474, "A Technical Update on Pressure Suppression Type Containments in Use in U.S. Light Water Reactor Nuclear Power Plants," issued in July 1978.

Enclosure A to NUREG-0474 summarizes NRC staff actions related to each of the seven concerns identified in Dr. Hanauer's memorandum of September 20, 1972. For convenience, a copy of that enclosure is provided as Attachment C to this response. Each statement of concern was followed by a response that reflected the NRC evaluation. In each case, the response showed that the NRC no longer considered the concern an unresolved safety issue.

It should be noted that while the concern reflected the views of Dr. Hanauer in September 1972, the NRC response reflected the status of the issue in July 1978. Moreover, by June 1978, Dr. Hanauer had changed his opinion regarding his 1972 concerns, as reflected in a memorandum dated June 20, 1978 in which he stated: "Thus while we may yearn for the greater simplicity of 'dry' containments, the problems of both 'dry' and pressure suppression containments are solvable, in my opinion, and the design safe, therefore licensable" (NUREG-0474).

Our review of the Petition issues that are based on correspondence dated 1978 or earlier indicates that all of these issues have been addressed in NUREG-0474. Although various changes have occurred since then, the fundamental safety conclusions stated in NUREG-0474 are essentially unchanged. The most notable of the changes has been the NRC position related to inerting the containment.^{4/} Since NUREG-0474 was issued, the regulations relating to this issue (10 CFR 50.44, "Standards for Combustible Gas Control System in Light Water Cooled Power Reactors") have been revised to require all Mark I and II containments to be inerted. The response to Dr. Hanauer's concern (see Item B of Attachment C to this response) indicates that most Mark I containments were already inerted. Pilgrim was inerted at the time NUREG-0474 was published; however, the reason for inerting was restricted to Design Basis Accident (DBA) considerations. With the issuance of the revised 10 CFR 50.44, the Commission required all Mark I and II containments to be inerted to accommodate the degraded core accident. Therefore, although the revision did not cause any immediate change to the Pilgrim plant operation, the change did alter the basic NRC requirements in this area. A review of this and other changes made since NUREG-0474 was issued indicates that, in no case, have the changes altered the fundamental staff conclusions concerning safety contained in NUREG-0474.

The Petition references statements from NUREG-0474 that relate to differences between expected experimental results and actual test results.

^{4/} An inerted containment is one in which oxygen is replaced by enough nitrogen to preclude combustion.

The Petitioners state that surprises repeatedly occurred during the course of the various, then-ongoing, test programs. The statements extracted from NUREG-0474 were made during 1978 when many of these test programs were in their early stages.

These test programs were initiated by utilities owning Mark I plants as part of a program in response to NRC letters that were transmitted in February and April 1975 to all utilities owning BWR facilities with Mark I design containments (including the licensee). The letters requested that the owners quantify the hydrodynamic and safety-relief valve (SRV) discharge loads and assess the effect of these loads on the containment. (These loads had not been considered during the licensing of the individual plants because these loads (including pool swell) were identified in the period 1972 through 1974 as part of the review of the large-scale testing of the Mark III containment system design.)

As a result of these letters from the NRC and recognizing that the evaluation effort would be very similar for all Mark I BWR plants, the utilities (including the licensee) formed an ad hoc Mark I Owners Group. The objectives of this Owners Group were to determine the magnitude and significance of these dynamic loads as quickly as possible and to identify actions to resolve any outstanding safety concerns. A series of generic test programs was created to accomplish these objectives.

Since NUREG-0474 was issued in July 1978, the generic test programs related to the Mark I containment design and the NRC assessment of the tests have been completed. The staff evaluation of the generic tests programs was reported in NUREG-0661, "Mark I Containment Long Term Program Safety Evaluation

Report," issued in July 1980. NUREG-0661 describes and presents staff conclusions regarding the generic techniques for the definition of suppression pool hydrodynamic loads in a Mark I system and the related structural acceptance criteria. As part of the acceptance criteria, the staff required a plant-specific analysis.

The licensee performed a plant-specific analysis on the Pilgrim Station. The licensee submitted the Plant Unique Analysis Report (PUAR) of the Suppression Chamber - Mark I Containment Long-Term Program (TR-5310-1) on October 27, 1982, and the PUAR of the Torus Attached Piping - Mark I Containment Long Term Program (TR-5310-2) on October 26, 1983. On the basis of this analysis, the licensee proposed design changes to restore the intended safety margins. (The intended margin in this context simply means that the structural margin that was computed without consideration of the hydrodynamic and SRV loads would remain unchanged when the loads are included and the modifications completed.) The staff reviewed these changes and approved them in a Safety Evaluation Report issued January 30, 1985. The modifications have been implemented and the licensee has demonstrated that the Pilgrim containment is capable of accommodating design-basis accidents with adequate margin.

The Petition refers to another concern which can be considered as related to Dr. Hanauer's concerns. The concern focused on the safety disadvantages of pressure-suppression containments. This issue is related to the possibility of steam bypassing the suppression pool in BWR pressure-suppression containments, and was designated as Generic Issue 61, "SRV Line Break Inside the Wet Well Airspace of Mark I and II Containments." An evaluation of this issue

was recently completed, and the results were presented in NUREG/CR-4594, "Estimated Safety Significance of Generic Issue 61," which was issued in June 1986.

On the basis of these results, the staff concluded that no new requirements were justified and, on the basis of an overall risk assessment, no further study of this safety issue was warranted.

In summary, the Petitioners have asserted that the pressure-suppression containment design is flawed from the perspective of its original design function and they have questioned the viability of this containment type. We have shown that many of their specific concerns, and in particular those issues raised by Dr. Hanauer, were previously and satisfactorily addressed in NUREG-0474 and in various generic issues programs. For those concerns identified since NUREG-0474 was issued, generic programs were conducted to determine the magnitude of the design loads under investigation and the licensee, based on the program results, implemented design changes at Pilgrim to reestablish acceptable structural design margins. Consequently, these concerns are resolved.

3. Chernobyl Accident

The Petitioners express concern regarding the threat of a Chernobyl-type event at the Pilgrim Station as part of an overall reference to severe accidents.

Immediately upon learning of the event at the Chernobyl plant in the Soviet Union, the NRC formed a task force to thoroughly evaluate the accident

to learn as much as possible about its causes, course, and consequences. The results of this effort were published in NUREG-1250, "Report on the Accident at the Chernobyl Nuclear Power Station." NUREG-1250 was prepared collaboratively by the NRC, other United States Government agencies, and other groups.

Within the next few weeks, the NRC plans to issue for public comment a report entitled, "Implications of the Accident at Chernobyl for Safety Regulation of Commercial Nuclear Power Plants in the United States," NUREG-1251 (August 1987). The facts of the Chernobyl accident relied on for this report are drawn from NUREG-1250 and its sources. NUREG-1251 presents an assessment of the implications, with respect to a number of U.S. reactor safety regulatory issues. The issues selected for evaluation were those associated with significant factors which led to or exacerbated the consequences of the Chernobyl accident. Issues covered are in the areas of administrative controls and operational practice, design, containment, emergency planning, and severe accident phenomena.

Notwithstanding important design differences between the Chernobyl reactor and U.S. commercial reactors, the findings from these reports add to our understanding of some of the phenomena that may be involved in a severe nuclear accident and provide some additional insights useful in guiding our severe accident programs. The findings and assessments provide us with conclusions regarding the vulnerability of plants such as Pilgrim to a Chernobyl-type event.

The Chernobyl accident was initiated by serious operator violations of safety procedures. However, the ensuing reactor damage resulted from basic design features of the RBMK 1000 reactor which are specifically prohibited

in US reactors. The RBMK reactor design does not use large steel reactor pressure vessels with water as a moderator, such as are employed in the US designs. Rather, the RBMK utilizes a graphite moderated pressure tube concept. For some conditions or modes of operation this design has an undesirable characteristic known as a positive void coefficient.

A positive void coefficient means that, for reactor incidents where rapid power increases vaporize cooling water in the pressure tubes, a further power increase is incited. This is known as negative control stability, and occurred so quickly at Chernobyl that the operators or safety systems had no opportunity to respond and an explosion resulted. In violation of operating procedures, some safety systems had also been deactivated. The RBMK design also possesses a slow acting safety control rod system, which further contributed to the event.

As nuclear power was being developed in the United States, the importance of control stability and specifically negative void and negative power coefficients were recognized. The nuclear cores of US reactors are specifically designed to prevent the power instability which caused the Chernobyl accident, and also include fast acting safety control rod systems. Fully complying with these design criteria, Pilgrim responds to an increase in voiding by a power reduction due to the inherent physics of its design. Additionally, it is worth noting that the accident at Chernobyl was exacerbated by the graphite fire which resulted. Since Pilgrim does not utilize graphite in its design, the concerns associated with a graphite fire are not applicable. Also of note is the fact that the reactor at Chernobyl is surrounded by a confinement structure as opposed to a containment, as in Pilgrim. The differences in design relate to the basis

of the pressure retaining capability of the two structures. The Pilgrim reactor containment would be expected to withstand an internal pressure resulting from an energy release many times the energy release that the Chernobyl reactor confinement could (by design and in fact) withstand.

As discussed above, the steam explosion in the reactor core, which ruptured the reactor core and surrounding building, was caused by a nuclear physics design vulnerability specifically prevented by the Pilgrim design. Due to that and other factors discussed above, we find that the contentions of the Petitioners regarding Chernobyl are without merit.

4. Capability of the Pilgrim Containment to Withstand Severe Accidents

The Petitioners raised concerns regarding the possibility that the Pilgrim containment might fail in the event of a severe accident. The Petitioners assert that there is a tendency to underestimate the probability of various types of accidents; they cite, among other things, the recent accident at Chernobyl (see previous section). The Petitioners also conclude that there is a high probability that Pilgrim's Mark I containment structure will not stand various severe accident scenarios.

As discussed at the initial introduction to this section (C.1), the NRC views probabilistic risk assessment as a structured method for investigating the likelihood and consequences of reactor accidents considered to have a very low frequency of occurrence. The perceived inability of the Pilgrim

containment to survive a severe accident was identified by the Petitioners as a design flaw.

The evaluation of severe accident vulnerability involves three distinct evaluations. First, the probability of an accident involving core damage. Second, the likelihood of containment failure and third, an assessment of the radiological consequences and public doses resulting from the accident. All three issues must be considered in making a determination on the magnitude of severe accident risk and what actions should prudently be taken to reduce those risks.

The studies which have been conducted emphasize that the results inherently possess large uncertainties. The draft results of NUREG 1150 present the most recent program, whose intent is to accurately reflect the severe accident risk at a number of US nuclear power plants, and also to properly reflect the areas of uncertainty. This study included an evaluation for Peach Bottom, a plant quite similar to Pilgrim in reactor design and containment. The study presented the estimated mean frequency of core damage to be approximately one chance in 100,000 per year of operation. Another comprehensive risk study conducted for the Limerick plant estimated a mean core damage probability of 1 in 10,000.

These results are consistent with NRC's belief that core melt accidents are very unlikely. Draft NUREG 1150 also investigated the probability of early containment failure following a core melt. This study concluded that our ability to accurately predict the response of a Mark I containment was limited

for situations where it was subjected to the harsh temperature and pressure conditions following a core melt accident. As stated earlier, the report indicated that containment failure probability (for these extremely unlikely events) could likely range from 10 to 90 percent.

These uncertainties are currently the subject of research efforts to better predict the behavior of containments during severe accidents, so that a more complete risk perspective can be assembled for guiding our regulatory activities. However, it is important that these uncertainties be properly characterized. They are not identified deficiencies in the BWR Mark I containments, which have been demonstrated to satisfy their design performance requirements (see Hanauer Issues, Sec. C.2). Rather, these uncertainties are areas which guide our research investigations, whose goals are to provide improved understanding of very unlikely risk situations at nuclear power facilities. Results from these studies (including high containment failure probabilities) also allow us to calculate public risk estimates assuming that one element of the three which go into a risk assessment (containment failure) is less favorable.

Even allowing the large uncertainties which result in a high upper value for containment failure, the NUREG 1150 study estimated that the probability of a large reactor accident that results in 1 or more early fatalities ranged from 1 in one million to 1 in one billion. Given a severe accident, the probabilities of very high radiation exposure and the distances over which they would occur were also estimated to be reasonably small. The risk levels for Pilgrim would of course depend on its actual core melt probability, containment

behavior, the local demography, and could vary somewhat from the results presented in NUREG 1150. The results of this and related studies do, however, support our overall conclusion of low severe accident risk at the Pilgrim utility. One contributing factor is the issue mentioned in Section C.1, that the massive reactor containment structures may retain considerable radioactive material following a core melt even if its pressure boundary is failed. In this regard, containment failures include cracks or other phenomena that result in loss of pressure integrity that can result in leaks but should not be viewed solely as catastrophic failure of the containment structure. Plateout and deposition of material within containments, even though there may be leakage, also increase the time available to implement effective evacuation activities.

While we believe that severe accident risks are low at operating nuclear plants, our goal is to pursue additional activities to achieve even lower levels of public risk. To assure that our risk conclusions are applicable to all operating units, a number of programs are going forward to assess severe accident likelihood and consequences. These programs include plant specific studies to determine any severe accident vulnerabilities, both from the perspective of accident frequencies and from containment performance following a core melt. Any problems will be dealt with if identified. This program is known as the individual plant examination (IPE) program which is expected to commence later this year. These and related programs will be conducted to provide further assessments of severe accidents on a plant specific basis, so that appropriately low risk levels can be maintained.

On July 25, 1986, the licensee announced that it is voluntarily considering implementation of certain modifications to enhance the Pilgrim Station containment capabilities. In an April 30, 1987 letter from S. Varga to R. Bird, NRC asked the licensee to provide details of the modifications and procedural changes. We have received the licensee's response dated July 8, 1987 and it is currently under review. The NRC does not view any of these modifications as necessary before the plant restarts. The NRC staff will review these modifications to ensure that they do represent overall safety improvements and that they have no overall adverse safety impact on existing systems.

The Petitioners also requested that the NRC require the licensee to submit a feasibility study on all possible structural modifications before NRC approves specific modification proposals. At the present time, neither the licensee, nor the staff, nor the Petitioners have identified any structural modifications to the Pilgrim containment that would be warranted by severe accident considerations. Therefore, this request for a feasibility study is denied.

The Petitioners' assertions with respect to inherent design flaws in the pressure-suppression system utilized at the Pilgrim plant have been addressed above. The licensee has implemented modifications to re-establish Pilgrim's intended containment design margins (see the discussion on the Pilgrim PUAR). Evaluations of the Mark I containment with respect to severe accidents are continuing through (1) the implementation of the Commission Policy Statement on Severe Accidents, (2) the NRC staff and industry dialogue to improve containment severe accident performance for all BWRs, and (3) the licensee's voluntary initiative.

As indicated in the discussion on the Mark I containment, the Petitioners have not presented sufficient evidence to indicate that the Pilgrim Station should not operate while risk-reduction improvements are being considered. That is, there is not sufficient evidence of either design flaws at Pilgrim or high risk to warrant a Show Cause Order for the plant to remain closed or to suspend the operating license. Therefore, this portion of Petitioners' request is denied.

CONCLUSION

The NRC has required, and will continue to require, that the Pilgrim facility remain shut down until the management and emergency preparedness issues are dealt with to the satisfaction of the NRC.

For the reasons discussed above, a decision cannot be made at this time regarding the management issues. This portion of the Petition will be addressed in a subsequent response.

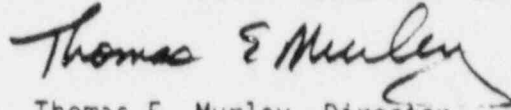
For the reasons discussed above, the information identified by the Petition does not warrant the initiation of the requested proceedings in regard to the radiological emergency response plan. Based on the FEMA evaluation of the emergency preparedness issues raised by the Petitioners, the Petitioners' request for action pursuant to 10 CFR 2.206 on this issue is denied. However, in view of FEMA's interim finding that Massachusetts offsite radiological emergency planning and preparedness are inadequate to protect the public health and safety, the Commission will consider, among other issues, corrective actions regarding emergency planning issues identified by FEMA before permitting the restart of the Pilgrim Plant.

For the reasons discussed above, the information identified by the Petition does not warrant the initiation of the requested proceedings in regard

to the containment issues. Accordingly, the Petitioners' request for action pursuant to 10 CFR 2.206 on this issue is denied.

As provided in 10 CFR § 2.206(c), a copy of this Decision will be filed with the Secretary for the Commission's review.

FOR THE NUCLEAR REGULATORY COMMISSION



Thomas E. Murley, Director
Office of Nuclear Reactor Regulation

Attachments:

- A. FEMA Analysis of Petition's Contentions
- B. Mark I Containment Design
- C. Summary of Staff Actions Related
to Hanauer Issues

Dated at Bethesda, Maryland
this 21st day of Aug. 1987.

ATTACHMENT A



ANALYSIS OF EMERGENCY PREPAREDNESS ISSUES
AT PILGRIM NUCLEAR POWER STATION RAISED
IN A PETITION TO THE NRC
DATED JULY 15, 1986

JULY 29, 1987

FEDERAL EMERGENCY MANAGEMENT AGENCY
JOHN W. McCORMACK POST OFFICE AND COURTHOUSE
BOSTON, MASSACHUSETTS 02109-4595

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2. ANALYSIS REPORT ON ISSUES RELATED TO THE PILGRIM EVACUATION TIME ESTIMATE FOR PILGRIM NUCLEAR POWER STATION, PLYMOUTH, MASSACHUSETTS, FEMA, MAY 1, 1984.
3. MASSACHUSETTS CIVIL DEFENSE AGENCY (MCDA) ANALYSIS TO THE MASSACHUSETTS PUBLIC INTEREST RESEARCH GROUP (MASSPIRG) REPORT "BLUEPRINT FOR CHAOS II", JULY 20, 1983.
4. 1986 EMERGENCY PUBLIC INFORMATION (EPI) BROCHURE FOR PILGRIM EPZ
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I. INTRODUCTION

ON JULY 15, 1986, MASSACHUSETTS STATE SENATOR GOLDEN, STATE REPRESENTATIVES HYNES AND HILDT, THE MASSACHUSETTS PUBLIC INTEREST RESEARCH GROUP (MASSPIRG), THE PLYMOUTH COUNTY NUCLEAR INFORMATION COMMITTEE, INC. (PCNIC), THE PLYMOUTH ALLIANCE AND ATTORNEYS JO ANN SHOTWELL AND JAMES SHANNON FILED A PETITION WITH THE NUCLEAR REGULATORY COMMISSION (NRC). THIS PETITION REQUESTED THAT THE NRC ISSUE AN ORDER TO THE BOSTON EDISON COMPANY,

...TO SHOW CAUSE AS TO WHY THE PILGRIM I NUCLEAR POWER STATION ("PILGRIM") SHOULD NOT REMAIN CLOSED AND/OR HAVE ITS OPERATING LICENSE SUSPENDED BY THE NRC UNLESS AND UNTIL THAT TIME AT WHICH THE LICENSEE DEMONSTRATES CONCLUSIVELY TO THE NRC AND THE PUBLIC: (1) THAT ITS MANAGEMENT IS NO LONGER HAMPERED BY THE DEFICIENCIES NOTED BY THE PETITIONERS; (2) THAT THE RADIOLOGICAL EMERGENCY RESPONSE PLAN FULLY COMPLIES WITH 10 CFR §50.47 AND 10 CFR §50.57, IS GIVEN HIGH ORGANIZATIONAL PRIORITY AND SUFFICIENT FUNDING BY THE LICENSEE, THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), THE MASSACHUSETTS CIVIL DEFENSE AGENCY (MCDA) AND LOCAL GOVERNMENTS; AND (3) THAT THE INHERENT DESIGN FLAWS NOTED BY THE PETITIONERS WHICH RENDER PILGRIM I'S CONTAINMENT STRUCTURE EXTREMELY VULNERABLE IN MOST ACCIDENT SCENARIOS HAVE BEEN OVERCOME TO THE EXTENT THAT THE PUBLIC HEALTH AND SAFETY WILL BE ASSURED.

ON AUGUST 11, 1986, NRC FORWARDED A COPY OF THE PETITION TO FEMA FOR INFORMATION AND INITIAL REVIEW. THEN, ON OCTOBER 16, 1986, NRC FORMALLY REQUESTED THAT FEMA EVALUATE THE OFF-SITE EMERGENCY PLANNING AND PREPAREDNESS ISSUES RAISED IN THE PETITION. THIS IS A REPORT OF THAT EVALUATION.

THE PETITION IDENTIFIED SEVEN ALLEGED DEFICIENCIES IN EMERGENCY PLANNING (LISTED AS NUMBERS 14 THROUGH 20 IN THE PETITION) AS FOLLOWS:

14. DEFICIENCIES IN THE RADIOLOGICAL EMERGENCY RESPONSE PLAN (KERP)
15. DEFICIENCIES IN ADVANCE INFORMATION
16. DEFICIENCIES IN NOTIFICATION DURING AN ACCIDENT
17. DEFICIENCIES IN EVACUATION PLANS
18. DEFICIENCIES IN MEDICAL FACILITIES
19. THE EMERGENCY PLANNING ZONE IS TOO SMALL
20. LACK OF COORDINATION AND PRIORITIZATION OF THE
KERP

ON SEPTEMBER 5, 1986, FEMA SENT A LETTER (SEE APPENDIX 7) TO ROBERT BOULAY, DIRECTOR, MASSACHUSETTS CIVIL DEFENSE AGENCY WITH A COPY TO BOSTON EDISON REQUESTING THEIR VIEWS CONCERNING THE ALLEGATIONS IN THE PETITION AND FURTHER DEVELOPMENT OF PROCEDURES FOR CORRECTING ANY PLAN DEFICIENCIES WHICH MAY EXIST. FEMA ALSO SENT A LETTER TO SENATOR GOLDEN REQUESTING A TRANSCRIPT OR DETAILED NOTES OF A JUNE 18, 1986 MEETING AT THE STATE HOUSE CONCERNING THE EMERGENCY RESPONSE PLANS FOR THE PILGRIM PLUME EXPOSURE EMERGENCY PLANNING ZONE, WHICH WOULD HELP US IN OUR REVIEW OF THE PETITION.

THE BOSTON EDISON COMPANY PROVIDED INFORMATION USED IN REVIEWING THIS PETITION. BOSTON EDISON'S WRITTEN RESPONSE IS ATTACHED AS APPENDIX 5. THE STATE INDICATED THAT IT HAD NO

COMMENTS ON THE PETITION. WE UNDERSTAND THAT NO TRANSCRIPT WAS MADE OF THE MEETING AT THE STATE HOUSE, AND FEMA HAS, THEREFORE, RELIED ON ITS OWN NOTES AND RECOLLECTIONS OF THE MEETING.

THE ANALYSIS OF THESE ISSUES WAS PREPARED BY FEMA REGION I WITH THE ASSISTANCE OF THE ARGONNE NATIONAL LABORATORY, BASED UPON ORAL INPUT FROM MASSACHUSETTS CONCERNING THE CONTENTS OF THE PETITION; PREVIOUS WRITTEN AND ORAL INPUT FROM MASSACHUSETTS CONCERNING THE ISSUES COVERED BY THE PETITION; RESPONSES PREPARED BY FEMA TO A PREVIOUS MASSPIRG PETITION; FEMA REVIEWS OF THE MASSACHUSETTS REKP; AND OF EXERCISE REPORTS FOR THE EXERCISE OF THE RADIOLOGICAL EMERGENCY RESPONSE PLANS FOR THE PILGRIM NUCLEAR POWER STATION IN 1982, 1983, AND 1985. ON DECEMBER 30, 1986, FEMA WAS PROVIDED A COPY OF A REPORT CONCERNING THE MASSACHUSETTS PLANS TO PROTECT THE PUBLIC IN THE PILGRIM EPZ. THE REPORT WAS PREPARED BY THE SECRETARY OF PUBLIC SAFETY AND ENDORSED BY MASSACHUSETTS GOVERNOR DUKAKIS (HEREINAFTER CALLED THE BARRY REPORT). THE BARRY REPORT AND ALL OTHER RELEVANT FACTORS, INCLUDING INPUT FROM PUBLIC MEETINGS IN BOSTON, DUXBURY, AND PLYMOUTH, A MEETING WITH A REPRESENTATIVE OF THE PLYMOUTH COUNTY NUCLEAR INFORMATION COMMITTEE, INC., AS WELL AS ADDITIONAL ANALYSIS BY FEMA STAFF AND CONSULTANTS HAS BEEN SEPARATELY ANALYZED AS PART OF THE ATTACHED REVIEW OF THE MASSACHUSETTS RADIOLOGICAL PLANS FOR PILGRIM WHICH FEMA INITIATED PURSUANT TO 44 CFR 350.

II. SUMMARY

THE DETAILED ANALYSIS OF ISSUES RAISED IN THE JULY 15, 1986 PETITION IS PRESENTED IN SECTION III. MOST OF THE ISSUES RAISED IN THE 1986 PETITION ARE ESSENTIALLY IDENTICAL TO ISSUES RAISED IN A PETITION SUBMITTED TO THE NRC IN 1983 BY MASSPIRG, AND TO ISSUES PREVIOUSLY EXAMINED BY NRC AND FEMA. BASED ON A PREVIOUS ANALYSIS BY FEMA, THE NRC DENIED THE 1983 MASSPIRG PETITION ON FEBRUARY 27, 1984.

FEMA REVIEWED THIS NEW PETITION IN LIGHT OF THE STATE OF THE RECORD AT THE TIME OF ITS SUBMITTAL AND INFORMATION AVAILABLE TO FEMA AS OF NOVEMBER, 1986. OUR REVIEW WAS LARGELY COMPLETED BY DECEMBER 20, 1986. FEMA DEALT WITH LATER INFORMATION INCLUDING FEMA STAFF ANALYSIS OF PUBLIC AND INTERAGENCY MEETINGS, AND THE BARRY REPORT, IN ITS SELF-INITIATED REVIEW. IT SHOULD BE NOTED, HOWEVER, THAT, WHILE FEMA'S ANALYSIS OF THE SEVEN ALLEGED DEFICIENCIES IN OFF-SITE EMERGENCY PLANNING INDICATES THAT THE INFORMATION IN THE PETITION DID NOT SUSTAIN THE CONTENTIONS BASED ON THE STATE OF THE RECORD AT THE TIME THE PETITION WAS REVIEWED, FEMA AGREES WITH THE GENERAL THRUST OF SOME OF THE CONCLUSIONS OF THE PETITION FOR THE REASONS CITED IN ITS SELF-INITIATED REVIEW AND INTERIM FINDING DATED JULY 29, 1987.

THE FEDERAL EMERGENCY MANAGEMENT AGENCY WILL CONTINUE TO REVIEW AND ANALYZE THE STATUS OF EMERGENCY PLANNING IN THE VICINITY OF ALL NUCLEAR POWER PLANTS, INCLUDING PILGRIM, TO INSURE THAT A CORRECT ANALYSIS OF OFF-SITE EMERGENCY PLANNING IS PRESENTED TO THE NUCLEAR REGULATORY COMMISSION.

III. ANALYSIS

FEMA HAS ADDRESSED EACH OF THE SEVEN ISSUES IN OFF-SITE EMERGENCY PLANNING RAISED IN THIS PETITION BELOW.

14/ DEFICIENCIES IN THE RADIOLOGICAL EMERGENCY RESPONSE PLAN (REKP)

PETITIONERS:

SERIOUS DEFICIENCIES EXIST IN THE REKP FOR PILGRIM, WARRANTING SUSPENSION OF DUSTON EDISON'S OPERATING LICENSE BY THE NRC. THE DEFICIENCIES ARE OUTLINED BELOW. THE COMBINED EFFECT OF THESE DEFICIENCIES IS TO ABROGATE THE "REASONABLE ASSURANCE THAT ADEQUATE PROTECTIVE MEASURES CAN AND WILL BE TAKEN IN THE EVENT OF A RADIOLOGICAL EMERGENCY," THE STANDARD SET BY 10 CFR 50.47 (A)(1).

FEMA:

FEMA HAS PROVIDED RESPONSES TO EACH OF THE PETITIONER'S ALLEGATIONS. THESE RESPONSES ARE GIVEN BELOW.

15/ DEFICIENCIES IN ADVANCE INFORMATION

A) PETITIONERS:

THE ONLY METHOD BEING USED FOR ADVANCE PUBLIC EDUCATION IN THE PILGRIM EMERGENCY PLANNING ZONE (EPZ) IS THE DISTRIBUTION OF PAMPHLETS BY MAIL. A MASSPIRG TELEPHONE SURVEY CONDUCTED IN 1983 REVEALED SERIOUS INADEQUACIES IN THE DISTRIBUTION, RETENTION, AND UNDERSTANDING OF THE PAMPHLETS BY AREA RESIDENTS. NO IMPROVEMENTS IN THE ADVANCE INFORMATION PROCEDURES HAVE BEEN CARRIED OUT SINCE 1983.

FEMA:

THIS ISSUE WAS RAISED PREVIOUSLY IN THE PETITION OF THE MASSACHUSETTS PUBLIC INTEREST RESEARCH GROUP FOR EMERGENCY AND REMEDIAL ACTION FILED BY MASSPIRG WITH THE NRC ON JULY 20, 1983. NO SUBSTANTIVE NEW ISSUES ARE RAISED BY THE CURRENT PETITION. IN RESPONSE TO THE 1983 PETITION (APPENDIX 1)

FEMA STATED:

TWO PAMPHLETS ENTITLED "EMERGENCY PUBLIC INFORMATION" AND "NUCLEAR ENERGY QUESTIONS AND ANSWERS" WERE MAILED TO ALL RESIDENTS IN THE EPZ IN SEPTEMBER 1981 AND SEPTEMBER 1982. IN ADDITION, THE PAMPHLETS WERE DISTRIBUTED TO COMMERCIAL ESTABLISHMENTS AND PUBLIC BUILDINGS IN THE EPZ, INCLUDING HOTELS. OVER 120,000 OF BOTH BROCHURES HAVE BEEN DISTRIBUTED IN AN AREA OF APPROXIMATELY 55,000 POPULATION AND 20,000 HOUSEHOLDS. POSTERS DEPICTING EMERGENCY INFORMATION HAVE BEEN DISPLAYED IN THE EPZ SINCE OCTOBER 1982.

MASSPIRG'S INFORMATION WAS DERIVED FROM A POLL THAT THEY CONDUCTED OF SOME OF THESE RESIDENTS IN THE AREA. WHEN ASKED IF THEY HAVE RECEIVED EPI BROCHURES, A SUBSTANTIAL 70% RESPONDED THAT THEY REMEMBERED RECEIVING THEM.

MASSPIRG ALSO REPORTS THAT 9% OF THOSE POLLED SAID THEY WOULD TUNE TO AN EBS RADIO STATION AS A FIRST REACTION TO HEARING THE SIRENS, AND AN ADDITIONAL 19% WOULD TUNE TO RADIO OR TV, BOTH OF WHICH ARE REASONABLE AND APPROPRIATE RESPONSES. MASSPIRG DID NOT ASK WHAT PEOPLE WOULD DO UPON SOME REFLECTION AS THE SIRENS CONTINUED TO SOUND.

EACH SIREN HAS A PUBLIC ADDRESS CAPABILITY AND CAN BE USED TO BROADCAST SPECIFIC INSTRUCTIONS TO THE PUBLIC, INCLUDING TRANSIENTS, IN AN EMERGENCY AND THIS SHOULD BE CONSIDERED TO BE PART OF THE PUBLIC EDUCATION EFFORT. LOCAL AND STATE PUBLIC SAFETY VEHICLES ALSO ARE EQUIPPED WITH PA CAPABILITY. MESSAGES WILL BE BROADCAST OVER THESE PUBLIC ADDRESS SYSTEMS TO TUNE TO THE EBS STATION FOR INFORMATION. THIS SHOULD BE SUFFICIENT TO AID RESIDENTS AND TRANSIENTS IN AN EMERGENCY.

FEMA DETERMINED IN 1983 THAT THE PETITION DID NOT INDICATE THAT THE COMMONWEALTH WAS UNABLE TO PROTECT THE HEALTH AND SAFETY OF THE PUBLIC. THE MASSPIRG PETITION WAS DENIED BY THE NRC IN THE "INTERIM DIRECTOR'S DECISION UNDER 10 CFR 2.206", FEBRUARY 27, 1984. HOWEVER, SINCE THAT TIME THE COMMONWEALTH HAS TAKEN ADDITIONAL STEPS TO ENHANCE ITS PUBLIC INFORMATION PROGRAM.

ACCORDING TO INFORMATION PROVIDED BY MCDA AND THE BOSTON

EDISON COMPANY, THE ANNUAL PUBLIC EDUCATION BROCHURE ENTITLED "EMERGENCY PUBLIC INFORMATION: WHAT TO DO IN CASE OF AN EMERGENCY AT PILGRIM NUCLEAR POWER STATION" (APPENDIX 4) WAS MAILED TO RESIDENTS, HOTELS AND MOTELS, AND PUBLIC BUILDINGS IN THE PLUME EXPOSURE EMERGENCY PLANNING ZONE (EPZ) IN AUGUST 1986 (SEE APPENDIX 5). BROCHURES WERE ALSO MAILED TO RESIDENTS IN 1985. THE 1986 BROCHURE IS IN COMPLIANCE WITH THE GUIDANCE PROVIDED IN NUREG-0654, FEMA-REP-1, REV 1, "CRITERIA FOR PREPARATION AND EVALUATION OF RADIOLOGICAL EMERGENCY RESPONSE PLANS AND PREPAREDNESS IN SUPPORT OF NUCLEAR POWER PLANTS." THE CURRENT BROCHURE CONTAINS THE FOLLOWING INFORMATION:

- EDUCATIONAL INFORMATION ON RADIATION;
- DESIGNATION OF RADIO STATIONS FOR EMERGENCY PUBLIC INFORMATION;
- PROTECTIVE MEASURES (I.E., SHELTERING, RESPIRATORY PROTECTION, EVACUATION ROUTES, AND RECEPTION CENTERS); AND
- A RETURN POSTCARD AND INSTRUCTIONS FOR PERSONS WITH SPECIAL NEEDS SO THAT ARRANGEMENTS CAN BE MADE TO PROVIDE APPROPRIATE TRANSPORTATION IN THE EVENT OF AN EVACUATION.

FEMA SPONSORED A STATISTICALLY VALID SURVEY AFTER THE SEPTEMBER 29, 1986 TEST OF THE PILGRIM PUBLIC ALERT AND NOTIFICATION SYSTEM. THE SURVEY INDICATED THAT 72.8% OF THE PEOPLE REMEMBER RECEIVING THE PUBLIC INFORMATION BROCHURE.

FEMA, THEREFORE, CONCLUDES THAT THE PETITION DOES NOT PROVIDE INFORMATION WHICH SUSTAINS THE CONTENTIONS.

B) PETITIONERS:

THE CURRENT (SEPTEMBER 1985) PAMPHLETS CONTAIN NO INFORMATION REGARDING PUBLIC TRANSPORTATION FOR PURPOSES OF EVACUATION, DESPITE THE FACT THAT THE RADIOLOGICAL EMERGENCY RESPONSE PLAN (HERP) FOR THE TOWN OF PLYMOUTH PROVIDES FOR THIRTEEN "STAGING AREAS" WHERE PERSONS WITHOUT TRANSPORTATION WILL BE DIRECTED FOR "POSSIBLE" PUBLIC TRANSPORT.

FEMA:

THIS ISSUE WAS RAISED PREVIOUSLY IN THE "PETITION OF THE MASSACHUSETTS PUBLIC INTEREST RESEARCH GROUP FOR EMERGENCY AND REMEDIAL ACTION" FILED BY MASSPIRG WITH THE NRC ON JULY 20, 1983. NO SUBSTANTIVE NEW ISSUES ARE RAISED IN THE CURRENT PETITION.

THE COMMONWEALTH STATED IN ITS RESPONSE TO THE 1983 PETITION: (APPENDIX 3)

LOCAL PLANS UTILIZE LISTINGS OF POST OFFICES, FIRE HOUSES, SCHOOLS AND OTHER WELL KNOWN, RECOGNIZABLE SITES FOR 'STAGING AREAS.' ALTHOUGH LOCAL RESIDENTS ARE WELL AWARE OF THESE SITES, WE ARE STUDYING THE USE OF MAPS AND MAY INCLUDE THEM IN FUTURE PUBLICATIONS.

FEMA STATED IN ITS RESPONSE TO THE 1983 PETITION: (APPENDIX 1)

PUBLIC TRANSPORTATION - THE LACK OF PROVISIONS IN THE PLANS FOR TRANSPORTATION OF THOSE WHO MAY NOT HAVE ACCESS TO CARS WAS PREVIOUSLY NOTED AS A DEFICIENCY AND THE STATE IS REVISING THE PLANS ACCORDINGLY. NO REQUESTS FOR SPECIAL TRANSPORTATION HAVE, TO DATE, BEEN REGISTERED WITH PLYMOUTH CIVIL DEFENSE, ALTHOUGH SUCH INFORMATION HAS BEEN SOLICITED.

THE 1986 PUBLIC INFORMATION BROCHURES DIRECT PERSONS IN NEED OF TRANSPORTATION OR OTHER SPECIAL HELP TO RETURN THE POSTCARD FOUND IN THE BROCHURE TO MCDA AREA II HEADQUARTERS OR TO CALL THEIR TOWN HALL OR CIVIL DEFENSE OFFICE AS SOON AS POSSIBLE TO ARRANGE FOR ASSISTANCE BEFORE AN EMERGENCY.

IF PEOPLE NEED ASSISTANCE DURING AN EMERGENCY, THEY ARE TO CALL THE LOCAL CIVIL DEFENSE OFFICE. THE LOCAL PLANS SPECIFY THAT CONTRACTOR SCHOOL BUSES MAY BE USED TO MOVE THOSE WITHOUT PERSONAL MEANS OF TRANSPORTATION. IF NEEDED, ADDITIONAL BUSES (OR OTHER MEANS OF MASS TRANSPORT) WILL BE REQUESTED THROUGH THE MASSACHUSETTS CIVIL DEFENSE AGENCY (MCDA) AREA II HEADQUARTERS. THE COMMONWEALTH OF MASSACHUSETTS HAS IDENTIFIED IN ITS STATE PLAN A VAST NUMBER OF STATE CONTROLLED RESOURCES AVAILABLE IN THE EVENT OF AN ACCIDENT AT PILGRIM.

PREDETERMINED STAGING AREAS FOR BUSES WILL BE ACTIVATED AT SITES SPECIFIED BY THE DIRECTOR OF CIVIL DEFENSE (CD) AS THE SITUATION REQUIRES. PLYMOUTH HAS IDENTIFIED 13 STAGING AREAS WHERE THOSE PEOPLE IN NEED OF TRANSPORTATION WOULD GO TO OBTAIN PUBLIC TRANSPORTATION. IF AN EVACUATION WERE ORDERED, PEOPLE WOULD BE ADVISED TO STAY TUNED TO RADIO AND TV FOR INFORMATION REGARDING THE EVACUATION. THE PLYMOUTH CIVIL DEFENSE DIRECTOR IS RESPONSIBLE FOR COORDINATING WITH MCDA AREA II HEADQUARTERS TO ASSURE THAT INFORMATION REGARDING THE ARRANGEMENTS FOR THOSE PEOPLE IN NEED OF TRANSPORTATION ARE CONTAINED IN EBS MESSAGES.

FEMA, THEREFORE, CONCLUDES THAT THE PETITION DOES NOT PROVIDE INFORMATION WHICH SUSTAINS THE CONTENTION.

C) PETITIONERS:

THE ADVANCE INFORMATION SYSTEM FOR TOURISTS AND OTHER TRANSIENTS IS INADEQUATE OR NONEXISTENT. FOR EXAMPLE, NO SIGNS HAVE BEEN POSTED TO PROVIDE APPROPRIATE INFORMATION FOR TRANSIENTS, A MEASURE SUGGESTED BY THE NRC IN 10 CFR PART 50, APPENDIX E. IV.D.2.

FEMA:

THIS ISSUE WAS RAISED PREVIOUSLY IN THE "PETITION OF THE MASSACHUSETTS PUBLIC INTEREST RESEARCH GROUP FOR EMERGENCY AND REMEDIAL ACTION" FILED BY MASSPIRG WITH THE NRC ON JULY 20, 1983. NO SUBSTANTIVE NEW ISSUES ARE RAISED IN THE CURRENT PETITION.

THE COMMONWEALTH STATED IN ITS RESPONSE TO THE 1983 PETITION: (APPENDIX 3)

POSTERS HAVE BEEN DISTRIBUTED, AND ARE AVAILABLE THROUGHOUT THE EPZ. THE EPI PAMPHLETS INCLUDE REMOVABLE EMERGENCY PUBLIC INFORMATION STICKERS AND HAVE ALSO BEEN DISTRIBUTED (SEE ENCLOSED). THE SIREN SYSTEM INSTALLED THROUGHOUT THE EPZ IS EQUIPPED WITH PUBLIC ADDRESS CAPABILITY WHICH WOULD BE USED TO PROVIDE TRANSIENTS WITH EMERGENCY INFORMATION. LOCAL AND STATE PUBLIC SAFETY VEHICLES ARE ALSO EQUIPPED WITH PA CAPABILITY.

FEMA'S RESPONSE TO THE 1983 PETITION (APPENDIX 1) STATED:

TWO PAMPHLETS ENTITLED "EMERGENCY PUBLIC INFORMATION" AND "NUCLEAR ENERGY QUESTIONS AND ANSWERS" WERE MAILED TO ALL RESIDENTS IN THE EPZ IN SEPTEMBER 1981 AND SEPTEMBER 1982. IN ADDITION, THE PAMPHLETS WERE DISTRIBUTED TO COMMERCIAL ESTABLISHMENTS AND PUBLIC BUILDINGS IN THE EPZ, INCLUDING HOTELS. OVER 120,000 OF BOTH BROCHURES HAVE BEEN DISTRIBUTED IN AN AREA OF APPROXIMATELY 55,000 POPULATION AND 20,000 HOUSEHOLDS. POSTERS DEPICTING EMERGENCY INFORMATION HAVE BEEN DISPLAYED IN THE EPZ SINCE OCTOBER 1982.

ACCORDING TO INFORMATION PRESENTED TO FEMA BY BOSTON EDISON,

WHO DISTRIBUTE THE BROCHURES FOR THE MASSACHUSETTS CIVIL DEFENSE AGENCY, EMERGENCY PUBLIC INFORMATION BROCHURES WERE RECENTLY DISTRIBUTED TO HOTELS AND MOTELS, LIBRARIES, AND TOWN OFFICES IN THE AREA, AND PLACARDS WERE POSTED AT VARIOUS LOCATIONS THROUGHOUT THE EPZ (SEE LETTER FROM BOSTON EDISON, DATED OCTOBER 29, 1986, APPENDIX 5).

FEMA, THEREFORE, CONCLUDES THAT THE PETITION DOES NOT PROVIDE INFORMATION WHICH SUSTAINS THE CONTENTION.

D) PETITIONERS:

THE INADEQUATE ADVANCE INFORMATION SYSTEM VIOLATES 10 CFR §50.47 (B)(7); 10 CFR PART 50, APPENDIX E, IV D.2, AND EVALUATION CRITERIA G.1, G.2 AND P. 10 OF NUREG-0654.

FEMA:

FEMA HAS RESPONDED TO THIS ISSUE IN ITEMS A, B, AND C ABOVE.

1b/ DEFICIENCIES IN NOTIFICATION DURING AN ACCIDENT

A) PETITIONERS:

THE WARNING SIREN SYSTEM AND BACK-UP SYSTEMS ARE INADEQUATE TO ESSENTIALLY COMPLETE THE INITIAL NOTIFICATION OF THE PUBLIC WITHIN THE PLUME EXPOSURE PATHWAY OF THE EMERGENCY PLANNING ZONE (EPZ) WITHIN FIFTEEN MINUTES, AS REQUIRED BY 10 CFR PART 50, APPENDIX E., IV. D.3. FOR EXAMPLE, THE SIREN SYSTEM HAS BEEN PLAGUED WITH FALSE ALARMS. RATHER THAN CORRECT THIS PROBLEM, THE RESPONSE HAS BEEN TO DISCONNECT THE SIREN SYSTEM DURING ELECTRICAL STORMS.

FEMA:

THIS ISSUE WAS RAISED PREVIOUSLY IN THE "PETITION OF THE MASSACHUSETTS PUBLIC INTEREST RESEARCH GROUP FOR EMERGENCY AND REMEDIAL ACTION" FILED BY MASSPIRG WITH THE NRC ON JULY 20, 1983. NO NEW SUBSTANTIVE ISSUES ARE RAISED IN THE CURRENT PETITION.

WHILE THE ALERT AND NOTIFICATION SYSTEM EXPERIENCED FALSE ALARMS FOR SOME TIME AFTER ITS INSTALLATION, BOSTON EDISON EXAMINED THE PROBLEM AND MADE IMPROVEMENTS IN THE SYSTEM. FEMA'S REVIEW OF THE SIREN TEST RESULTS, THE ALERT AND NOTIFICATION SYSTEM DESIGN AND OPERATIONAL RECORDS PROVIDED BY BOSTON EDISON COMPANY INDICATES THAT THIS PROBLEM DOES NOT NOW EXIST. (ALSO SEE APPENDIX 5, PAGE 8, ET. SEQ.)

FEMA, THEREFORE, CONCLUDES THAT THE PETITION DOES NOT PROVIDE INFORMATION WHICH SUSTAINS THE CONTENTION.

B) PETITIONERS:

THE SIRENS ARE INAUDIBLE OR BARELY AUDIBLE WITHIN LARGE AREAS OF THE EPZ (REPORT ON THE PILGRIM NUCLEAR POWER STATION SIREN TEST, JUNE 19, 1982, FEMA, JANUARY 1983, P.6). FURTHERMORE, FEDERAL REGULATIONS REQUIRE NOTIFICATION OF "ALL SEGMENTS" OF THE POPULATION (CRITERIA J.10.C, E.6; 10 CFR PART 50, APPENDIX E, IV. D.3).

FEMA:

THIS ISSUE WAS RAISED PREVIOUSLY IN THE "PETITION OF THE MASSACHUSETTS PUBLIC INTEREST RESEARCH GROUP FOR EMERGENCY AND REMEDIAL ACTION" FILED BY MASSPIRG WITH THE NRC ON JULY 20, 1983. NO SUBSTANTIVE NEW ISSUES ARE RAISED IN THE CURRENT PETITION.

FEMA STATED IN ITS RESPONSE TO THE 1983 PETITION (APPENDIX 1)

THAT:

MASSPIRG SEEMS TO HAVE MISUNDERSTOOD THE REPORT ON THE "PILGRIM NUCLEAR POWER STATION SIREN RESPONSE EXERCISE FOR THE PILGRIM NUCLEAR POWER STATION, MARCH 3, 1982." THE FIXED SIREN SYSTEM WAS DESIGNED TO BE USED IN CONJUNCTION WITH OTHER METHODS OF NOTIFICATION SUCH AS MOBILE NOTIFYING TEAMS, TONE ALERT RADIOS, AND THE EBS. FEMA IS CURRENTLY DEVELOPING STANDARDS FOR MEASURING THE EFFECTIVENESS OF FIXED SIRENS. HOWEVER, THE 1982 SIREN TEST DEMONSTRATED AN IMPRESSIVE ABILITY TO NOTIFY THE PUBLIC USING SIRENS ALONE. IN OUR OPINION, THE TEST ALSO DEMONSTRATED A CONTINUING NEED FOR THE OTHER FORMS OF PUBLIC NOTIFICATION THAT ARE PRESENTLY INCLUDED IN THE PLANS.

FEMA'S REPORT ON THE PILGRIM NUCLEAR POWER STATION SIREN TEST DID NOT STATE THAT THE SIRENS WERE INAUDIBLE OR BARELY AUDIBLE WITHIN LARGE AREAS OF THE EPZ. PAGE 6 OF THE REPORT, WHICH THE THE PETITIONERS REFERENCE, DISCUSSES WHERE FEMA OBSERVERS WERE LOCATED DURING THE TEST. FEMA STATED ELSEWHERE IN THE REPORT THAT WE CHOSE TO LOCATE THE 18 OBSERVERS IN THOSE FEW AREAS WHERE SIREN OUTPUTS WOULD BE THE WEAKEST. THEREFORE, WE CONCLUDED THAT THE OBSERVERS' REPORTS SHOULD NOT BE TAKEN AS AN INDICATION OF WIDESPREAD PROBLEMS. IT IS WORTH NOTING THAT FEMA SPONSORED A TELEPHONE SURVEY IMMEDIATELY FOLLOWING A SEPTEMBER 29, 1986 TEST OF THE PILGRIM ALERT AND NOTIFICATION SYSTEM WHICH INDICATED THAT 88.2% OF THE PEOPLE WERE DIRECTLY ALERTED BY THE SIRENS ON THE DAY OF THE TEST. FEMA, THEREFORE, CONCLUDES THAT THE PETITION DOES NOT PROVIDE INFORMATION WHICH SUSTAINS THE CONTENTION.

C) PETITIONERS:

THE DEFICIENT SIREN SYSTEM COULD FAIL TO WARN THE HEARING IMPAIRED; TESTIMONY AT THE JUNE 18, 1985 HEARING ON THE PILGRIM KEKP BEFORE MASSACHUSETTS LEGISLATORS PROVIDED NO EVIDENCE OF THE EXISTENCE OF AN ALTERNATE PLAN FOR NOTIFICATION OF THIS SEGMENT OF THE POPULATION, A DIRECT VIOLATION OF THIS STATUTORY MANDATE.

FEMA:

THIS ISSUE WAS RAISED PREVIOUSLY IN THE "PETITION OF THE MASSACHUSETTS PUBLIC INTEREST GROUP FOR EMERGENCY AND REMEDIAL ACTION" FILED BY MASSPIRG WITH THE NRC ON JULY 20, 1983. NO SUBSTANTIVE NEW ISSUES WERE RAISED IN THE CURRENT PETITION.

IN ITS RESPONSE TO THE 1983 MASSPIRG PETITION (APPENDIX 3), THE COMMONWEALTH OF MASSACHUSETTS STATED:

MCDA AND BOSTON EDISON HAVE WORKED WITH THE MASSACHUSETTS OFFICE FOR THE DEAF (MUD) AND THE DEAF COMMUNITY CENTER IN FRAMINGHAM, MA IN ORDER TO ADDRESS THIS PROBLEM. BOSTON EDISON OFFERED TO EQUIP HOUSEHOLDS OF DEAF PEOPLE LIVING ALONE IN THE EPZ WITH TELE-TYPEWRITER DEVICES FOR THEIR TELEPHONE. THIS DEVICE IS WIDELY ACCEPTED AS ADEQUATE COMMUNICATIONS FOR SERVING A DEAF PERSON DURING AN EMERGENCY. NEWSLETTERS FOR THE DEAF CARRIED NOTIFICATION OF THIS PROGRAM. NO SUCH HOUSEHOLDS HAVE BEEN IDENTIFIED IN THE PILGRIM EPZ.

FEMA STATED IN ITS NOVEMBER 3, 1983 ANALYSIS OF THE 1983 MASSPIRG PETITION (APPENDIX 1).

THE COMMONWEALTH OF MASSACHUSETTS AND BOSTON EDISON HAVE WORKED WITH THE MASSACHUSETTS OFFICE OF THE DEAF, THE COUNCIL OF ELDER AFFAIRS AND THE DEAF COMMUNITY CENTER IN FRAMINGHAM IN AN ATTEMPT TO IDENTIFY DEAF RESIDENTS WITHIN THE EPZ. THEY HAVE ALSO ATTEMPTED TO NOTIFY DEAF PEOPLE WITHIN THE EPZ THROUGH NEWSLETTERS ABOUT EFFORTS TO PROVIDE

DEAF RESIDENTS OF THE EPZ WITH TELETYPewriter (TTY) DEVICES. NO SUCH HOUSEHOLDS HAVE BEEN IDENTIFIED BY THESE EFFORTS. THIS MAY BE BECAUSE MOST INDIVIDUALS WITH SPECIAL NEEDS LIVE WITH SOMEONE AND CAN RELY ON OTHER MEMBERS OF THE HOUSEHOLD IN TIMES OF EMERGENCY. ALSO, DEAF PEOPLE AND OTHER INDIVIDUALS WITH SPECIAL NEEDS TEND TO CONGREGATE IN URBANIZED AREAS WHERE THEY CAN RECEIVE SERVICES READILY AND THE PILGRIM EPZ IS NOT URBANIZED.

CONFIDENTIAL LISTS IDENTIFYING THE DEAF ARE BELIEVED TO EXIST. IN A MEETING ON AUGUST 19, 1983 WITH MASSPIRG, THE MASSACHUSETTS SECRETARY OF PUBLIC SAFETY AGREED TO DO RESEARCH ON EXISTING LAWS TO SEE IF THIS INFORMATION COULD LEGALLY BE MADE AVAILABLE TO THE MCDA FOR PLANNING PURPOSES. THE COMMONWEALTH AND UTILITY HAVE ASSURED FEMA THAT THEY WILL CONTINUE THEIR OUTREACH AND WILL PROVIDE TTY DEVICES TO ANY PROFOUNDLY DEAF PERSON IN THE EPZ WHO REQUESTS NE.

THE EFFORT TO IDENTIFY HEARING IMPAIRED PEOPLE WHO MAY REQUIRE TTY DEVICES CONTINUES THROUGH ANNUAL EMERGENCY PUBLIC INFORMATION (EPI) BROCHURES MAILED TO ALL HOMES WITHIN THE 10-MILE EPZ. AS NOTED EARLIER, THESE BROCHURES CONTAIN A POSTCARD TO BE USED BY SPECIAL NEEDS INDIVIDUALS APPRISING LOCAL OFFICIALS OF THE INDIVIDUAL'S SPECIAL NEED. BOSTON EDISON RECENTLY SENT A LETTER TO THE MASSACHUSETTS COMMISSION FOR DEAF AND HARD OF HEARING TO REQUEST THEIR AID IN IDENTIFYING INDIVIDUALS LIVING IN THE PILGRIM EPZ, WHO MAY NEED TTY DEVICES (SEE BOSTON EDISON LETTER - APPENDIX 5).

MCDA AND BOSTON EDISON INFORMED US THAT AS OF OCTOBER 1986, NO HOUSEHOLDS CONTAINING A DEAF PERSON HAVE BEEN IDENTIFIED.

FEMA, THEREFORE, CONCLUDES THAT THE PETITION DOES NOT PROVIDE INFORMATION WHICH SUSTAINS THE CONTENTION.

D) PETITIONERS:

IN TESTIMONY BEFORE MASSACHUSETTS STATE LEGISLATORS ON JUNE 18, 1986, EDWARD A. THOMAS, DIVISION CHIEF, NATURAL & TECHNOLOGICAL HAZARDS, FEMA, STATED THAT BOSTON EDISON HAD FAILED REPEATEDLY TO DELIVER TO FEMA NECESSARY TECHNICAL SPECIFICATIONS ON THE SIREN SYSTEM. MR. THOMAS ADDED THAT THESE DELAYS BY BECO HAVE FORCED REPEATED POSTPONEMENTS OF THE FULL-SCALE SYSTEM TEST REQUIRED BY FEMA.

FEMA:

WHILE BOSTON EDISON DID NOT SUBMIT THE NECESSARY TECHNICAL INFORMATION WHEN SCHEDULED, THE COMMONWEALTH OF MASSACHUSETTS FORWARDED TO FEMA THE "FEMA-43 REPORT, PUBLIC ALERT AND NOTIFICATION SYSTEM FOR THE PILGRIM NUCLEAR POWER STATION" ON JUNE 20, 1985. ADDITIONAL INFORMATION WAS REQUESTED AND PROVIDED TO FEMA BY BOSTON EDISON ON JUNE 23, 1986. THE ADDITIONAL INFORMATION WAS ANALYZED AND FOUND TO BE IN SUFFICIENT COMPLIANCE WITH THE REQUIREMENTS OF FEMA-43 TO ENABLE FEMA TO CONDUCT A TEST OF THE PILGRIM SIREN SYSTEM ON SEPTEMBER 29, 1986. THIS TEST INDICATED THAT 88.2% OF THE PEOPLE WERE DIRECTLY ALERTED BY THE SIRENS ON THE DAY OF THE TEST.

FEMA, THEREFORE, CONCLUDES THAT THE PETITION DOES NOT PROVIDE INFORMATION WHICH SUSTAINS THE CONTENTION.

17/ DEFICIENCIES IN EVACUATION PLANS

A) PETITIONERS:

THE EVACUATION TIME ESTIMATES FOR THE PILGRIM EPZ ARE UNREALISTICALLY LOW. THEY FAIL TO TAKE INTO ACCOUNT THE PROBABILITY OF SOME PANIC, TRAFFIC DISORDER, TRAFFIC OBSTACLES OUTSIDE THE EPZ AND THE FACT THAT THOUSANDS OF PEOPLE OUTSIDE DESIGNATED EVACUATION ZONES WILL ALSO EVACUATE. ACCORDING TO TESTIMONY BEFORE MASSACHUSETTS LEGISLATORS ON JUNE 18, 1986, BY EDWARD A. THOMAS, DIVISION CHIEF, NATURAL & TECHNOLOGICAL HAZARDS, FEMA, THE "REASONABLE ASSURANCE" ADEQUACY OF THE CURRENT PLAN IS BASED ON THE ASSUMPTION THAT COMMUNITIES OUTSIDE OF THE TEN MILE EPZ HAVE DEVELOPED PLANS TO AUGMENT EVACUATION AND SHELTERING EFFORTS. WHEN ASKED, MR. LUBERING, (SIC) DEPUTY DIRECTOR OF THE MASSACHUSETTS CIVIL DEFENSE AGENCY (MCDA), STATED THAT HE HAD NO EVIDENCE THAT SUCH PLANS EXIST. FURTHERMORE, EVACUATION TIME ESTIMATES ARE NOT PROVIDED FOR VARIOUS ADVERSE WEATHER SCENARIOS.

FEMA:

THE CURRENT EVACUATION TIME ESTIMATES ARE BASED ON A SEPTEMBER, 1980, STUDY CONDUCTED BY HMM ASSOCIATES, INC. WHICH WAS UPDATED IN AUGUST, 1981. THERE WERE ALSO SUPPLEMENTAL STUDIES ADDRESSING TRAFFIC CONGESTION PROBLEMS OUTSIDE OF THE EPZ IN THE VICINITY OF BUZZARDS BAY AND THE SAGAMORE BRIDGE AND PROJECTING THE IMPACT OF FUTURE POPULATION GROWTH. THESE STUDIES WERE EXTENSIVELY REVIEWED BY THE NRC AND FEMA AS PREVIOUSLY MENTIONED IN THIS REPORT. BOSTON EDISON HAS RECENTLY CONTRACTED TO UPDATE THE EVACUATION TIME ESTIMATE FOR THE PILGRIM NUCLEAR POWER STATION. THE PETITIONERS RAISE FIVE SEPARATE ISSUES WITH RESPECT TO EVACUATION WHICH WE HAVE ADDRESSED BELOW:

A) PANIC - PANIC, AS ACCEPTED BY MOST DISASTER RESEARCH PROFESSIONALS, WAS DEFINED BY ENRICO L. QUARANTELLI TO MEAN PEOPLE RUNNING FROM AN ASSUMED THREAT OF DANGER, NOT JUST A

HEIGHTENED SENSE OF ANXIETY¹. PANIC ALSO CONNOTES A SUDDEN OVERWHELMING FEAR THAT PRODUCES HYSTERICAL OR IRRATIONAL BEHAVIOR THAT CAN SPREAD QUICKLY THROUGH A GROUP OF PEOPLE. RESEARCH BASED ON ACTUAL DISASTERS HAS REVEALED THAT THE SPECTER OF WILD OR IRRATIONAL FLIGHT IN THE FACE OF GREAT THREAT OR DANGER IS NOT BORN OUT IN REALITY. PEOPLE WILL OFTEN STAY IN A THREATENING SITUATION RATHER THAN MOVE OUT OF IT. RUSSEL DYNES AND OTHER RESEARCHERS² HAVE COMMENTED THAT THERE IS NO REASON TO EXPECT THAT PEOPLE WOULD REACT ANY DIFFERENTLY BECAUSE OF A RADIATION THREAT FROM AN EMERGENCY AT A NUCLEAR POWER PLANT THAN THEY WOULD TO ANY OTHER DISASTER. THEY HAVE ALSO EMPHASIZED THAT A KEY TO THE MANAGEMENT OF PEOPLE IN DANGER IS THE ABILITY FOR OFFICIALS TO PROVIDE CLEAR INSTRUCTIONS AND INFORMATION THAT WILL ADDRESS PUBLIC FEARS AND MINIMIZE CURIOSITY THAT COULD ATTRACT ONLOOKERS WHO MIGHT INHIBIT OR INTERFERE WITH MEASURES TAKEN TO PROTECT THE PUBLIC IN DANGER.

B) TRAFFIC DISORDERS - DISASTER RESEARCH LITERATURE HAS GENERALLY SHOWN THAT DURING A DISASTER PEOPLE DRIVE SAFELY AND DO NOT EXHIBIT ERRATIC DRIVING BEHAVIOR^{3,4}. IN ADDITION, THE COMMONWEALTH OF MASSACHUSETTS HAS DEMONSTRATED THE ABILITY TO DEAL WITH TRAFFIC DISORDERS IN NUMEROUS EXERCISES AND REAL LIFE SITUATIONS.

c) TRAFFIC OBSTACLES OUTSIDE THE EPZ - THIS ISSUE WAS RAISED BY THE NUCLEAR REGULATORY COMMISSION AND WAS EXTENSIVELY REVIEWED BY FEMA IN A REPORT DATED MAY 1, 1984 (APPENDIX 2). IN BRIEF, OUR MAY 1, 1984 REPORT INDICATES THE TWO AREAS WHICH MIGHT PRESENT OBSTRUCTIONS TO EVACUATING TRAFFIC OUTSIDE OF THE EPZ ARE THE ROUTE 128, ROUTE 3 (SOUTH) INTERCHANGE AND THE SAGAMORE BRIDGE ROTARY. FEMA'S ANALYSIS INDICATED THAT THE COMMONWEALTH OF MASSACHUSETTS HAS UTILIZED THE INFORMATION DEVELOPED BY BOSTON EDISON AND ISSUES IDENTIFIED BY NRC TO DEVELOP AN ADEQUATE TRAFFIC MANAGEMENT PLAN. THIS PLAN IS ENTITLED "MASSACHUSETTS STATE POLICE TROOP U HEAD-QUARTERS, MIDDLEBOROUGH, MASSACHUSETTS, HIGHWAY TRAFFIC CONTROL AND PLAN FOR AN EMERGENCY CONDITION AT PILGRIM I NPS." THE PLAN CALLS FOR CONTROL OF TRAFFIC AT THE SAGAMORE BRIDGE AND SEVERAL MILES TO THE WEST TO EXPEDITE THE FLOW OF TRAFFIC OUT OF THE EPZ. TRAFFIC FROM CAPE COD WOULD BE RE-ROUTED TO THE BOURNE BRIDGE.

IN THE MOST SEVERE CASE MASSACHUSETTS PLANS TO CLOSE ROUTE 3 SOUTH AT ITS INTERSECTION WITH ROUTE 128. IN OTHER CASES THEY WILL CLOSE ROUTE 3 SOUTH AT ROUTE 18 WHICH IS 4 MILES SOUTH OF THE 128/3 INTERCHANGE.

d) SHADOW EVACUATION - THE MAIN EVACUATION ROUTES OUT OF THE PILGRIM EPZ ARE ROUTE 3 NORTH; ROUTE 3A NORTH; ROUTE 3 SOUTH; ROUTE 3A SOUTH; ROUTE 6/28 WEST; ROUTE 44 WEST; ROUTE 58 NORTH; ROUTE 58 SOUTH; ROUTE 108 WEST AND ROUTE 495 WEST.

THERE ARE ADDITIONAL SECONDARY ROADS OUT OF THE EPZ WHICH WOULD ALSO BE UTILIZED DURING AN EVACUATION. THE STATE POLICE HAVE DEVELOPED A DETAILED TRAFFIC MANAGEMENT PLAN FOR THE PILGRIM EPZ SO AS TO EXPEDITE TRAFFIC MOVEMENT OUT OF THE EPZ IN THE EVENT OF AN ACCIDENT AT THE PILGRIM NUCLEAR POWER STATION. THEY WILL BE ASSISTED BY THE MASSACHUSETTS DEPARTMENT OF PUBLIC WORKS.

E) ADVERSE WEATHER - THE AUGUST 19, 1981 UPDATE OF THE PILGRIM EVACUATION TIME ESTIMATES PROVIDED AN ESTIMATE FOR AN ADVERSE WEATHER CONDITION WHICH WAS INCLUDED IN THE AREA II NCUA PLAN. THE EVACUATION TIME ESTIMATE UPDATE FOR PILGRIM WHICH IS NOW BEING PERFORMED FOR BOSTON EDISON WILL ADDRESS ADVERSE WEATHER SCENARIOS IN MORE DETAIL.

CONCERNING THE REMARKS ATTRIBUTED TO EDWARD A. THOMAS, THE THRUST OF MR. THOMAS'S COMMENTS WERE THAT: (A) FEMA AND THE COMMONWEALTH OF MASSACHUSETTS SUPPORT THE DEVELOPMENT OF COMPREHENSIVE PLANS TO DEAL WITH A WIDE VARIETY OF EMERGENCIES; (B) LOCAL GOVERNMENTS HAVE THE OPTION OF DETERMINING WHICH PARTICULAR HAZARDS WILL BE SPECIFICALLY IDENTIFIED IN THEIR PLANS; (C) AND THAT LOCAL EMERGENCY PLANS CAN BE AND HAVE BEEN USED TO SUCCESSFULLY PROTECT THE PUBLIC FROM HAZARDS NOT SPECIFICALLY RECOGNIZED IN THE EMERGENCY PLANS. MR. THOMAS POINTED OUT THREE EXAMPLES OF THE USE

OF EMERGENCY PLANS DESIGNED FOR ONE HAZARD TO PROTECT THE PUBLIC FROM ANOTHER HAZARD:

- A. SUCCESSFUL USE OF CRISIS RELOCATION PLANS TO MOVE APPROXIMATELY 250,000 PEOPLE FROM THE PATH OF HURRICANE FREDERICK IN 1979.
- B. SUCCESSFUL USE BY STATE AND LOCAL GOVERNMENTS OF RADIOLOGICAL EMERGENCY RESPONSE PLANS AND EQUIPMENT TO PROTECT THE PUBLIC IN A SECTION OF CONNECTICUT DEVASTATED BY SUDDEN AND CATASTROPHIC FLOODS IN 1982.
- C. SUCCESSFUL USE OF LOCAL RADIOLOGICAL EMERGENCY RESPONSE PLANS AND EQUIPMENT TO PROTECT THE PUBLIC FROM A TOXIC RELEASE OF CHEMICALS FROM A CHEMICAL MANUFACTURER LOCATED NEAR THE WATERFORD NUCLEAR POWER PLANT IN LOUISIANA.

THEREFORE, MR. THOMAS CONCLUDED, THAT IN CONSIDERING WHETHER OR NOT A LARGER EMERGENCY PLANNING ZONE WAS REQUIRED TO PROTECT THE PUBLIC ON CAPE COD OR IN OTHER AREAS OUTSIDE THE CURRENT EMERGENCY PLANNING ZONE FOR PILGRIM ESTABLISHED BY THE COMMONWEALTH OF MASSACHUSETTS, THE LEGISLATURE MAY WANT TO CONSIDER FUNDING THE COMPREHENSIVE IMPROVEMENT OF EMERGENCY PLANS FOR THE AREA TO DEAL WITH ALL HAZARDS INCLUDING THOSE OF TOXIC CHEMICAL SPILLS, HURRICANES AND FLOODS WHICH EVERYONE AGREES HAVE A MUCH HIGHER PROBABILITY OF OCCURRING THAN AN ACCIDENT AT A NUCLEAR POWER PLANT.

FEMA, THEREFORE, CONCLUDES THAT THE PETITION DOES NOT PROVIDE INFORMATION WHICH SUSTAINS THE CONTENTION.

B) PETITIONERS:

"THERE ARE NO WORKABLE PLANS FOR EVACUATING THE PHYSICALLY DISABLED, NURSING HOME RESIDENTS, SCHOOL CHILDREN, HOSPITAL PATIENTS, CAMPERS, INMATES OF CORRECTIONAL FACILITIES, OR PEOPLE WITHOUT AUTOMOBILES. IN LIGHT OF THE DEFICIENCY NOTED IN C. BELOW (LACK OF CONTRACTUAL AGREEMENTS WITH TRANSPORTATION PROVIDERS), GENERAL STATEMENTS IN THE PLAN TO THE EFFECT THAT THESE GROUPS WILL SOMEHOW BE EVACUATED ARE MEANINGLESS AND UNREALISTIC."

FEMA:

THIS ISSUE WAS RAISED PREVIOUSLY IN THE "PETITION OF THE MASSACHUSETTS PUBLIC INTEREST RESEARCH GROUP FOR EMERGENCY AND REMEDIAL ACTION" FILED BY MASSPIRG WITH THE NRC ON JULY 20, 1983. NO SUBSTANTIVE NEW ISSUES ARE RAISED IN THE CURRENT PETITION.

FEMA HAS STATED PREVIOUSLY IN ITS NOVEMBER 3, 1983, ANALYSIS OF THE MASSPIRG PETITION (SEE APPENDIX 1) THAT THE COMMONWEALTH OF MASSACHUSETTS PLANNING FOR SPECIAL NEEDS POPULATION IS WEAK BUT ACCEPTABLE. MCDA IN ITS RESPONSE TO THE 1983 MASSPIRG PETITION, HAS STATED THAT IN ADDITION TO LOCAL RESOURCES THE SUBSTANTIAL RESOURCES OF THE COMMONWEALTH WOULD BE BROUGHT TO BEAR SHOULD LOCAL GOVERNMENTS NEED ADDITIONAL ASSISTANCE IN EVACUATING SPECIAL NEEDS POPULATIONS. THE LOCAL PLANS SPECIFY THAT NURSING HOME RESIDENTS WILL BE EVACUATED BY PRIVATE AUTO, INSTITUTIONAL VAN, FIRE DEPARTMENT AMBULANCES, AND BUSES, IF NECESSARY. THE ONLY HOSPITAL LOCATED WITHIN THE 10-MILE EPZ IS THE JORDAN HOSPITAL IN PLYMOUTH. THE PROTECTION FACTOR AFFORDED BY THE HOSPITAL BUILDINGS' STRUCTURE AND MATERIALS WILL BE SUFFICIENT TO ALLOW SHELTER-IN-PLACE AS THE APPROPRIATE

PROTECTIVE ACTION FOR MANY ACCIDENT SCENARIOS. HOWEVER, IF NECESSARY, MOST OF THE PATIENTS WOULD BE EVACUATED BY PRIVATE AUTOS OF THE STAFF AND PATIENTS OR BY BUSES COORDINATED BY PLYMOUTH CIVIL DEFENSE STAFF. INTENSIVE CARE AND ORTHOPEDIC PATIENTS WHO NEED LIFE-SUPPORT SYSTEMS OR SPECIAL CARE IN MOVING WILL BE TRANSPORTED BY AMBULANCES.

THROUGH RESPONSE CARDS INCLUDED WITH THE ANNUAL EPI BROCHURES DISTRIBUTED TO ALL HOUSEHOLDS WITHIN THE 10-MILE EPI, PHYSICALLY DISABLED INDIVIDUALS ARE BEING IDENTIFIED SO THAT SPECIAL TRANSPORTATION NEEDS CAN BE IDENTIFIED IN ADVANCE.

AS MENTIONED ABOVE IN RESPONSE TO ISSUE 15(B), THE LOCAL PLANS SPECIFY THAT CONTRACTOR SCHOOL BUSES MAY BE USED TO MOVE THOSE WITHOUT PERSONAL MEANS OF TRANSPORTATION. THE PLAN PROVIDES THAT, IF THERE IS TIME, SCHOOL CHILDREN WILL BE RETURNED HOME TO EVACUATE WITH THEIR FAMILIES, UNLESS A DECISION IS MADE AT THE STATE OR LOCAL LEVEL, TO EVACUATE IN BUSES.

EVACUATION PLANS FOR INMATES AT CORRECTIONAL FACILITIES ARE DETAILED IN LOCAL PLANS. THERE ARE ONLY THREE SUCH FACILITIES ALL LOCATED WITHIN THE TOWN OF PLYMOUTH. THESE ARE THE PLYMOUTH COUNTY HOUSE OF CORRECTION (1984 EST. PEAK USE 255 INMATES), THE TOWN OF PLYMOUTH JAIL (1984 EST. PEAK USE - 22 INMATES), AND THE MASSACHUSETTS CORRECTIONAL INSTITUTION (1984 EST. PEAK USE - 65 INMATES).

ACCORDING TO THE TOWN OF PLYMOUTH KERP DATED MAY 1985,
EACH FACILITY HAS ESTABLISHED PROCEDURES FOR SHELTERING OR
EVACUATION OF INMATES AND STAFF.

RECEPTION FOR INMATES, IN THE EVENT OF AN EVACUATION, WILL
BE PROVIDED BY THE MASSACHUSETTS CORRECTIONAL INSTITUTION
IN BRIDGEWATER. TRANSPORT WILL BE VIA BUSES AND VANS PRO-
VIDED BY EACH INSTITUTION, WITH ADDITIONAL BACK-UP AVAIL-
ABLE FROM THE NATIONAL GUARD.

A COMPARISON OF THE ANTICIPATED TRANSPORTATION REQUIREMENTS
THAT WOULD BE NECESSARY TO EVACUATE THE TRANSIT DEPENDENT
POPULATION (INCLUDING MOBILITY IMPAIRED INDIVIDUALS, NURSING
HOME RESIDENTS, HOSPITAL PATIENTS, SCHOOL CHILDREN AND
INMATES AT CORRECTIONAL FACILITIES) WITH THE TRANSPORTATION
RESOURCES ARTICULATED BY THE COMMONWEALTH OF MASSACHUSETTS,
(ESPECIALLY, THE VAST STATE CONTROLLED RESOURCE OF MBTA BUSES)
DOES NOT SUPPORT THE PETITION'S ALLEGATIONS THAT THE AREA
|| MCDA AND AND STATE RESOURCES ARE INADEQUATE TO HANDLE
AN EVACUATION.

FEMA, THEREFORE, CONCLUDES THAT THE PETITION DOES NOT PROVIDE
INFORMATION SUFFICIENT TO SUSTAIN ITS CONTENTION. ON THE
OTHER HAND, FEMA, IN ITS SELF-INITIATED REVIEW HAS ANALYZED
INFORMATION OF ITS OWN THAT SPEAKS TO THE ISSUES RAISED.

C.1) PETITIONERS:

TESTIMONY BY FEMA AND MCDA OFFICIALS AT THE JUNE 18, 1986 HEARING ON THE PILGRIM KERP INDICATED THAT THERE ARE NO CONTRACTUAL AGREEMENTS WITH BUS COMPANIES OR BUS DRIVERS, AMBULANCE COMPANIES, OR ANY OTHER TRANSPORTATION PROVIDERS FOR THOUSANDS OF PEOPLE WHO CANNOT DRIVE OR MAY NOT HAVE AN AUTOMOBILE.

FEMA:

THIS ISSUE WAS RAISED PREVIOUSLY IN THE "PETITION OF THE MASSACHUSETTS PUBLIC INTEREST RESEARCH GROUP FOR EMERGENCY AND REMEDIAL ACTION" FILED BY MASSPIRG WITH THE NRC ON JULY 20, 1983. NO SUBSTANTIVE NEW ISSUES ARE RAISED IN THE CURRENT PETITION.

AT THE PRESENT TIME THERE ARE NO WRITTEN AGREEMENTS WITH PRIVATE BUS COMPANIES ALTHOUGH THE STATE HAS BEEN CONSIDERING THE NEED FOR THESE AGREEMENTS SINCE JULY 1983, (SEE MCDA RESPONSES TO MASSPIRG PETITION, PAGE 9, APPENDIX III).

AS STATED IN FEMA'S RESPONSE TO THE 1983 MASSPIRG PETITION (APPENDIX I), ARRANGEMENTS HAVE BEEN MADE WITH THE MASSACHUSETTS BAY TRANSPORTATION AUTHORITY (MBTA), A STATE AGENCY THAT, IN AN EMERGENCY, MAY BE DIRECTED BY THE GOVERNOR TO RESPOND. ACCORDING TO THE COMMONWEALTH OF MASSACHUSETTS, AN INVENTORY OF PUBLIC TRANSPORTATION RESOURCES IS AVAILABLE ON COMPUTER AND THESE RESOURCES SHOULD BE SUFFICIENT TO PROVIDE TRANSPORTATION TO THOSE WHO NEED IT. [SEE, SELF-INITIATED REVIEW AND INTERIM FINDING FOR UPDATED INFORMATION].

C.2) PETITIONERS:

NO DRIVERS HAVE BEEN TRAINED IN THEIR SUPPOSED ROLE IN EVACUATION PLANS. IN FACT, NO DRIVERS HAVE BEEN INFORMED THAT THEY HAVE A ROLE IN EVACUATION PLANS.

FEMA:

AN EMERGENCY WORKER IS AN INDIVIDUAL WHO HAS AN ESSENTIAL MISSION WITHIN THE PLUME EXPOSURE EPZ TO PROTECT THE HEALTH AND SAFETY OF THE PUBLIC WHO COULD BE EXPOSED TO IONIZING RADIATION FROM THE PLUME OR ITS DEPOSITION. THE EMERGENCY WORKER MUST BE TRAINED IN THE BASIC CHARACTERISTICS OF IONIZING RADIATION AND ITS HEALTH EFFECTS. IN THIS CONTEXT, BUS DRIVERS AND OTHER PERSONNEL WHO WILL DRIVE EVACUATION VEHICLES MAY BE EMERGENCY WORKERS AND AS SUCH SHOULD BE TRAINED IN THEIR ROLE DURING AN EMERGENCY. [SEE, FEMA-REP-2 (REV. 1) "GUIDANCE ON OFF-SITE EMERGENCY RADIATION SYSTEMS", PHASE 1 - AIRBORNE RELEASE, DECEMBER 1985, P. 5-1, AND NUREG-0654, FEMA REP-1, REV.-1, II U. 1,2, 4 AND 5.]

THE MASSACHUSETTS PLANS FOR DEALING WITH AN ACCIDENT AT PILGRIM INDICATE THAT THE PRIMARY MEANS OF EVACUATION FOR THE EPZ WILL BE PRIVATE AUTOMOBILES. [SEE, E.G., TOWN OF PLYMOUTH RADIOLOGICAL EMERGENCY RESPONSE PLAN, P.7 ET SEQ.]. FOR POPULATIONS WHO DID NOT HAVE ACCESS TO PRIVATE AUTOMOBILES, THE PLANS CONTEMPLATE THE USE OF BUSES OR AMBULANCES. IF EXTRA BUSES ARE NEEDED FROM OUTSIDE THE EPZ, THE TOWNS WOULD CONTACT THE STATE AREA II CIVIL DEFENSE HEADQUARTERS WHICH WOULD THEN COORDINATE THE PROVISION OF SUCH RESOURCES FROM THE VAST RESOURCES AVAILABLE TO THE COMMONWEALTH OF MASSACHUSETTS ESPECIALLY INCLUDING THE MBTA [ID. AT PP. 24-33].

FEMA HAS NO INDICATION THAT APPROPRIATE TRAINING (E.G., IN NOTIFICATION, RADIOLOGICAL EXPOSURE CONTROL, AND RADIOLOGICAL ACCIDENTS) HAS BEEN PROVIDED. THE TOWN OF PLYMOUTH CIVIL DEFENSE DIRECTOR INDICATED AT THE FEMA SPONSORED PUBLIC MEETING ON THE PLANS ON JUNE 3, 1982, THAT A TRAINING PROGRAM FOR BUS DRIVERS WAS BEING DEVELOPED FOR DEPLOYMENT IN THE FALL OF 1982. [SEE, TRANSCRIPT OF A PUBLIC MEETING ON THE STATE RADIOLOGICAL EMERGENCY RESPONSE PLAN, P. 57]. HOWEVER, WE UNDERSTAND THAT SUCH TRAINING DID NOT TAKE PLACE, AND IN ANY CASE, TRAINING FOR BUS DRIVERS IN RADIOLOGICAL EXPOSURE CONTROL HAS NOT EVER BEEN PROVIDED TO BUS DRIVERS.

LACK OF TRAINING FOR DRIVERS OF EVACUATION VEHICLES OR ANY OTHER EMERGENCY WORKER IS A PROBLEM AND IS NOT IN ACCORDANCE WITH FEDERAL GUIDANCE. THE COMMONWEALTH OF MASSACHUSETTS PLANS FOR EVACUATING THE PILGRIM EPZ CONTEMPLATE THAT THOSE BUS DRIVERS FROM OUTSIDE THE EPZ WILL MAKE ONLY ONE RUN INTO THE EPZ, PICK UP PASSENGERS AT A DESIGNATED SITE, AND IMMEDIATELY LEAVE. IN ADDITION, BASED ON OUR OBSERVATIONS OF THE MASSACHUSETTS EXERCISES OF THE PILGRIM PLANS, WE UNDERSTAND THAT THE STATE WILL CAREFULLY CONSIDER THE DOSE CONSEQUENCES TO THE DRIVER AND HIS PASSENGERS, AND THE OPTIMUM TIME FOR THE EVACUATION TRIP SELECTED. [SEE, MASSACHUSETTS RADIOLOGICAL EMERGENCY RESPONSE PLAN §§P.A.3, P.B.1, AND P.B.3]. THE STATE HAS INFORMED US THAT IN THE EVENT THAT A DRIVER

OF AN EVACUATION VEHICLE WAS LIKELY TO BE EXPOSED TO A LARGER DOSE OF RADIATION THAN THE GENERAL PUBLIC, THE STATE DECISION-MAKERS COULD USE AS EVACUATION DRIVERS A SUBSTANTIAL POOL OF STATE POLICE AND CIVIL DEFENSE WORKERS WHO HAVE BEEN APPROPRIATELY TRAINED IN RADIOLOGICAL EMERGENCY RESPONSE. THIS TYPE OF PRIMARILY AD HOC RESPONSE IS NOT DESIRABLE HOWEVER, AND THE COMMONWEALTH SHOULD IMPROVE ITS PLANS IN THIS AREA. TO ASSIST STATE AND LOCAL GOVERNMENTS IN IMPROVING THEIR PLANNING IN THE AREA OF BUS TRANSPORTATION, PARTICULARLY FOR SCHOOL CHILDREN, FEMA HAS DEVELOPED GUIDANCE MEMORANDUM EV-2, "PROTECTIVE ACTIONS FOR SCHOOL CHILDREN". THIS DOCUMENT WILL ASSIST THE COMMONWEALTH IN REFINING PLANS FOR BUS TRANSPORTATION, AND DRIVER TRAINING. FEMA WILL INSIST THAT IMPROVED PLANS AND TRAINING RELATED TO BUS DRIVERS BE DEVELOPED PRIOR TO, AND TESTED DURING, THE NEXT EXERCISE OF THE PILGRIM RADIOLOGICAL EMERGENCY RESPONSE PLANS.

IN THE MEANTIME, FEMA BELIEVES THAT THE USE OF TRAINED STATE POLICE AND CIVIL DEFENSE WORKERS AS BUS DRIVERS IS AN ADEQUATE COMPENSATORY MEASURE, AND THEREFORE, THE PETITION DOES NOT PROVIDE INFORMATION WHICH SUSTAINS THE CONTENTION.

C.5) PETITIONERS:

FURTHERMORE, THE PROPOSED ROUTE OF SUCH EVACUATION (ROUTE 5 NORTH AND ROUTE 44 WEST) ARE COMPLETELY INADEQUATE TO EFFECTIVELY HANDLE THE ANTICIPATED VOLUME OF TRAFFIC. THIS IS PARTICULARLY TRUE DURING THE SUMMER MONTHS DUE TO THE HEAVY VOLUME OF TOURISTS HEADING TO AND FROM CAPE COD.

FEMA:

FEMA THOROUGHLY ANALYZED THIS ISSUE IN 1984 AT THE REQUEST OF THE NRC, (SEE APPENDIX 2). WHILE ROUTES 3 AND 44 ARE THE MAJOR ROUTES LEADING OUT OF THE EPZ, THERE ARE MANY OTHER ROADS WHICH CAN BE USED TO LEAVE THE AREA. ALL ROUTES LEADING INTO THE EPZ WILL BE CLOSED TO INCOMING TRAFFIC, ACCORDING TO THE "STATE POLICE HIGHWAY TRAFFIC CONTROL AND NOTIFICATION PLAN FOR AN EMERGENCY AT PILGRIM I NPS."

THE EVACUATION TIME ESTIMATE FOR THE PILGRIM EPZ HAS BEEN EXTENSIVELY REVIEWED BY FEMA AND THE NRC AND FOUND TO BE ADEQUATE. POSSIBLE BOTTLE NECKS HAVE BEEN IDENTIFIED AND TRAFFIC MANAGEMENT PLANS HAVE BEEN DEVELOPED TO ALLOW EVACUATION TO PROCEED AS RAPIDLY AS POSSIBLE.

BOSTON EDISON HAS RECENTLY CONTRACTED TO UPDATE THE EVACUATION TIME ESTIMATE AND TRAFFIC MANAGEMENT PLAN FOR THE PILGRIM EPZ. (SEE APPENDIX 5, PAGES 11-12).

FEMA, THEREFORE, CONCLUDES THAT THE ISSUES RAISED IN SECTION 17 OF THE PETITION DO NOT PROVIDE INFORMATION SUFFICIENT TO SUSTAIN ITS CONTENTION. ON THE OTHER HAND, FEMA, IN ITS

SELF-INITIATED REVIEW HAS ANALYZED INFORMATION THAT SPEAKS TO THE ISSUES RAISED IN 17.C.1 AND 17.C.2.

18/ ALLEGED DEFICIENCIES IN MEDICAL FACILITIES

A) PETITION:

VARIOUS NRC AND FEMA REGULATIONS REQUIRE THAT ARRANGEMENTS BE MADE FOR MEDICAL SERVICES FOR CONTAMINATED INJURED INDIVIDUALS (10 CFR §50.47 (b)(12); 10 CFR PART 50, APPENDIX E. 11.E AND IV. E.7; EVALUATION CRITERIA L.1 AND L.3). THE PLAN MAKES INADEQUATE PROVISION FOR TREATMENT OF VICTIMS OF RADIOACTIVE CONTAMINATION. A MASSPIRG 1983 STUDY OF THE TWO HOSPITALS LISTED IN THE PLAN IN EFFECT REVEALED THEY HAVE A TOTAL CAPACITY TO TREAT ONLY EIGHT OR NINE VICTIMS OF RADIOACTIVE CONTAMINATION. ONE OF THESE (JORDAN HOSPITAL, PLYMOUTH) IS WITHIN FOUR MILES OF THE PLANT, SO IT MAY NEED TO BE EVACUATED. THE OTHER (MORTON HOSPITAL, TAUNTON) IN 1983 HAD NO STAFF TRAINED FOR RADIOLOGICAL ACCIDENTS. NO DATA SUGGESTS THE SITUATION HAS MATERIALLY IMPROVED SINCE 1983.

FEMA:

THIS ISSUE WAS RAISED PREVIOUSLY IN THE "PETITION OF THE MASSACHUSETTS PUBLIC INTEREST RESEARCH GROUP FOR EMERGENCY AND REMEDIAL ACTION" FILED BY MASSPIRG WITH THE NRC ON JULY 20, 1983. NO SUBSTANTIVE NEW ISSUES ARE RAISED IN THE CURRENT PETITION.

IN ITS RESPONSE TO THE PETITION THE COMMONWEALTH OF MASSACHUSETTS STATED (APPENDIX 3, JULY 20, 1983):

UNDER NO CIRCUMSTANCES WOULD WE EXPECT LARGE NUMBERS OF CONTAMINATED INDIVIDUALS. THE NRC THROUGH NUREG-0396 MADE IT CLEAR THAT MEDICAL REQUIREMENTS RESULTING FROM POWER PLANT ACCIDENTS NEED INVOLVE ONLY LIMITED FACILITIES FOR TREATMENT OF EXPOSED OR CONTAMINATED INDIVIDUALS. NONETHELESS, ALL ACCREDITED MASSACHUSETTS HOSPITALS MUST MAINTAIN A CAPABILITY TO TREAT EXPOSED OR CONTAMINATED INDIVIDUALS.

FEMA PREVIOUSLY STATED (APPENDIX 1, NOVEMBER 3, 1985):

THIS CONCERN HAS BEEN ADDRESSED IN ACCORDANCE WITH NRC'S REQUIREMENTS AS FOLLOWS:

1) NUREG-0396 MAKES IT CLEAR THAT MEDICAL REQUIREMENTS RESULTING FROM POWER PLANT ACCIDENTS NEED INVOLVE ONLY LIMITED FACILITIES FOR TREATMENT OF EXPOSED OR CONTAMINATED INDIVIDUALS. THIS POSITION IS IN ACCORD WITH THE NRC COMMISSIONER'S MEMORANDUM AND ORDER OF APRIL 4, 1983 (17 NRC 528 (1983), CLI-83-10) WHICH STATES:

NO ADDITIONAL MEDICAL FACILITIES OR CAPABILITIES ARE REQUIRED FOR THE GENERAL PUBLIC. HOWEVER, FACILITIES WITH WHICH PRIOR ARRANGEMENTS ARE MADE AND THOSE LOCAL OR REGIONAL FACILITIES WHICH HAVE THE CAPABILITY TO TREAT CONTAMINATED INJURED INDIVIDUALS SHOULD BE IDENTIFIED... EMERGENCY PLANS SHOULD, HOWEVER, IDENTIFY THOSE LOCAL OR REGIONAL MEDICAL FACILITIES WHICH HAVE THE CAPABILITIES TO PROVIDE APPROPRIATE MEDICAL TREATMENT FOR RADIATION EXPOSURE. NO CONTRACTUAL AGREEMENTS ARE NECESSARY AND NO ADDITIONAL HOSPITALS OR OTHER FACILITIES NEED BE CONSTRUCTED.

2) WE NOTE THAT ALL ACCREDITED MASSACHUSETTS HOSPITALS ARE REQUIRED BY THE COMMONWEALTH TO MAINTAIN A CAPABILITY TO TREAT EXPOSED OR CONTAMINATED INDIVIDUALS AND EMERGENCY PERSONNEL ARE ADVISED IN THE HANDLING OF RADIATION VICTIMS. IN ADDITION, AS REQUIRED BY NRC REGULATIONS, THE UTILITY HAS MADE ARRANGEMENTS WITH JORDAN HOSPITAL IN PLYMOUTH TO PROVIDE ACUTE TREATMENT FOR EXPOSED OR CONTAMINATED PERSONNEL. THIS ABILITY WAS REVIEWED BY THE MAY 1982 EXERCISE OF THE EMERGENCY PLAN AND FOUND ACCEPTABLE.

THESE ARRANGEMENTS ARE DOCUMENTED ON PAGE 133 AND ANNEX A OF THE EMERGENCY PLAN FOR THE PILGRIM NUCLEAR POWER STATION.

BOSTON EDISON STATED THAT ADDITIONAL HOSPITALS HAVE BEEN IDENTIFIED AND ARRANGEMENTS HAVE BEEN MADE WITH THEM CONCERNING TREATMENT OF CONTAMINATED INDIVIDUALS OR RADIATION VICTIMS. (APPENDIX 5, PAGE 15).

ADDITIONAL RESOURCES ARE AVAILABLE IN OTHER AREAS AND THROUGH THE FEDERAL RADIOLOGICAL EMERGENCY RESPONSE PLAN.

FEMA, THEREFORE, CONCLUDES THAT THE PETITION DOES NOT PROVIDE INFORMATION WHICH SUSTAINS THE CONTENTION.

B) PETITIONERS:

THE PLAN FAILS TO PROVIDE FOR THE DISTRIBUTION OF RADIO-PROTECTIVE DRUGS FOR THE PREVENTION OF THYROID TUMORS TO THE GENERAL PUBLIC OR TO PERSONS IN INSTITUTIONS WHO MAY NOT BE EVACUATED. THE NRC AND FEMA RECOMMEND DISTRIBUTION OF SUCH DRUGS AT LEAST TO SUCH INSTITUTIONALIZED PERSONS (EVALUATION CRITERIA, J.10.E. AND J.10.F.J).

FEMA:

THIS IS SIMILAR TO AN ISSUE THAT WAS RAISED PREVIOUSLY IN THE "PETITION OF THE MASSACHUSETTS PUBLIC INTEREST RESEARCH GROUP FOR EMERGENCY AND REMEDIAL ACTION" FILED BY MASSPIRG WITH THE NRC ON JULY 20, 1983. HOWEVER THE PETITIONER IN THIS CASE MAKES THE ADDITIONAL POINT THAT THERE ARE NO SPECIFIC PROVISIONS IN THE MASSACHUSETTS RADIOLOGICAL EMERGENCY PLANS FOR PROVIDING RADIO PROTECTIVE DRUGS TO INSTITUTIONALIZED PERSONS AS IS REQUIRED BY FEDERAL GUIDANCE.

IN ITS RESPONSE TO THE 1983 MASSPIRG PETITION, THE COMMONWEALTH OF MASSACHUSETTS STATED (APPENDIX 3):

THE MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH (MDPH) HAS ADVISED THAT DISTRIBUTION OF POTASSIUM IODIDE IN MASSACHUSETTS WILL BE LIMITED TO EMERGENCY WORKERS DURING THE INITIAL PHASE OF AN EMERGENCY. THE MDPH POLICY IS BASED UPON THE DRUG'S POTENTIAL ADVERSE SIDE EFFECTS IF DISTRIBUTED TO THE GENERAL POPULATION INDISCRIMINATELY.

FEMA STATED IN ITS RESPONSE TO THE 1983 MASSPIRG PETITION (APPENDIX 1):

THE COMMONWEALTH OF MASSACHUSETTS HAS CAREFULLY REVIEWED THIS ISSUE AND FORMULATED A POLICY FOR THE DISTRIBUTION OF POTASSIUM IODIDE WHICH IS THAT IT WILL ONLY BE GIVEN TO EMERGENCY WORKERS UNDER EXTRAORDINARY CIRCUMSTANCES. IF THERE WERE A POSSIBILITY OF RADIOACTIVE IODINES BEING RELEASED, THE COMMONWEALTH WOULD EVACUATE THE AREA OR SHELTER THE POPULATION RATHER THAN HAVE THEM TAKE RADIO-PROTECTIVE DRUGS. THIS POLICY IS BASED UPON THE COMMONWEALTH'S PERCEPTION OF THE DRUG'S POTENTIAL ADVERSE SIDE EFFECTS IF DISTRIBUTED TO THE GENERAL POPULATION, AND IS CONSISTENT WITH CURRENT FEDERAL POLICY. (SEE APPENDIX b)

THE COMMONWEALTH'S PLAN FOR THE DISTRIBUTION OF POTASSIUM IODINE TO INSTITUTIONALIZED PEOPLE IS WEAK. THE STATE DIRECTOR OF THE DEPARTMENT OF PUBLIC HEALTH, RADIATION CONTROL UNIT HAS TOLD US THAT THE CURRENT MASSACHUSETTS POLICY IS THAT THE COMMISSIONER OF PUBLIC HEALTH WOULD ANALYZE THE SITUATION AT THE TIME OF THE ACCIDENT TO DETERMINE IF THE ADMINISTRATION OF KI TO INSTITUTIONALIZED PEOPLE IS WARRANTED. BECAUSE OF THE COMPARATIVELY FEW INSTITUTIONS IN THE PILGRIM PLUME EXPOSURE EMERGENCY PLANNING ZONE THE DISTRIBUTION OF KI TO THE INSTITUTIONS COULD BE ACCOMPLISHED ON AN AD HOC BASIS USING EXISTING STOCKS MAINTAINED BY NUCLEAR UTILITIES. THE COMMONWEALTH'S PLAN WOULD BE ENHANCED IF THE POLICY FOR THE ADMINISTRATION OF KI TO INSTITUTIONALIZED PEOPLE WERE CLEARLY STATED; AND IF PROCEDURES FOR THE DISTRIBUTION OF KI TO THE INSTITUTIONS WERE MORE FULLY DEVELOPED.

FEMA, THEREFORE, CONCLUDES THAT WHILE THE PETITION POINTS OUT A WEAKNESS IN THE MASSACHUSETTS PLANS, IT DOES NOT PROVIDE INFORMATION WHICH SUSTAINS THE CONTENTION.

19/ THE EMERGENCY PLANNING ZONE IS TOO SMALL

A) PETITIONERS:

THE ENVIRONMENTAL PROTECTION AGENCY (EPA) RECOMMENDS PROTECTIVE MEASURES BY THE PUBLIC WHEN RADIATION EXPOSURE IS LIKELY TO EXCEED THE EPA'S "PROTECTIVE ACTION GUIDE" OF ONE REM (MANUAL OF PROTECTIVE ACTION GUIDE AND PROTECTIVE ACTIONS FOR NUCLEAR ACCIDENTS, EPA-520/1-75-001, EPA, 1975).

FEMA:

THE COMMONWEALTH OF MASSACHUSETTS RADIOLOGICAL EMERGENCY RESPONSE PLAN IS CONSISTENT WITH FEDERAL PROTECTIVE ACTION GUIDELINES.

B) PETITIONERS:

NRC REGULATIONS REQUIRE THE EXACT SIZE AND CONFIGURATION OF EACH EPZ TO BE "DETERMINED IN RELATION TO LOCAL RESPONSE NEEDS AND CAPABILITIES AS THEY ARE AFFECTED BY SUCH CONDITIONS AS DEMOGRAPHY, TOPOGRAPHY, LAND CHARACTERISTICS, ACCESS ROUTES, AND JURISDICTIONAL BOUNDARIES." GENERALLY, THE NRC PROVIDES, THE PLUME EXPOSURE EPZ SHOULD BE ABOUT TEN MILES IN RADIUS (10 CFR PART 50.47 (c)(2)). BOSTON EDISON COMPANY HAS ADMITTED THAT THE ONLY FACTOR USED TO CREATE THE PILGRIM EPZ WAS JURISDICTIONAL BOUNDARIES (RESPONSE OF BOSTON EDISON COMPANY TO COMMONWEALTH OF MASSACHUSETTS' FIRST SET OF INTERROGATORIES ON EMERGENCY PLANNING, JULY 20, 1981, P. 21).

FEMA:

THE REGIONAL ASSISTANCE COMMITTEE, WHICH IS CHAIRED BY FEMA, REVIEWED THE PROPOSED PILGRIM NUCLEAR POWER STATION PLUME EXPOSURE EMERGENCY PLANNING ZONE AND FOUND IT TO BE ADEQUATE IN SIZE AND THAT IT ADEQUATELY ADDRESSED THE DEMOGRAPHIC, TOPOGRAPHIC AND LAND USE CHARACTERISTICS, ACCESS ROUTES, AND JURISDICTIONAL BOUNDARIES.

THE COMMONWEALTH OF MASSACHUSETTS INDICATED AT THE PLYMOUTH PUBLIC MEETING (JUNE 30, 1986) IT WILL REVIEW THE SIZE OF THE PILGRIM PLUME EXPOSURE EMERGENCY PLANNING ZONE AS PART OF AN ONGOING EFFORT TO IMPROVE EMERGENCY PLANS AND PREPAREDNESS AROUND NUCLEAR POWER PLANTS.

FEMA CONCLUDES THAT THE PETITION CONTAINS NO EVIDENCE TO SUGGEST THAT THE SIZE OF THE PLUME EXPOSURE EMERGENCY PLANNING ZONE FOR THE PILGRIM NUCLEAR POWER STATION IS TOO SMALL.

C) PETITIONERS:

CAPE COD BEGINS JUST ELEVEN MILES FROM PILGRIM AND IS CONNECTED TO THE MAINLAND BY ONLY TWO BRIDGES. THERE IS NO EMERGENCY PLANNING FOR CAPE COD, NOR PUBLIC EDUCATION OF PROTECTIVE MEASURES, NOR WARNING SIRENS. HOWEVER, THERE ARE PLANS TO CLOSE THE CAPE COD BRIDGES TO PREVENT ITS EVACUATION, SO AS TO GIVE PREFERENCE TO EVACUEES WITHIN THE PLANT'S 10-MILE RADIUS. THIS IS TOTALLY UNACCEPTABLE TO THE PEOPLE ON THE CAPE, WHO WOULD BE IN THE PATH OF A RADIOLOGICAL PLUME IF THE WIND WERE BLOWING TOWARD THE CAPE. EVEN IF THEY WERE ALLOWED TO EVACUATE THE CAPE OVER THE CONNECTING BRIDGES, THEY WOULD BE DOING SO IN THE DIRECTION OF THE PLANT AND THE SOURCE OF THE RADIATION. THE ISSUE OF EVACUATING CAPE COD IS EXTREMELY IMPORTANT IN THE LIGHT OF THE CHERNOBYL ACCIDENT, SINCE THERE THE RADIOACTIVE PLUME EXTENDED MUCH FURTHER THAN 10-MILES.

FEMA:

THIS ISSUE WAS RAISED PREVIOUSLY IN THE "PETITION OF THE MASSACHUSETTS PUBLIC INTEREST RESEARCH GROUP FOR EMERGENCY AND REMEDIAL ACTION" FILED BY MASSPIRG WITH THE NRC ON JULY 20, 1983. NO SUBSTANTIVE NEW ISSUES ARE RAISED IN THE CURRENT PETITION.

FEMA STATED IN ITS RESPONSE TO THE 1983 PETITION (APPENDIX 1):

THE CONCLUSION IN THE MASSPIRG PETITION THAT THE SIZE OF THE EMERGENCY PLANNING ZONE SHOULD BE INCREASED TO INCLUDE CAPE COD AND OTHER AREAS IS BASED UPON A REPORT PREPARED FOR THE MASSACHUSETTS ATTORNEY GENERAL'S OFFICE. THIS REPORT WAS PREPARED BY MHB TECHNICAL ASSOCIATES AND IS ENTITLED "REVIEW OF CALCULATION OF REACTOR ACCIDENT CONSEQUENCES (CRAC 2) RESULTS AND LIQUID PATHWAYS, (NUREG-1596) STUDY:

"IMPLICATIONS FOR EMERGENCY PLANNING IN THE VICINITY OF THE PILGRIM NUCLEAR POWER STATION." THE REPORT CONCLUDES "...PROTECTIVE ACTION GUIDELINE DOSES MAY BE EXCEEDED IF THE CURRENT EMERGENCY PLANNING ZONES ARE USED." TO THE EXTENT THAT THIS STATEMENT INDICATES A NEED TO INCREASE THE SIZE OF THE APPROXIMATELY 10-MILE RADIUS PLUME EXPOSURE PATHWAY ZONE AT PILGRIM, SUCH A CONCLUSION IS NOT GENERALLY ACCEPTED BY THE SCIENTIFIC COMMUNITY AT THIS TIME.

THE SIZE AND CONFIGURATION OF THE EMERGENCY PLANNING ZONE FOR PILGRIM IS BASED UPON NUREG-0654 CRITERIA AND APPROVED BY THE REGIONAL ASSISTANCE COMMITTEE (RAC). THE SIZE OF THE EPZ TO BE USED FOR RADIOLOGICAL EMERGENCY RESPONSE WAS DETERMINED BY A JOINT NRC/EPA TASK FORCE STUDY. THE CONCLUSIONS REACHED BY THE TASK FORCE ARE DOCUMENTED IN NUREG-0396, EPA 520/1-78-016. BOTH NUREG-0654 AND NUREG-0396 RECOGNIZE THAT PAGES MIGHT BE EXCEEDED BEYOND THE TEN MILE PLUME EXPOSURE EPZ IN THE EVENT OF THE WORST POSSIBLE ACCIDENT AND METEOROLOGICAL CONDITIONS. HOWEVER, A TEN MILE PLUME EXPOSURE EPZ WAS STILL CHOSEN AS A PLANNING BASIS IN NUREG-0654 BECAUSE:

- A. PROJECTED DOSES FROM THE TRADITIONAL DESIGN BASIS ACCIDENTS WOULD NOT EXCEED PAG LEVELS OUTSIDE THE ZONE;
- B. PROJECTED DOSES FROM MOST CORE MELT SEQUENCES WOULD NOT EXCEED PAG LEVELS OUTSIDE THE ZONE;
- C. FOR THE WORST CORE MELT SEQUENCES, IMMEDIATE LIFE THREATENING DOSES WOULD GENERALLY NOT OCCUR OUTSIDE THE ZONE;
- D. DETAILED PLANNING WITHIN 10 MILES WOULD PROVIDE A SUBSTANTIAL BASE FOR EXPANSION OF RESPONSE EFFORTS IN THE EVENT THAT THIS PROVED NECESSARY.

THE NRC HAS BEEN INVESTIGATING ACCIDENT SOURCE TERMS, PROBABILITIES AND CONSEQUENCES OF NUCLEAR REACTOR ACCIDENTS FOR SEVERAL YEARS. THE RESULT OF THESE STUDIES, WHEN COMPLETE, ARE EXPECTED TO BE USED IN REVISING NUREG 0654. THE REVISION OF NUREG-0654 MAY INCLUDE RECONSIDERATION OF THE SIZE OF THE EMERGENCY PLANNING ZONE.

CAPE COD IS BEYOND THE 10-MILE EPZ AND DOES NOT NEED SPECIFIC RADIOLOGICAL EMERGENCY PLANS. HOWEVER, AS NOTED EARLIER IN THIS RESPONSE, THE COMMONWEALTH HAS INDICATED TO FEMA THAT IT WILL REVIEW THE SIZE OF THE PILGRIM PLUME EXPOSURE EMERGENCY PLANNING ZONE AS PART OF AN ON-GOING EFFORT TO IMPROVE EMERGENCY PLANS AND PREPAREDNESS AROUND NUCLEAR POWER PLANTS. SPECIFIC, DETAILED PLANS DEVELOPED FOR THE EPZ DO NOT PRECLUDE TAKING APPROPRIATE PROTECTIVE ACTIONS BEYOND THE 10-MILE AREA. IN FACT, THE DETAILED EPZ PLANS BECOME THE BASIS FOR ANY ACTIONS REQUIRED AT GREATER DISTANCES.

ACCORDING TO THE MASSACHUSETTS CIVIL DEFENSE AGENCY COMPREHENSIVE EMERGENCY MANAGEMENT PLANS WHICH ADDRESS THE USE OF SHELTER AND EVACUATION AS POSSIBLE PROTECTIVE RESPONSE TO EMERGENCIES CURRENTLY EXIST IN MOST COMMUNITIES OUTSIDE OF THE PLUME EXPOSURE EMERGENCY PLANNING ZONE.

FEMA HAS JOINED NRC AND THE DEPARTMENT OF ENERGY, EPA AND THE NUCLEAR INDUSTRY IN THE PREPARATION OF A REPORT ON THE CHERNOBYL ACCIDENT. FEMA ACCEPTED THE RESPONSIBILITY FOR THE CHAPTER ON EMERGENCY RESPONSE AND PREPAREDNESS. WE VIEW THIS REPORT AS A NECESSARY PREREQUISITE FOR ANY REVIEW

OF THE U.S. RADIOLOGICAL EMERGENCY PREPAREDNESS PROGRAM. IT SHOULD IDENTIFY LESSONS FROM THE CHERNOBYL EXPERIENCE THAT CAN BE USED IN REVIEWING THE U.S. PROGRAM. AT THIS TIME, HOWEVER, WE ARE NOT YET IN A POSITION TO DETERMINE IF THE LESSONS LEARNED AT CHERNOBYL WILL REQUIRE CHANGES IN THE RADIOLOGICAL EMERGENCY PLANNING.

FEMA, THEREFORE, CONCLUDES THAT THE PETITION DOES NOT PROVIDE INFORMATION WHICH SUSTAINS THE CONTENTION.

D) PETITIONERS:

BASED HIS CONCLUSION UPON NRC DATA, THE ATTORNEY GENERAL OF MASSACHUSETTS HAS CONCLUDED THAT THE SIZE OF THE PILGRIM EPZ IS INADEQUATE (COMMENTS OF ATTORNEY GENERAL FRANCIS X. BELLOTTI RELATIVE TO OFF-SITE EMERGENCY PLANNING FOR THE PILGRIM NUCLEAR POWER STATION, SUBMITTED TO FEMA, AUGUST 1982).

FEMA:

IN RESPONSE TO A JUNE 3, 1982, PUBLIC MEETING ON THE STATE AND LOCAL OFF-SITE RADIOLOGICAL EMERGENCY PLAN, ASSISTANT ATTORNEY GENERAL JOANN SHOTWELL OF THE ENVIRONMENTAL PROTECTION DIVISION OF THE MASSACHUSETTS ATTORNEY GENERAL'S OFFICE REQUESTED BY A LETTER OF JUNE 16, 1982, THAT THE MEETING RECORD BE LEFT OPEN UNTIL THE END OF JULY SO THAT HER OFFICE COULD SUBMIT FURTHER COMMENTS. THE ATTORNEY GENERAL'S OFFICE RETAINED MHB TECHNICAL ASSOCIATES OF SAN JOSE, CALIFORNIA, TO REVIEW FOR THEM CERTAIN DOCUMENTS RELATED TO OFF-SITE PLANNING AROUND THE PILGRIM NPS. THE MHB REPORT WAS TITLED "REVIEW OF CALCULATION OF REACTOR CON-

SEQUENCES (CRAC 2) RESULTS AND LIQUID PATHWAYS (NUREG-1596) STUDY: IMPLICATIONS FOR EMERGENCY PLANNING IN THE VICINITY OF THE PILGRIM NUCLEAR POWER STATION". IN A LETTER DATED AUGUST 25, 1982, FRANCIS X. BELLOTTI, THE MASSACHUSETTS ATTORNEY GENERAL (AG) SENT TO FEMA REGION I, FIFTEEN PAGES OF COMMENTS ADDRESSING FOUR GENERAL ISSUES. ONE OF THESE ISSUES DEALT WITH THE SIZE OF THE 10-MILE PLUME EXPOSURE EPZ. BASED ON MHB'S TECHNICAL REVIEW OF THE REFERENCED NRC DOCUMENTS, THE MASSACHUSETTS AG INDICATED THAT POTENTIAL DOSES TO THE POPULATION WOULD EXCEED THE LEVELS AT WHICH THE EPA PROTECTIVE ACTION GUIDES RECOMMEND EVACUATION, EVEN AT DISTANCES OF 50 MILES DOWNWIND FROM THE PLANT. THIS SITUATION, THE AG BELIEVES, WOULD OCCUR DURING AN SST-1 WORSE CASE ACCIDENT UNDER CERTAIN WEATHER CONDITIONS THAT RESULT IN MAXIMUM DOSE. THUS, THE AG BELIEVES THAT THE CURRENT USE OF THE 10-MILE EPZ FOR PILGRIM IS NOT APPROPRIATE, AND THAT THE EPZ SHOULD, THEREFORE, BE EXTENDED FURTHER TO INCLUDE ALL OF CAPE COD.

THIS SAME CONCERN WAS RAISED BY MASSPIRG AND WAS REFERRED TO THE NRC FOR THEIR RESPONSE AS IT WAS IN DIRECT CONFLICT WITH NRC'S REGULATION 10 CFR 50.7 (c) (2). NRC'S RESPONSE TO MASSPIRG IS DISCUSSED ON PAGES 10-14 OF NRC'S "INTERIM DIRECTOR'S DECISION UNDER 10 CFR 2.206 (DOCKET NO. 50-293)," (FEBRUARY 27, 1984).

THE RESPONSE STATES THAT THE PLUME EPZ FOR THE PILGRIM FACILITY IS BASED UPON NUREG-0654 GUIDANCE CRITERIA. THE JOINT NRC/EPA TASK FORCE THAT DEVELOPED NUREG-0396 CONSIDERED SEVERAL POSSIBLE RATIONALES FOR ESTABLISHING THE SIZE OF THE EPZs. THESE INCLUDED RISK, PROBABILITY, COST EFFECTIVENESS AND AN ACCIDENT CONSEQUENCE SPECTRUM. THE TASK FORCE CHOSE TO BASE EPZ SIZE ON A FULL SPECTRUM OF ACCIDENTS AND CORRESPONDING CONSEQUENCES TEMPERED BY PROBABILITY CONSIDERATIONS. IT WAS THE CONSENSUS OF THE TASK FORCE THAT A PLUME EPZ OF ABOUT TEN MILES WOULD PROVIDE AN ADEQUATE PLANNING BASE BEYOND WHICH ACTIONS COULD BE TAKEN ON AN AD HOC BASIS USING THE SAME CONSIDERATIONS THAT WENT INTO THE INITIAL ACTION DETERMINATIONS. IN ITS STATEMENT ON "PLANNING BASIS FOR EMERGENCY RESPONSE TO NUCLEAR POWER ACCIDENTS," 44 FED. REG. 61123 (OCT. 23, 1979), THE COMMISSION NOTED THAT AN EPZ OF ABOUT 10 MILES IS CONSIDERED LARGE ENOUGH TO PROVIDE A RESPONSE BASE WHICH WOULD SUPPORT ACTIVITY OUTSIDE THE PLANNING ZONE SHOULD THIS EVER BE NEEDED.

THE PETITIONER CONTENDS THAT, BASED UPON THE REFERENCED CRAC 2 RESULTS, AN ENLARGEMENT OF THE CURRENT PILGRIM PLUME EPZ IS WARRANTED BECAUSE THE PROJECTED DOSES EXCEED THE EPA PROTECTIVE ACTION GUIDES (PAGS) OUTSIDE THE 10-MILE EPZ. BOTH NUREG-0654 AND NUREG-0396 RECOGNIZE, BASED UPON CRAC 2 RESULTS, THAT THE PAGS MIGHT BE EXCEEDED BEYOND THE TEN MILE

PLUME EXPOSURE EPZ IN THE EVENT OF THE WORST POSSIBLE ACCIDENT AND METEOROLOGICAL CONDITIONS. HOWEVER, A TEN MILE PLUME EXPOSURE EPZ WAS STILL CHOSEN AS A PLANNING BASIS IN NUREG-0654 BECAUSE:

- A. PROJECTED DOSES FROM THE TRADITIONAL DESIGN BASIS ACCIDENTS WOULD NOT EXCEED PAG LEVELS OUTSIDE THE ZONE;
- B. PROJECTED DOSES FROM MOST SEVERE FUEL DEGRADATION SEQUENCES WOULD NOT EXCEED PAG LEVELS OUTSIDE THE ZONE;
- C. FOR THE WORSE FUEL DEGRADATION SEQUENCES, IMMEDIATE LIFE THREATENING DOSES WOULD GENERALLY NOT OCCUR OUTSIDE THE ZONE; AND
- D. DETAILED PLANNING WITHIN 10 MILES WOULD PROVIDE A SUBSTANTIAL BASE FOR EXPANSION OF RESPONSE EFFORTS IN THE EVENT THAT THIS PROVED NECESSARY.

HENCE, AT THE PRESENT TIME, NRC HAS INDICATED TO FEMA THAT THERE IS NO BASIS FOR REQUIRING THAT A PLUME EXPOSURE PATHWAY EPZ SHOULD BE GREATER THAN APPROXIMATELY A 10-MILE RADIUS FROM THE PLANT.

FEMA, THEREFORE, CONCLUDES THAT THE PETITION DOES NOT PROVIDE INFORMATION WHICH SUSTAINS THE CONTENTION.

20/ LACK OF COORDINATION AND PRIORITIZATION

A) PETITIONERS:

THE NRC SHOULD SUSPEND THE OPERATING LICENSE OF THE PILGRIM POWER PLANT UNTIL A REALISTIC, DETAILED KERP IS DEVELOPED, SHOWING AN ACTUAL CAPABILITY TO EDUCATE, ALERT, TREAT AND EFFICIENTLY EVACUATE ALL PEOPLE WHO MAY BE AT RISK FROM A CATASTROPHIC ACCIDENT AT THE PLANT. FEDERAL, STATE AND LOCAL GOVERNMENT AGENCIES, AS WELL AS BOSTON EDISON, HAVE ALL ACCORDED A LOW PRIORITY TO EMERGENCY PLANNING. INSTEAD OF TRYING SERIOUSLY TO DEVISE A PLAN THAT WILL PROTECT ALL

OF THE PUBLIC, PLANNERS HAVE SOUGHT TO ACHIEVE ONLY MINIMUM COMPLIANCE WITH NRC REGULATIONS; AS SECTIONS 13 THROUGH 18 OF THIS PETITION DEMONSTRATE, THEY HAVE FAILED TO DO EVEN THAT. THIS INSUFFICIENT COMMITMENT TO PUBLIC PROTECTION IS EVIDENT IN MISSED DEADLINES, SLOW PROCESSING OF PAPERWORK, LACK OF ATTENTION TO DETAIL AND INADEQUATE BUDGETS AND STAFFING.

TO DATE, FEMA HAS LARGELY ACQUIESCED IN PLANS THAT FAIL TO DEMONSTRATE A CAPABILITY TO ADEQUATELY RESPOND TO AN ACTUAL EMERGENCY, AND FEMA'S ACQUIESCENCE HAS BEEN EMULATED BY THE NRC. WHERE FEMA HAS CRITICIZED PARTS OF THE PLAN, THE MASSACHUSETTS CIVIL DEFENSE AGENCY (MCDA) HAS NOT RESPONDED IN A TIMELY FASHION TO FEMA'S CONCERNS. FOR EXAMPLE, ACCORDING TO TESTIMONY BEFORE MASSACHUSETTS STATE LEGISLATORS ON JUNE 18, 1986, BY EDWARD A. THOMAS OF FEMA, THE AGENCY SENT LETTERS OUTLINING PERSISTENT FEMA CONCERNS TO MCDA IN OCTOBER, 1985 AND JANUARY, 1986. FEMA RECEIVED NO RESPONSE TO THE OCTOBER LETTER UNTIL JUNE 5, 1986 AND FEMA HAD NOT YET RECEIVED A RESPONSE TO THE JANUARY LETTER BY THE TIME OF THE HEARING.

FEMA:

ON JUNE 16, 1981, THE DIRECTOR OF THE MASSACHUSETTS CIVIL DEFENSE AGENCY (MCDA) ON BEHALF OF THE GOVERNOR OF THE COMMONWEALTH OF MASSACHUSETTS SUBMITTED THE RADIOLOGICAL EMERGENCY RESPONSE PLANS FOR REVIEW PURSUANT TO 44 CFR 350, AND STATED THAT IN THE OPINION OF MCDA THE PLAN WAS ADEQUATE TO PROTECT THE PUBLIC HEALTH AND SAFETY. ON SEPTEMBER 29, 1982, FEMA ISSUED AN INTERIM FINDING THAT ALTHOUGH THE PLANS WERE NOT PERFECT, "THE INTERIM FINDING OF FEMA IS THAT THE STATE PLAN AND LOCAL PLANS TOGETHER ARE ADEQUATE TO PROTECT THE HEALTH AND SAFETY OF THE PUBLIC." ON MARCH 6, 1985 AND OCTOBER 30, 1985 FEMA INFORMED THE MASSACHUSETTS CIVIL DEFENSE AGENCY BY LETTER THAT BECAUSE OF UNRESOLVED EMERGENCY PLANNING ISSUES RAISED DURING THE RAC REVIEWS OF OCTOBER 1981

AND SEPTEMBER 1982, AND DURING THE 1982 AND 1985 EXERCISES WE HAD SUSPENDED PROCESSING THEIR REQUEST FOR A FORMAL APPROVAL PURSUANT TO 44 CFR 350. FEMA HAS NOT RESUMED ITS PROCESSING OF THE 350 APPROVAL REQUEST BECAUSE MCDA HAS NOT ADEQUATELY ADDRESSED THE ISSUES RAISED IN THE LETTERS. IT SHOULD BE UNDERSTOOD THAT WHILE THE RESOLUTION OF THESE ISSUES WOULD ENHANCE THE MASSACHUSETTS PILGRIM KERP, NEVERTHELESS THE PLANS HAVE BEEN FOUND TO BE ADEQUATE IN THAT THEY MEET THE MINIMUM STANDARD OF PROVIDING A REASONABLE ASSURANCE THAT THE STATE AND LOCAL PLANS ARE ADEQUATE TO PROTECT THE HEALTH AND SAFETY OF THE PUBLIC IN THE PILGRIM EPZ. (SEE, SELF-INITIATED REVIEW AND INTERIM FINDING FOR UPDATED INFORMATION.)

EXERCISES OF THE PLANS AND PREPAREDNESS OF STATE AND LOCAL GOVERNMENTS WITHIN THE PLUME EXPOSURE EMERGENCY PLANNING ZONE FOR THE PILGRIM NUCLEAR POWER STATION WERE OBSERVED BY FEMA ON MARCH 3, 1982; JUNE 29, 1983, AND SEPTEMBER 5, 1985. A REVIEW OF THE EXERCISES INDICATES THAT THE COMMONWEALTH OF MASSACHUSETTS HAS MOVED PROMPTLY TO CORRECT PLAN OR PERFORMANCE PROBLEMS WHICH WOULD INTERFERE WITH ITS ABILITY TO PROTECT THE PUBLIC IN THE EVENT OF AN ACCIDENT AT PILGRIM. THE 1982 AND 1983 EXERCISES DEMONSTRATED THAT A CAPABILITY EXISTED FOR STATE AND LOCAL GOVERNMENTS TO PROTECT THE HEALTH AND SAFETY OF THE PUBLIC IN THE EVENT OF AN ACCIDENT AT THE PILGRIM NUCLEAR POWER STATION.

HOWEVER, FEMA'S OBSERVATION OF THE EXERCISE CONDUCTED ON SEPTEMBER 9, 1985, IDENTIFIED FOUR DEFICIENCIES IN THE EXERCISE. FEMA NOW USES THE WORD "DEFICIENCIES" TO MEAN DEMONSTRATED AND OBSERVED INADEQUACIES THAT WOULD CAUSE A FINDING THAT OFF-SITE EMERGENCY PREPAREDNESS WAS NOT ADEQUATE TO PROVIDE REASONABLE ASSURANCE THAT APPROPRIATE PROTECTIVE MEASURES CAN BE TAKEN TO PROTECT THE HEALTH AND SAFETY OF THE PUBLIC LIVING IN THE VICINITY OF A NUCLEAR POWER FACILITY IN THE EVENT OF A RADIOLOGICAL EMERGENCY.

ON SEPTEMBER 20, 1985, FEMA SENT A LETTER TO MCDA INFORMING THEM OF THE EXISTENCE OF THE FOUR DEFICIENCIES IDENTIFIED FOR THE CARVER EOC AND THE TAUNTON RECEPTION CENTER. ON OCTOBER 29, 1985, A REMEDIAL EXERCISE WAS HELD TO DEMONSTRATE CORRECTION OF THESE DEFICIENCIES. THE FOUR DEFICIENCIES WERE CORRECTED. (SEE FEMA DOCUMENT, "REPORT ON THE REMEDIAL EXERCISE FOR THE PILGRIM NUCLEAR POWER STATION", OCTOBER 29, 1985).

THE COMMONWEALTH OF MASSACHUSETTS RESPONDED PROMPTLY TO THE DEFICIENCIES IDENTIFIED DURING THE 1985 EXERCISE. AS INDICATED ABOVE BOTH BY FEMA AND THE PETITIONERS, THE RESPONSE TO ISSUES WHICH WERE NOT CATEGORIZED AS DEFICIENCIES HAS NOT BEEN TIMELY. FOLLOWING THE JUNE 29, 1983 EXERCISE NO DEFICIENCIES WERE IDENTIFIED AND THE COMMONWEALTH PROVIDED A

COMMUNITY LEVEL. THE STATE THEN PROVIDED A SCHEDULE OF CORRECTIVE ACTIONS IN A LETTER TO FEMA DATED JUNE 20, 1985, FOR ALL STATE AND LOCAL COMMUNITY INADEQUACIES NOTED AT THE 1983 EXERCISE. FEMA OBSERVED, DURING THE 1985 EXERCISE, THAT MANY OF THE PROBLEMS IDENTIFIED IN THE 1982 AND 1983 EXERCISES HAD BEEN CORRECTED, BUT MANY NEW "AREAS REQUIRING CORRECTIVE ACTION" (ARCA) AND FOUR DEFICIENCIES WERE IDENTIFIED. THE COMMONWEALTH HAD CORRECTED THE DEFICIENCIES BY OCTOBER 29, 1985 AND ON OCTOBER 30, 1985 PROVIDED FEMA WITH A PLAN OF ACTION WHICH, IT FELT, IF IMPLEMENTED WOULD RESOLVE THE "AREAS REQUIRING CORRECTIVE ACTION". ON MARCH 5, 1986 FEMA SENT THE COMMONWEALTH THE REPORT ON THE SEPTEMBER 3, 1985 EXERCISE. THE COMMONWEALTH, AS PROVIDED IN FEMA GUIDANCE, WAS TO PROVIDE FEMA WITH A SCHEDULE OF CORRECTIVE ACTIONS FOR THE "AREAS REQUIRING CORRECTIVE ACTION" WITHIN 30 DAYS OF THE REPORT'S RECEIPT. ALTHOUGH FEMA HAD NOT RECEIVED A SCHEDULE BY THE TIME THE PETITION WAS FILED, IT DID NOT FEEL THE SCHEDULE WAS OVERLY LATE. THE COMMONWEALTH HAS NOT YET, HOWEVER, SUBMITTED ITS SCHEDULE OF CORRECTIVE ACTIONS. THIS SUBJECT IS DEALT WITH IN FEMA'S SELF-INITIATED REVIEW AT PP 37-44.

B) PETITIONERS:

ANOTHER EXAMPLE OF THE SERIOUS LACK OF COORDINATION WAS THE FAILURE OF MCDA TO DELIVER TO FEMA AN UP-TO-DATE VERSION OF THE STATE EMERGENCY PLAN. ACCORDING TO STATEMENTS BY FEMA AND MCDA OFFICIALS IN THE JUNE 20, 1986 EDITION OF THE PATRIOT LEDGER OF QUINCY, MA, THE PLAN WAS NOT DELIVERED UNTIL 10 MONTHS AFTER IT WAS PREPARED. MCDA COMPLETED THE

UPDATED PLAN IN AUGUST, 1985 BUT DID NOT DELIVER A COPY OF IT UNTIL JUNE 25, 1986. FEMA HAD FORMALLY REQUESTED A COPY OF THE PLAN IN OCTOBER, 1985, BUT DID NOT FOLLOW UP ON THAT REQUEST. MCOA'S FAILURE TO RESPOND TO FEMA'S REQUEST AND FEMA'S EVIDENT LACK OF CONCERN AND UNWILLINGNESS TO DEMAND MORE RESPONSIVE ACTION ARE SYMPTOMATIC OF AN EMERGENCY RESPONSE REGIME THAT IS UNCOORDINATED AND GIVEN LOW PRIORITY BY ITS ATTENDANT PUBLIC AGENCIES.

FEMA:

THE BULK OF THE MASSACHUSETTS RERPs FOR THE PILGRIM EPZ WHICH FEMA HAS ON FILE ARE CURRENT. THE LAST MAJOR REVISION TO THE STATE PLAN WAS IN 1982 AND FEMA HAS THOSE CHANGES. MINOR CHANGES TO LOCAL PLANS WERE MADE IN 1985. FEMA REQUESTED COPIES OF THE PLANS ON OCTOBER 30, 1985, AND FEMA RECEIVED COPIES OF THEM FROM HMM ASSOCIATES IN A LETTER DATED JUNE 22, 1986. THE COMMONWEALTH SUBSEQUENTLY INFORMED FEMA THAT THE 1985 VERSION OF THE LOCAL PLANS WERE CURRENT. FEMA WOULD ENCOURAGE ATTEMPTS BY THE COMMONWEALTH OF MASSACHUSETTS TO GIVE RADIOLOGICAL EMERGENCY PREPAREDNESS PLANNING A HIGHER PRIORITY.

C) PETITIONERS:

FURTHER EVIDENCE OF THIS LACK OF COORDINATION AND PRIORITIZATION WAS REVEALED IN MR. THOMAS' JUNE 18, 1986 TESTIMONY. MR. THOMAS STATED THAT BOSTON EDISON HAD FAILED REPEATEDLY TO DELIVER TO FEMA NECESSARY TECHNICAL SPECIFICATIONS ON THE SIRENS THAT WOULD NOTIFY THE PUBLIC OF A RADIOLOGICAL EMERGENCY AT THE PILGRIM PLANT. MR. THOMAS STATED THAT THESE DELAYS BY BOSTON EDISON HAVE FORCED REPEATED POSTPONEMENTS OF SYSTEM TESTING. THUS, THE SYSTEM HAS NEVER BEEN GIVEN THE FULL-SCALE TEST REQUIRED BY FEMA.

FEMA:

AS NOTED IN THE RESPONSE TO ITEM 16 ABOVE, FEMA RECEIVED THE

SIREN SYSTEM TECHNICAL SPECIFICATIONS ON JUNE 20, 1985, AND PERFORMED A DETAILED REVIEW OF THE STATE AND LOCAL FULL-SCALE SIREN TEST ON SEPTEMBER 19, 1986. RESULTS OF THE SIREN TEST INDICATED THAT 38.2% OF THE PEOPLE WERE DIRECTLY ALERTED BY THE SIRENS ON THE DAY OF THE TEST. HOWEVER THE PETITION DOES NOT DEMONSTRATE THAT THESE DELAYS INTERFERED WITH THE COMMONWEALTH'S ABILITY TO PROTECT THE PUBLIC.

C) PETITIONERS:

THE EMERGENCY RESPONSE SYSTEM'S LACK OF PRIORITIZATION IS FURTHER DEMONSTRATED BY THE FACT THAT LOCAL CIVIL DEFENSE AGENCIES IN THE COMMUNITIES WITHIN THE EMERGENCY PLANNING ZONE HAVE SERIOUS STAFFING AND BUDGETARY PROBLEMS. MOST LOCAL CIVIL DEFENSE DIRECTORS WITHIN THE EPZ ARE UNPAID OR RECEIVE ONLY SMALL STIPENDS. MOST HAVE LITTLE OR NO PAID STAFF. THE RELIANCE ON VOLUNTEERS, WHO OFTEN HAVE MINIMAL PROFESSIONAL EXPERIENCE OR TRAINING, REFLECTS THE UNWILLINGNESS OF STATE AND LOCAL GOVERNMENT TO MAKE A GENUINE COMMITMENT TO EMERGENCY RESPONSE PLANNING. MAJOR IMPROVEMENTS IN STAFFING AND BUDGETS OF STATE AND LOCAL CIVIL DEFENSE BODIES MUST BE IMPLEMENTED BEFORE PUBLIC SAFETY CAN BE ENSURED. MOREOVER, IF THE NECESSARY MEASURES TAKEN CONSTITUTE PUBLIC SUBSIDIZATION OF THE FINANCIAL REQUIREMENTS OF A SAFE NUCLEAR POWER SYSTEM, BOSTON EDISON SHOULD BE REQUIRED TO PROVIDE THE FINANCIAL MEANS FOR THEM.

FEMA:

FEMA FEELS THAT THIS ALLEGATION IS TOTALLY WITHOUT MERIT BASED UPON PAST HISTORY WITH VOLUNTEER GOVERNMENT IN THE U.S. EACH DAY THOUSANDS OF VOLUNTEERS IN LOCAL GOVERNMENTS PERFORM ADMIRABLY, OFTEN WITH GREAT RISK TO THEIR PERSONAL SAFETY AND WELL-BEING. ONE EXCELLENT EXAMPLE OF THIS IS THE DEDICATION AND COMMITMENT DISPLAYED BY VOLUNTEERS WHO PARTICIPATE IN RADIOLOGICAL EMERGENCY RESPONSE EXERCISES AND RES-

POND TO EMERGENCIES IN THEIR COMMUNITIES ON A DAILY BASIS. AS NOTED BY FEDERAL EVALUATORS' COMMENTS IN EXERCISE REPORTS FOR THE EXERCISES OF THE RADIOLOGICAL EMERGENCY RESPONSE PLANS FOR THE PILGRIM NUCLEAR POWER STATION IN 1982, 1983, AND 1985, THE DEDICATION AND COMMITMENT OF THE VOLUNTEERS HAS BEEN CONSISTENTLY DISPLAYED. THE VOLUNTEERS HAVE INCLUDED LOCAL CIVIL DEFENSE DIRECTORS AND STAFF, SELECTMEN, FIRE PERSONNEL, PARA-MEDICS, RED CROSS VOLUNTEERS, RACES AMATEUR RADIO OPERATORS, THE CIVIL AIR PATROL AND OTHERS. THE VOLUNTEERS ARE KNOWLEDGEABLE OF THEIR DUTIES AND CONSCIENTIOUS IN THE PERFORMANCE OF THESE DUTIES. ALTHOUGH VOLUNTEERS RECEIVE LITTLE OR NO STIPENDS FOR THEIR SERVICES, THEY ARE WORKING TO MAKE THEIR COMMUNITIES A SAFER AND BETTER PLACE FOR THEIR FAMILY AND FRIENDS TO LIVE. MANY VOLUNTEERS HAVE INDICATED TO OUR STAFF THAT THE SATISFACTION OF HELPING PROTECT THEIR COMMUNITY AFFORDS THEM FAR GREATER REWARDS AND INCENTIVE THAN ANY MONETARY COMPENSATION COULD PROVIDE.

FEMA, THEREFORE, CONCLUDES THAT THE ISSUES RAISED IN SECTION 20 OF THE PETITION DO NOT PROVIDE INFORMATION WHICH SUSTAINS THE CONTENTION.

FOOTNOTES

1. HANS, JOSEPH M., JR.; SELL, THOMAS C., EVACUATION RISKS - AN EVALUATION, ENVIRONMENTAL PROTECTION AGENCY, EPA-520/6-74-002, JUNE, 1974.
2. IBID; PG 43
3. IBID; PG 18
4. TREADWELL, MATTIE E., HURRICANE CARLA - SEPTEMBER 3-14, 1961; DEPARTMENT OF DEFENSE - OFFICE OF CIVIL DEFENSE, REGION V, DENTON, TEXAS, PG 16
5. FEMA REGION I INTERIM FINDINGS "JOINT STATE AND LOCAL EMERGENCY RESPONSE CAPABILITIES FOR THE PILGRIM NUCLEAR POWER STATION, PLYMOUTH, MASSACHUSETTS, SEPTEMBER 1982"

Attachment B

Mark I Containment Design

As discussed in Section C.1 of the Petition, the original design basis of the reactor containment was to provide protection against loss of coolant accidents (LOCAs). This discussion will describe how it fulfills its function of protecting against these design basis events.

The design of the Pilgrim containment is referred to as the "Mark I" design, which features a "pressure-suppression" containment (see Figure 1). A pressure-suppression containment uses a large pool of water to reduce the buildup of steam pressure inside the containment following a LOCA. The steam is condensed by passing it through the pool of water.

The concept of pressure suppression with water was developed by GE for the Humboldt Bay Nuclear Plant during the time period from 1958 to 1962. Since that time, GE has designed many boiling water reactor (BWR) plants and has developed three distinctively different pressure-suppression containment designs, identified as the Mark I, II, and III designs.

The Mark I containment system consists of (1) a drywell that encloses the reactor vessel, the reactor coolant system, and other branch connections of the reactor coolant system; (2) a donut-shaped pressure-suppression chamber (torus) containing a large volume of water; (3) a vent system connecting the drywell to the water space of the torus; (4) containment isolation valves; (5) containment cooling systems; and (6) other service equipment.

The drywell is a steel pressure vessel supported in concrete with a spherical lower section and a cylindrical upper portion. The pressure suppression chamber is a steel pressure vessel in the shape of a torus, and is

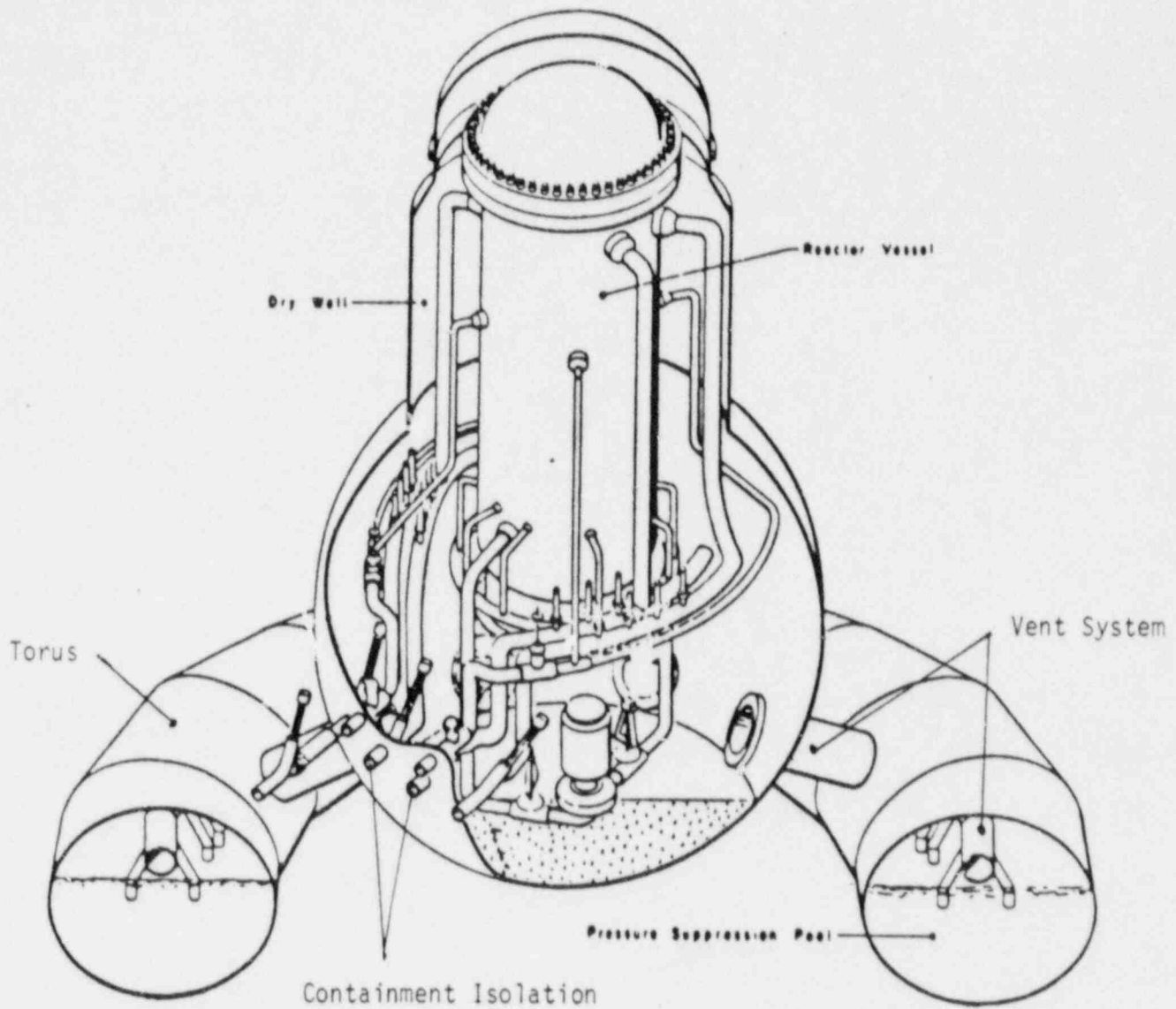


FIGURE 1 Schematic of Reactor Coolant System for BWR - Inside of the Primary Containment

located below and encircling the drywell. The suppression chamber is held in place by supports that transmit operational, accident, and seismic loads to the reinforced concrete foundation slab of the reactor building. The drywell-to-torus vents are connected to a vent header that is located in the airspace of the pressure-suppression chamber. Projecting downward from the vent header are the downcomer pipes, which are nominally 24 inches in diameter and end approximately 3 feet below the water surface of the pool.

In the event of a LOCA, reactor water and steam would be suddenly released into the drywell atmosphere. This is referred to as a blowdown. As a result of increasing drywell pressure, a mixture of drywell atmosphere, steam, and water would be forced through the vent system into the pool of water that is stored in the suppression chamber. The steam vapor would condense in the suppression pool, thereby reducing the drywell pressure. Noncondensable gases and fission products would be collected and contained in the air space of the torus. The drywell atmosphere would initially be transferred to the suppression chamber and would pressurize the chamber. At the end of the blowdown, water supplied by emergency core cooling systems (ECCS) would spill out of the break and rapidly reduce the drywell pressure. The suppression chamber would vent to the drywell through installed vacuum breakers to equalize the pressures between the drywell and suppression chamber. The ECCS would cool the reactor core and transport the heat to the water in the suppression chamber. Cooling systems are available to remove heat from the water in the suppression chamber, thus allowing for the continuous removal of decay heat from the primary containment under accident conditions following the initial deposition of energy to the suppression chamber from the blowdown.

ATTACHMENT C TO RESPONSE TO PETITIONERS

C-1

ENCLOSURE A

to NUREG-0474

Summary of NRC Staff Actions Related

To The Technical Issues Identified In Dr. Hanauer's

Memorandum of September 20, 1972

A. Concern:

"Like all containments the pressure suppression designs are required to include margins in capability. Experiments have been conducted by GE and Westinghouse to establish the rate of steam generation that can be accommodated. The pressure-suppression pools, ice condenser, etc., are then sized for the double-ended break steam flow, with margins for unequal distribution of steam to the many modular units of which the condenser is composed. The rate and distribution margins are probably adequate.

More difficult to assess is the margin needed when applying the experimental data to the reactor design. Recently, we have reevaluated the 10-year old GE test results, and decided on a more conservative interpretation than has been used all these years by GE (and accepted by us). We now believe that the former interpretation was incorrect, using data from tests not applicable to accident conditions.

We are requiring an independent evaluation of the ice condenser design and its bases to make less probable any comparable misinterpretation of this design."

Responses:

Since this concern was expressed, additional tests, both domestic and foreign, of BWR pressure systems have been conducted, e.g., 4-T, PSTF, and Marviken. Computer codes which have been and are being used to predict the containment pressure and temperature response of the BWR pressure suppression containment systems have been used to calculate the pressure response for these test facilities. The calculated values when compared to the test results have confirmed the adequacy of the computer models. These comparisons have been made by both the vendor and the NRC.^{2/}

Consequently, the viability of the pressure suppression concept which was originally demonstrated by testing performed in 1958 through 1962 has been confirmed.

With respect to ice condenser containments, the NRC has developed computer codes which are used to predict the containment's pressure response

during postulated LOCAs. These codes are now being compared to test data and the preliminary results of such comparisons are that the adequacy of the current models has been confirmed. Vendor's codes (Westinghouse) have been compared to tests and have been confirmed.²

The margins applied for pressure suppression containment design have also been confirmed by the additional test data that has become available since 1972. These margins exist both in the basic design of the containment structure and in the analytical models used to predict the containment response. The experimental data are no longer applied directly to determine the containment design requirements.

B. Concern:

"Since the pressure-suppression containments are smaller than conventional "dry" containments, the same amount of hydrogen, formed in a postulated accident, would constitute a higher volume or weight percentage of the containment atmosphere. Therefore, such hydrogen generation tends to be a more serious problem in pressure-suppression containments. The small GE designs (both the light-bulb-and-doughnut and the over-under configurations) have to be inerted because the hydrogen assumed (per Safety Guide 7) would immediately form an explosive mixture. The GE Mod 3 and the Westinghouse ice condenser designs (they have equal volumes) require high-flow circulation and mixing systems to ensure even dilution of the hydrogen to avoid flammable mixtures in one or more compartments (see following for an additional serious disadvantage of this needed recirculation and its valves). By contrast, the dry containments only require recombination or purging starting weeks after the accident."

Response

Most Mark I BWR pressure suppression containments are currently required to be inerted as part of the measures for combustible gas (i.e., hydrogen) control following a postulated loss-of-coolant accident. This requirement resulted from the staff's assumptions regarding the amount of hydrogen generated and the magnitude of the lower limit of hydrogen flammability. However, in 1974 the Commission ruled that the technical issues related to inerting requirements should be resolved by way of rulemaking. Subsequently, a rulemaking proceeding was initiated which led to the development of a proposed change to the regulations, i.e., 10 CFR 50.44, "Standards for Combustible Gas Control System in Light Water Cooled Power Reactors."^{4/}

The revised assumptions in this proposed rule and those specified in the Branch Technical Position, CSB 6-2,^{3/} would permit plants to de-inert where it can be demonstrated that the hydrogen concentration

can be maintained below a combustible mixture. The analyses for Vermont Yankee indicate that most, if not all, plants could de-inert using the assumptions in the proposed 10 CFR 50.44.^{6/}

Those facilities with the Mark II pressure-suppression containment system design have not yet been licensed for operation. However, in light of the staff requirements specified in Branch Technical Position, CSB 6.2, we do not expect that inerting will be required for these facilities.

The Mark III BWR containment system and the PWR ice condenser containment system have relatively larger volumes and do not require inerting for combustible gas control. However, mixing systems are provided to take advantage of the total containment volume for dilution of hydrogen. In the ice condenser containment design, the primary function of the mixing system is to assure long-term condensation within the ice bed. Staff positions were developed during the course of the review of the first Mark III plant application (i.e., Grand Gulf) which set forth the minimum design requirements for the mixing systems^{5/} and to preclude the potential for excessive steam bypass.^{7/}

Although the time frame within which combustible gas control must be initiated is much shorter for a pressure suppression containment than for dry containments, it is still long enough to permit manual operation and it occurs well after the initial blowdown transient.

C. Concern:

"All pressure-suppression containments are divided into two (or more) major volumes, the steam flowing from one to the other through the condensing water or ice. Any steam that flows from one of these volumes to the other without being condensed is a potential source of unsuppressed pressure. Neither the strength nor the leakage rate of the divider (between the volumes) is tested in the currently approved programs for initial or periodic inservice testing. Some effort is now underway to devise a leakage test, but none has so far been accomplished."

Response:

With respect to the BWR pressure suppression containment systems, the leakage of steam from the drywell directly to the suppression chamber airspace bypasses the suppression pool and could potentially result in an overpressurization of the containment. The maximum allowable bypass leakage rate is a function of the size of the postulated loss-of-coolant accident. Facility Technical Specifications^{8/} include periodic

(approximately every eighteen months) testing requirements to monitor the bypass leakage rate. The tests are performed by pressurizing the drywell to one to two pounds per square inch greater than the suppression chamber and monitoring the rate of pressure decay. The pressure decay rate is then correlatable to an equivalent bypass leakage area. This test is conservative since all drywell leakage paths are inherently included in the test results while only a small portion of these paths contribute to bypass leakage.

In addition, most BWR operating plants with pressure suppression containments have been operating with a positive pressure differential between the drywell and suppression chamber since February 1976.^{9/} Maintaining this pressure differential provides a continuous monitor of bypass leakage and a verification of the status of the drywell to suppression chamber vacuum breakers.

With respect to the ice condenser containment design, a substantive amount of bypassing can be tolerated without exceeding design conditions. Analysis indicates that bypass areas of about 35 to 50 square feet can be tolerated.^{10/} This is a large area when compared to the bypass area which can be tolerated for water pressure-suppression systems (which varies between about .02 and 1 square feet) and, therefore, less testing has been required. However, we do require both pre- and post-operational testing to confirm the bypass capability of each ice condenser plant.^{11/}

The strength capacity of the "divider" in the Mark I design is demonstrated by structural analysis of the vent system. The strength capacity of the "divider" floor in the Mark II design will be confirmed by preoperational testing.

D. Concern:

"Because of limited strength against collapse, the "receiving" volume has to be provided with vacuum relief. In all designs except GE Mod 111, this function is performed by a group of valves. Such a valve stuck open is a large bypass of the condensation scheme; the amount of steam that thus escapes condensation can overpressurize the containment.

Valves do not have a very good reliability record. Recently, five of the vacuum relief valves for the pressure-suppression containment of Quad Cities 2 were found stuck partly open. Moreover, these valves had been modified to include redundant "valve-closed" position indicators and testing devices, because of recent Reg concerns. The redundant position indicators were found not to indicate correctly the particular partly open situation that obtained on the five failed valves. We have only recently begun to pay serious attention to these valves, so pre-

vious surveillance programs have not generally included them. The GE Mod 111 design has an elegant water-leg seal that obviates the need for vacuum relief valves."

Response:

Vacuum breakers are provided between the drywell and the suppression chamber to allow reverse flow back to the drywell following the initial blowdown transient. These valves are normally closed; however should any of these valves be open at the time of the accident, steam bypass could potentially result in an overpressurization of the containment. Since 1972, staff positions were developed which required periodic testing and redundant position indication to assure that excessive bypass leakage through the vacuum breakers would not occur.^{12/}

Continuous monitoring of these valves is provided by the positive pressure differential between the drywell and suppression chamber. Additional testing requirements also exist to demonstrate the capability of these valves to perform their vacuum-relief functions.^{13/} All of these testing requirements are included in the surveillance requirements contained in the Technical Specifications for each plant.

These testing requirements have also served as a basis for the development of maintenance programs to correct deficiencies in the valve position indicators. As a result of these independent maintenance programs, failures of the position indicators have been very infrequent over the past several years.

E. Concern:

"The high capacity atmosphere recirculation systems provided for hydrogen mixing involve additional valves which, if open at the wrong time, would constitute a serious steam bypass and thus a potential source of containment overpressurization. These valves are large, and must open quickly and reliably when recirculation is needed. In other engineered safety features, no single valve is relied on for such service, yet redundancy has not been provided even for single failures, open and closed, of these valves. This is a serious mission, since opening at the wrong time leads to overpressurization, while failure to open when needed inhibits recirculation."

Response:

This issue relates to the BWR Mark III containment system design. In 1974, the AEC developed a position in conjunction with the review of the first Mark III BWR (i.e., Grand Gulf) which addresses the concern of large mixing system penetrations in the drywell. This position included the following features:

1. Alternate mixing system designs were to be developed to limit the potential for bypass through large drywell penetrations.
2. Containment bypass capability was to be increased to accommodate single failures of the valves in the lines.

As a result of this position each Mark III applicant provided a mixing system design consistent with our position. The designs included the following features: small drywell penetrations; redundant inlet and exhaust penetrations to assure a recirculation path; the use of two valves in series on each line to assure isolation capability; and an evaluation of the containment capability to accommodate bypass through an inadvertently open recirculation line.

F. Concern:

"The smaller size of the pressure-suppression containment, plus the requirement for the primary system to be contained in one of the two volumes, has led to overcrowding and limitation of access to reactor and primary system components for surveillance and in-service testing."

Response:

Although pressure-suppression containment system designs are generally more crowded and less accessible than dry containment system designs, based upon the experience gained through our reviews of the Inservice Inspection and Inservice Testing (ISI/IST) programs which have been submitted by licensees in accordance with the requirements of 10 CFR 50.55.a, only one significant BWR inspection-related accessibility problem has been identified, i.e., the beltline region of the reactor pressure vessel. This inaccessibility is a result of the vessel design, not the containment design.

The beltline region of PWR vessels can be inspected from the inside of the vessel because the core internals can be removed whereas this is not possible for BWRs. Augmented inspection of accessible

areas of BWR reactor pressure vessels and operating limits on reactor pressure and temperature compensate for this inability to perform ISI.

With the exception of the above-mentioned area, no other significant inspection-related accessibility differences between PWR and BWR containments have been identified.

G. Concern:

"Separate shielding of components has tended to subdivide into compartments the volume occupied by the primary system. (Some compartmentation of dry containment also occurs.) A pipe break in one of these compartments creates a pressure differential; each compartment must be designed to withstand this pressure. A method of testing such designs has not been developed."

Response:

The arrangement of structures internal to the containment differ between the Mark I/II containment system design and the Mark III containment design. The Mark I/II's have fewer compartments than PWR dry containments because there is less need for radiation shielding. The Mark I/II's are essentially inaccessible during normal plant operations, thereby requiring fewer structures for shielding. The Mark III design for internal structures is generally comparable to the PWR dry containment design.

For all designs, both dry and pressure suppression containments, we analyze the pressure response within compartments for postulated pipe breaks to ensure the adequacy of the design pressure differential for compartments 15/, 16/. There are ongoing foreign tests being conducted to verify analytical methods 17/. NRC and vendor codes are part of this program.



THE COMMONWEALTH OF MASSACHUSETTS

DEPARTMENT OF THE ATTORNEY GENERAL

JOHN W. McCORMACK STATE OFFICE BUILDING
ONE ASHBURTON PLACE, BOSTON 02108-1698

JAMES M. SHANNON
ATTORNEY GENERAL

October 15, 1987

FEDERAL EXPRESS

Director of the Office of Nuclear
Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC. 20555

RE: Enclosed 10 C.F.R. § 2.206 Petition concerning the
Pilgrim Nuclear Power Station

Dear Sir:

Enclosed is the Petition of Michael S. Dukakis, Governor
and James M. Shannon, Attorney General for the Institution of a
Proceeding Pursuant to 10 C.F.R. § 2.202 to Modify, Suspend, or
Revoke the Operating License Held by the Boston Edison Company
For The Pilgrim Nuclear Station, which I am filing on behalf of
myself and Governor Michael S. Dukakis.

Very truly yours,

James M. Shannon
Attorney General

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UNITED STATES OF AMERICA
BEFORE THE NUCLEAR REGULATORY COMMISSION

PETITION OF MICHAEL S. DUKAKIS, GOVERNOR AND
JAMES M. SHANNON, ATTORNEY GENERAL FOR THE
INSTITUTION OF A PROCEEDING PURSUANT TO
10 C.F.R §2.202 TO MODIFY, SUSPEND, OR
REVOKE THE OPERATING LICENSE HELD BY
THE BOSTON EDISON COMPANY FOR THE
PILGRIM NUCLEAR STATION

Dated: October 15, 1987

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PDR ADOCK 05000293
G PDR

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THE BOSTON EDISON COMPANY FOR THE
PILGRIM NUCLEAR STATION

Dated: October 15, 1987

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UNITED STATES OF AMERICA
BEFORE THE NUCLEAR REGULATORY COMMISSION

PETITION OF MICHAEL S. DUKAKIS, GOVERNOR AND
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INSTITUTION OF A PROCEEDING PURSUANT TO
10 C.F.R. §2.202 TO MODIFY, SUSPEND, OR
REVOKE THE OPERATING LICENSE HELD BY
THE BOSTON EDISON COMPANY FOR THE
PILGRIM NUCLEAR STATION

I. INTRODUCTION

Governor Michael S. Dukakis and Attorney General James M. Shannon, pursuant to 10 C.F.R. §2.206, hereby request that the Director of the Office of Nuclear Reactor Regulation institute a proceeding pursuant to 10 C.F.R. §2.202 to modify, suspend, or revoke the operating license held by Boston Edison Company ("BEdCo." or "the Company") for the Pilgrim Nuclear Power Station ("Pilgrim") in Plymouth, Massachusetts. This petition is filed on behalf of the Commonwealth of Massachusetts and its citizens. The Governor and the Attorney General base this request on evidence of continuing serious managerial deficiencies at the plant, on evidence that a plant specific probabilistic risk assessment ("PRA") as well as the implementation of any safety modifications indicated thereby should be required prior to Pilgrim's restart, and on evidence that the state of emergency preparedness does not provide reasonable assurance that adequate protective measures can and

will be taken in the event of a radiological emergency during operations at the Pilgrim plant. The Governor and the Attorney General submit that this evidence, as set forth below, demonstrates the necessity of Nuclear Regulatory Commission ("NRC") action pursuant to 10 C.F.R. §2.202.

Further, the Governor and the Attorney General believe that the public interest requires that the NRC exercise its authority under 10 C.F.R. §2.202(f)^{1/} so that BECo. is prevented from proceeding any further with the restart of Pilgrim^{2/} until a formal adjudicatory hearing has been held and findings of fact are made concerning the safety questions surrounding the continued operation of the Pilgrim plant. In particular, the Governor and the Attorney General request that the NRC issue an order, effective immediately, modifying BECo's operating license to preclude BECo. from taking any steps in

1/ 10 C.F.R. 2.02(f) provides:

When the Executive Director for Operations, during an emergency as determined by the EDO, or the Director of Nuclear Reactor Regulation, Director of Nuclear Material Safety and Safeguards, Office of Inspections and Enforcement, as appropriate, finds that the public health, safety, or interest so requires or that the violation is willful, the order to show cause may provide, for stated reasons, that the proposed action be temporarily effective pending further review.

2/ At each step of BECo's so-called "power ascension" program there is an increase in the probability of an accident at Pilgrim as well as in the potential consequences of such an accident. See Affidavit of Steven C. Sholly (attached hereto as Attachment 1).

its power ascension program until the hearing is held and the findings are made.

II. EVIDENCE OF SERIOUS MANAGERIAL DEFICIENCIES

Recent events at Pilgrim indicate that BECo. has not corrected the long-standing managerial shortcomings that have plagued the plant. In the areas of security, radiological controls, personnel management, and corporate culture, the management of Pilgrim continues to be seriously flawed. As a result, Pilgrim poses an unreasonable risk to public health and safety. Its continued operation under the present circumstances is inimical to public health and safety.

A. OVERVIEW

Pilgrim commenced commercial operation in June, 1972, when BECo. received an operating license for the plant. During the intervening fifteen year period of operation by BECo., Pilgrim has had a capacity factor of approximately 50 percent,^{3/} which compares quite unfavorably with the average for all New England nuclear plants of approximately 67 percent.^{4/}

^{3/} The "capacity factor" for a plant is a measure of performance in terms of the power it has actually delivered over a period of time relative to the power it was capable of delivering over that same period of time. It is calculated by dividing the actual number of kilowatt hours produced by the plant in the period of measurement by the product of the plant's rated kilowatt capacity and the number of hours in the period.

^{4/} Electric Council of New England, New England Nuclear News, (June, 1987) (Attached hereto as Attachment 2).

B. BECo's PAST PERFORMANCE

The plant has been out of service since April, 1986, when the NRC, in Confirmatory Action Letter 86-10, ordered a shutdown after recurring operational problems at the plant.^{5/}

Pilgrim has been beset with managerial problems from the outset. BECo. has consistently received low ratings in the NRC's Systematic Assessment of Licensee Performance ("SALP") reports. Pilgrim has been identified by the NRC as one of the worst run and least safe plants in the country^{6/} and BECo. was ordered to initiate performance/management improvement programs in 1982 and 1984.^{7/} BECo. has been the subject of a long line of enforcement actions as a result of regulatory violations. While the NRC's efforts to spur BECo. to a higher level of performance have, on occasion, met with some initial success, a review of BECo's performance record, however, shows that all such successes have been short lived. Indeed, BECo.

^{5/} Confirmatory Action Letter 86-10 was clarified and expanded in an subsequent letter, dated August 27, 1987, from the NRC Region 1, Regional Administrator to BECo's Chief Operating Officer. (attached hereto as Attachment 3). In this letter, BECo. was informed that:

In light of the number and scope of the outstanding issues, I (the Regional Administrator) am not prepared to approve restart of the Pilgrim facility until you (BECo.) provide a written report that documents BECo's formal assessment of the readiness for restart operation.

^{6/} Boston Globe, May 28, 1986.

^{7/} Order Modifying License Effective Immediately, 47 Fed. Reg. 4171 (January 28, 1987).

appears to have an organic inability to manage Pilgrim in an effective and safe manner.^{8/}

**** BECo's SALP Evaluations ****

BECo. has consistently received low ratings in SALP reports.^{9/}

8/ Although it is the failings of BECo's management of the Pilgrim plant which are the subject of this petition, it is significant that findings have been made in other settings that confirm BECo's managerial deficiencies and indicate that they extend to the other aspects of its business. See e.g., Boston Edison Company, Massachusetts Department of Public Utilities Docket No. 87-1A-A (1987) (imprudence in operation of oil fired generating unit). Of particular relevance to the notion that BECo. responds to the identification of deficiencies with half-hearted (although sometimes quite showy), short-term solutions that treat the symptoms, not the disease, is the series of decisions by the Massachusetts Department of Public Utilities that address BECo's need to consider and develop new sources of power in the aftermath of the 1981 cancellation of the construction of the Pilgrim II nuclear unit. Boston Edison Company, MDPU 906 (1982) (ordering BECo. to develop a new plan to meet its future power needs); Boston Edison Company, MDPU No. 86-270 (found reason to believe BECo lacked commitment and/or skill to fulfill public service obligation).

9/ The SALP process is the mechanism by which the NRC on a periodic basis systematically assesses the overall performance of a licensee. For each assessment period (generally 12 to 18 months) a Board of NRC officials evaluates, in accordance with preestablished attributes and rating guidance, the licensee's performance for each of the various, preestablished functional areas and rates the licensee's performance in each area. The Board also compares the licensee's performance for the current period with that of the previous assessment period and identifies, for further followup and inspection, any areas where the licensee's corrective action to improve performance has not been fully effective.

Arizona Public Service Company, (Palo Verde Nuclear Generating Station, Unit 2), DD-86-8, 24 NRC 151, 156 (1986).

In 1980, BECo. received ratings indicating significant weakness in three of the nine functional areas evaluated. The most recent SALP Report, seven years later, indicates that conditions have not improved but rather have worsened. BECo. received ratings indicating significant weaknesses in five of the twelve functional areas evaluated. It has only once received a SALP Report without a rating indicating a significant weakness. On all other occasions, it has received reports indicating significant weaknesses in at least two functional areas. (See Appendix I: BECo. SALP History Tabulation)

Of particular significance, every time Quality Assurance has been assessed as a separate functional area during a SALP review, BECo. has received the lowest possible rating. These findings are indicative of the ineffectiveness of BECo's management. They are a measure of its inability and/or its lack of commitment to run the plant in a effective and safe manner.

Although BECo. has at one time or another received the lowest possible rating in all but three of the twelve functional areas covered by the NRC's SALP process, these individual poor SALP ratings are not the most troubling aspect of BECo's SALP record. Instead, the most troubling and telling facet of BECo's SALP record is the Company's distinct inability to maintain any period-to-period performance improvements. BECo. has at one time or another improved its SALP performance

in eight functional areas. However, it has not been able to sustain the increased level of performance in seven of those eight areas. In all but one instance, BECo's improved performance proved to be short-lived and its performance subsequently fell back to lower levels. This is not surprising as an ever recurring theme in NRC evaluations of BECo's performance is that NRC oversight and prompting is necessary at every stage of Pilgrim's operation.^{10/} The increased NRC attention (i.e., oversight and prompting) that a "3" rating calls for has, on occasion, produced better performance by BECo. However, when that level of attention returns to that norm, BECo's performance falls below the norm. BECo's SALP track record is proof of the proposition that BECo, by itself has not effectively operated Pilgrim and that the short-term solutions it has adopted in response to criticism have invariably permitted the reoccurrence of the original problems.

**** BECo's Regulatory Violations ****

BECo., an enforcement action record that is a mirror of its SALP Report record. It has had at least one Severity Level III violation during each of the past six years.^{11/} (See

^{10/} E.g., 1987 SALP Review at 8; 1986 SALP Review at 7.

^{11/} As set forth in 10 C.F.R. Part 2, Appendix C; General Statement of Policy and Procedure for NRC Enforcement Actions, regulatory violations are categorized into five descending levels of severity. Level III corresponds with "violations that are cause for significant concern."

Appendix II: BECO. VIOLATIONS TABULATIONS - SEVERITY LEVEL III VIOLATIONS) In the area of Security and Safeguards, BECo. had a Severity Level III violation in all but one of the years between 1981 and 1986. In 1982, a civil penalty in the amount of \$550,000 -- at the time the largest penalty to have ever been assessed by the NRC -- was levied against BECo. for serious plant operations violations and for submitting false information to the NRC.^{12/} While the number of such Severity Level III violations discovered at Pilgrim has not exceeded two in any single year since 1981, the number of Severity Level IV violations per year has more than doubled in the past few years.

BECO's enforcement action record also mirrors its SALP Report record in demonstrating BECo's chronic recidivism. It has been cited five times for Radiological Controls violations involving waste shipment packaging requirements.^{13/}

It has been cited five times for Security and Safeguards violations involving the control of sensitive material such as keys to vital areas, security plans, and firearms.^{14/}

^{12/} U.S. General Accounting Office, Report to the Honorable Alfonse M. D'Amato, U.S. Senate: Nuclear Regulation Efforts to Ensure Nuclear Power Plant Safety Can Be Strengthened (GAO-RCED-87-141 August, 1987), pp. 36-37.

^{13/} See NRC Enforcement Summary Tables taken from various SALP Reports (attached hereto as Attachment 4).

^{14/} Id.

C. RECENT INDICIA OF BECo'S PERFORMANCE LEVEL

The most recent indicia of the level of BECo's performance in managing Pilgrim are consistent with its past performance. They confirm the notion that BECo. appears to be organically incapable of managing a nuclear facility. Notwithstanding the frequent incantation by senior management of a program for the "pursuit of excellence," the addition of new personnel and the expenditure of large sums of money,^{15/} the available evidence indicates that BECo. has not changed. Its 1987 SALP Report shows that the Company continues to merit the lowest possible ratings in many functional areas. BECo. continues to be incapable of maintaining performance gains. On the basis of news reports, it appears that BECo's management of the Security and Safeguards function is deteriorating, not improving. Further, on the basis of statements made by NRC officials at a recent meeting, the NRC has received and is investigating allegations that the company may be compromising safety by overworking its or its contractors' employees in an effort to return the plant to service soon. This evidence suggests that BECo's claim to be approaching readiness for restart may

^{15/} E.g., NRC Docket No. 50-293, Official Transcript of NRC Office of Nuclear Reactor Regulation, "Meeting With Boston Edison Re: Pilgrim Status and Activities Leading to Restart Readiness," pp. 13-14, 18-20 (September 24, 1987) (hereinafter "9, 24/87 NRC/BECo. Readiness Meeting"). (Testimony Submitted by Stephen J. Sweeney, President and Chief Executive Officer, Boston Edison Company, to the U.S. House of Representatives, Subcommittee on Energy Conversation and Power of the Committee on Energy and Commerce July 16, 1986, pp. 4-5 (attached hereto as "Attachment 5").

be hasty and misleading.^{16/}

**** BECo's 1987 SALP Report ****

On April 8, 1987, the NRC released a SALP Report for BECo. which was based on the results of various inspections and evaluations conducted at Pilgrim over the period from November 1, 1985 through January 31, 1987. Ratings were given for BECo's performance in twelve functional areas. In keeping with its past record, BECo. received the lowest possible ratings in five of the twelve functional areas.^{17/} It received the highest possible rating in only two functional areas.^{18/} The picture painted in the SALP report is one of a plant with "(p)oor management control," an "obscured ... chain of command and weakened accountability," and "(s)ignificant recurring program weakness ... in some functional areas, showing the effect of ... long-term problems."^{19/}

^{16/} BECo's claim of readiness should be measured against its adoption of 9/24/87 NRC/BECo. Readiness Meeting, p. 43. This tendency to ignore reality in the operation of the plant has been previously found to be undesirable. See Boston Edison Company, MDPU NO. 1009-F (1982) (BECo. denied where evidence established that it had imprudently underestimated the necessary time required to perform outage tasks).

^{17/} The five areas were: Radiological Controls, Surveillance, Fire Protection, Security and Safeguards, and Assurance of Quality.

^{18/} The two areas were: Outage Management, Modifications, and Technical Support Activities and Engineering and Corporate Technical Support.

^{19/} 1987 SALP REPORT at 8.

Of particular importance to this Petition, were SALP ratings in three areas where BECo. had previously improved its performance. In the functional areas of Surveillance, Fire Protection, and Licensing Activities, BECo. had in the past improved its ratings between periods -- in fire protection, it had gone from a "3" to a "1" between its third and fourth SALP Reports -- but by the time of the review for the 1987 SALP Report, its performance had fallen back to earlier levels.

With respect to the functional area of Security and Safeguards, the 1987 SALP Report discussed continuing hardware problems, BECo's excessive reliance upon contractors, and management's failure to give this area sufficient attention.^{20/} The report noted that BECo's corrective actions for deficiencies in this area had not generally been effective and referenced three degradations in vital area barriers that had occurred during the evaluation period.^{21/}

^{20/} Id. at 31-34.

^{21/} The Commission's regulations define a "vital area" as any area which contains:

any equipment, system, device, or material, the failure, destruction, or release of which could directly or indirectly endanger the public health and safety by exposure to radiation. Equipment or systems which would be required to function to protect public health and safety following such failure, destruction, or release are also considered vital areas. 10 C.F.R. §73.2(h) and (i) (emphasis added). Such areas are to "be located within a protected area such that access to vital equipment requires passage through at least two physical barriers." 10 C.F.R. §73.50(b)(1). Access into a protected area is to be controlled through the checking of authorization and identity at entry control points to which barriers surrounding the protected area "channel persons and material." 10 C.F.R. §73.45(b)(1)(i) and 73.50(c).

** Recent Reports of Violations **

On the basis of news reports and statements made by NRC officials at a recent meeting, it appears that BECo. has suffered from at least four significant Security and Safeguards lapses in the past six months: a misplaced gun; a misplaced set of sensitive keys; a "serious degradation in a vital area barrier;" and ineffective identification cards.^{22/} While all four alleged lapses would be significant, the latter three would be a particularly strong indication of BECo's failure to learn from its past mistakes -- nearly identical lapses have occurred in the past.^{23/}

Further, allegations have recently been made which NRC stated at a recent meeting that they are investigating that BECo. may be compromising worker and/or plant safety by requiring excessive overtime.^{24/}

III. EVIDENCE THAT INDICATES THAT A PLANT SPECIFIC
PRA FOLLOWED BY IMPLEMENTATION OF ANY INDICATED
SAFETY MODIFICATIONS SHOULD BE REQUIRED TO
PILGRIM'S RESTART.

Pilgrim is a GE Mark I design plant. As such, it has a primary containment which, by nearly unanimous agreement, has an extremely high probability of failure in the event of

^{22/} Boston Globe, September 4, 1987, p. 1; Boston Globe, September 9, 1987, p. 21; Boston Herald, September 10, 1987, p. 24.

^{23/} See 1985 SALP Report, p. 40; 1983 SALP Report, pp. 41-43; 1982 SALP Report, p. 38 (included in Attachment 3 hereto).

^{24/} Boston Globe, September 29, 1987, p. 21.

certain accidents.^{25/} This characteristic is especially critical since Mark I design reactors, such as Pilgrim, do not have the backup of a secondary containment structure which can withstand any significant position pressure. ("PWRs").^{26/} In fact, Pilgrim's so-called "containment building" is not really designed to perform a backup function. It has "blow panels" which in some design and most severe accidents would activate and create a ready path for hazardous radioactive materials to escape into the environment.^{27/} The combination of an extremely vulnerable primary containment structure, a secondary containment not designed to provide an effective backup, and the large population in the immediate vicinity of Pilgrim^{28/} compel the Governor and the Attorney General to request that the NRC modify the Pilgrim operating license to bar restart until a plant specific probabilistic risk assessment ("PRA") is performed for Pilgrim and all indicated safety modifications are implemented. Until this occurs, the operation of the plant would pose an unreasonable threat to public health and safety.^{29/}

^{25/} See NUREG-1150, Reactor Risk Reference Document, Draft for Comment, Feb. 1987, at 4-33, 4-39.

^{26/} Affidavit of Steven C. Sholly (attached hereto as Attachment 1).

^{27/} Id.

^{28/} Id.

^{29/} Id.

The Governor and the Attorney General are aware that the NRC has to date declined to order mitigative modifications for Mark I design plants.^{30/} They submit, however, that the evidence presented here -- the combination of extremely vulnerable containment structures and a large population surrounding the plant -- precludes application of NUREG-1150's finding that the probability of a large reactor accident with early fatalities is extremely remote. The NUREG-1150 findings do not reflect the amalgam of risks posed by Pilgrim.

BECo. has proposed a number of modifications as remedial actions for the plant's design deficiencies.^{31/} These actions do not, however, address the inherent defects of the plant's design in any real way. The Governor and the Attorney General do, however, submit that through its so-called "safety enhancement program," BECo. has put the question of the appropriate modifications to be made to remedy the defects of the Mark I design in issue.

^{30/} E.g., Boston Edison Company (Pilgrim Nuclear Station), DD-87-14, __ NRC __ (1987) (slip at 31-32).

^{31/} Letter with enclosures dated July 8, 1987, from Mr. Ralph G. Bird, Senior Vice President-Nuclear, Boston Edison Company, to Mr. Steven A. Varga, Director, Division of Reactor Projects, I/II, Nuclear Regulatory Commission (attached hereto as Attachment 6).

IV. EVIDENCE OF INADEQUATE EMERGENCY PREPAREDNESS

Within the past twelve months, two authoritative assessments have been made of the Pilgrim Radiological Emergency Response Plan and the state of emergency preparedness within the Emergency Planning Zone ("EPZ") for Pilgrim.^{32/} Both conclude that the plan and the state of preparedness "are not adequate to protect the health and safety of the public in the event of an accident at the Pilgrim Nuclear Power Station."^{33/} Both also concluded that the plan and the state of preparedness have significant deficiencies and suggest potential remedies for those deficiencies that will require a substantial commitment of time, resources and cooperation.^{34/} BECo. has not quarreled with these conclusions.^{35/} The Governor and the Attorney General submit that these conclusions compel immediate action by the NRC. The

^{32/} FEMA, "Self-Initiated Review and Interim Finding for the Pilgrim Nuclear Power Station, Plymouth, MA" (August 4, 1987) (hereinafter "FEMA Self-Initiated Review"); Secretary of Public Safety, "Report to the Governor on Emergency Preparedness for an Accident at the Pilgrim Nuclear Power Station" (December 16, 1986) (hereinafter "Barry Report").

^{33/} FEMA Self-Initiated Review at 1-2; Barry Report at 74.

^{34/} FEMA Self-Initiated Review, pp. 12-13, 19, 22, 29-32, 43-44; Barry Report, pp. 47-55.

^{35/} 9/24/87 NRC/BECO Readiness Meeting", pp. 49-54.

authoritative expert agencies^{36/} agree that there is no reasonable assurance that the public can or will be protected in the event of an accident at Pilgrim. It is, thus, incumbent upon the NRC to take action immediately to insure that no steps are taken by BECo. which could increase the likelihood or the consequences of an accident.^{37/}

A. THE PLANNING AND PREPAREDNESS DEFICIENCIES IDENTIFIED BY FEMA AND THE MASSACHUSETTS EXECUTIVE OFFICE OF PUBLIC SAFETY

The deficiencies of the Radiological Emergency Response Plans for Pilgrim are manifold. Although the analyses of FEMA and the Massachusetts Executive Office of Public Safety do not reach the same conclusions on all issues, the following areas of substantial deficiency have been identified by both agencies:

1. the lack of any articulated evacuation plans for public and private schools as well as day care centers;
2. the lack of any articulated evacuation plans for the special needs population;

^{36/} FEMA is explicitly recognized by the Commission as the expert Federal authority on questions of nuclear power plant offsite emergency preparedness (Memorandum of Understanding, 50 Fed. Reg., No. 75, 15,486 (April 18, 1985) and the Commission is expressly required to base its findings on off-site emergency issues on FEMA's conclusions concerning such issues. 10 C.F.R. §50.47(s)(3). The Massachusetts Secretary of Public Safety oversees the Massachusetts Civil Defense Agency and Office of Emergency Planning, which pursuant to M.G.L. c. 147, §1 is responsible for the Commonwealth's emergency activities.

^{37/} Each step of BECo's power ascension plan corresponds with a substantial increase in the probability of an accident at Pilgrim. Affidavit of Steven C. Sholly (attached hereto as Attachment 1).

3. the lack of any articulated evacuation plans for the transport dependent population;
4. the lack of identifiable public shelters for the beach population;
5. the lack of a reception center, as required in the plan, for people evacuating by the northern route;
6. the lack of real progress in planning and the diminution in the state of emergency preparedness.^{38/}

These are critical deficiencies. The plans do not even purport to provide any measure of protection for significant numbers of people: pre-school and school age children; those who require special measures to transport; and those without ready access to private transportation. They fail to address the significant beach population in an adequate fashion. They do not incorporate current or reliable evacuation time estimates ("ETEs"). Nor do they incorporate a delineated inventory of identified and identifiable shelters which are accessible to the public. Moreover an integral component of the current plans -- a northern reception center^{39/}

^{38/} FEMA Self-Initiative Review, pp. 12-13, 19, 22, 29-32, 43-44; Barry Report, pp. 47-55.

^{39/} The lack of a reception center for those evacuating to the north is as worrisome as the more general planning failures. The lack of a northern reception center indicates that even if evacuation from the EPZ were successful -- a heroic assumption in light of the assorted planning deficiencies -- those who received and followed instructions to evacuate to the north would find no facilities available at their designated destination. According to FEMA, approximately 60,000 people would be left without facilities at which to register, be monitored and decontaminated if necessary. FEMA Self-Initiated Review at 19.

-- is missing altogether. Finally, offsite exercises and drills -- the most effective means of assuring preparedness -- have not been held in years.

B. THE CURRENT STATUS OF PLANNING AND PREPAREDNESS

The specific functional deficiencies in the first four areas enumerated above, as well as the functional areas in which work must be done before any determination can be made if adequate plans can be developed, encompass the entire set of tasks required for adequate planning and preparedness:

1. Identification/Estimation of populations;
2. Identification/Estimation of resources;
3. Develop plans for emergency actions to be taken for each population with potentially available resources;
4. Obtain commitments for required resources;
5. Provide education/information to public;
6. Conduct exercises/drills.

At present, it appears that the school/daycare population has been identified but that the special needs and transport dependent populations have not.^{40/} Preliminary estimates of the resources potentially available to evacuate these populations have now been obtained, but neither plan development nor obtaining commitments of resource availability can proceed in the absence of reliable ETES.^{41/}

^{40/} Executive Summary of the Report on Emergency Preparedness For an Accident at Pilgrim Power Station (October 15, 1987) (hereinafter "Barry Report Update"), p. 2.

^{41/} Id. at 2.

While BECo. has recently -- August 18, 1987 -- delivered an ETE study to the Commonwealth's public safety officials,^{42/} the document is still being reviewed by those officials and preliminary analysis has uncovered shortcomings that will necessitate further work. It is, thus, unlikely that final ETEs will be available within the immediate future for use in developing specific plans.^{43/} This shortcoming is critical. A consequence of the unavailability of reliable ETEs is that emergency planning is effectively on hold. Even when the task of identifying/estimating populations and resources is completed, radiological emergency planning cannot in any real sense proceed without reliable ETEs and a traffic management plan. As FEMA and the NRC well recognize, a realistic set of ETEs is an essential element of a workable emergency plan. See Cincinnatti Gas & Electric Company (Wm. H. Zimmer Nuclear Power Station, Unit No. 1), ALAB-727, 17 NRC 760, 770-71 (1983).

With respect to the beach population, preliminary population estimates and sheltering data have been provided to the Commonwealth's public safety officials but, at least in the case of the sheltering survey, these materials have been found

^{42/} KLD Associates, Pilgrim Station Evacuation Time Estimates and Traffic Management Plan Update (Final Draft for Review) August 18, 1987.

^{43/} Barry Report Update, p. 2.

to be inadequate for planning purposes.^{44/}

Again, plan development and resource availability commitments, much less public education/information efforts and exercises/drills, cannot proceed usefully without reliable final ETEs and sheltering data.^{45/}

No replacement site for a northern reception center has been found^{46/} and no determination has yet been made whether an emergency plan incorporating only two reception centers would provide an adequate assurance of protection.^{47/}

44/ Barry Report Update, p. 2; Letter with enclosures from Robert J. Boulay, Director, Massachusetts Civil Defense Agency, dated September 18, 1987, to Ralph C. Bird, Executive Vice President-Nuclear, Boston Edison Company (attached hereto as Attachment 7)

45/ Barry Report Update, p. 2; See also FEMA Self-Initiated Review at 26-27:

Before FEMA and the RAC can make a determination on this (whether protective actions for the beach population are or readily can be made adequate) it must receive the following information:

1) an updated geographical description of the beaches and their capacity; 2) a detailed analysis of the beach population, including the number of permanent and temporary residents and the number of day visitors, together with their geographical dispersion; 3) an updated estimate of the length of time it would take to evacuate the beach population; and 4) a list of suitable buildings available for sheltering the beach population at each beach, including the capacities of these buildings and their distances from the beaches. If these buildings are not open to the public, the plans must clearly state how they will be made accessible and letters of agreement must be obtained as appropriate.

46/ Id.

47/ 9/24 NRC/BECO. Readiness Meeting, p. 52. But see FEMA Self-Initiated Review at 19 (The use of only two reception centers "is not likely to be logistically feasible.").

Finally, in the absence of new plans, public information/education efforts and exercises/drills cannot, by definition, occur. There are no plans to inform the public of exercises, much less to exercise. Although the provisions of 10 C.F.R. Part 50, Appendix E, Section IV.F. require that a full participation biennial emergency preparedness exercise for Pilgrim be held this year, the NRC is presently considering a request from BECo. for a one-time exemption from that requirement to allow the exercise to be postponed to the second quarter of 1988.^{48/}

IV. CONCLUSION

In light of all of the foregoing deficiencies of the current state of emergency planning and preparedness, as well as the substantial questions raised herein concerning the managerial ability of the licensee, BECo., and the safety of the Pilgrim reactor, the Governor and Attorney General submit that the NRC must take action pursuant to 10 C.F.R. §2.202 to insure that BECo. does not take any action that could increase either the risk or the consequences of an accident at Pilgrim.

Since that Pilgrim is a GE Mark I design reactor, and the EPZ population at this plant is among the highest in the country, it is evident that the deficiencies in emergency planning and preparedness are significant for Pilgrim. These

^{48/} Letter with enclosures dated September 18, 1987, from Mr. Ralph G. Bird, Senior Vice President-Nuclear, Boston Edison Company, to NRC (attached hereto as Attachment 8).

deficiencies are so substantial and their potential ramifications are so significant, that it is impossible to conclude that any interim compensating actions have or can be taken. The NRC's regulations leave it no course other than issuing an order modifying BECo's license to extend the current shut down pending the outcome of a full hearing on the significant outstanding safety issue and the development and certification by the Governor of adequate emergency plans.^{49/}

Respectively submitted,

James M. Shannon
Attorney General
Commonwealth of Massachusetts

Michael S. Dukakis
Governor
Commonwealth of Massachusetts

Dated: October 15, 1987

49/ Compare 10 C.F.R. §50.54(s)(2)(ii):

... In determining whether a shutdown or other enforcement action is appropriate, the Commission shall take into account, among other factors, whether the licensee can demonstrate to the Commission's satisfaction that the deficiencies in the plan are not significant for the plant in question, or that adequate interim compensating actions have been or will be taken promptly, or that there are other compelling reasons for continued operation.

APPENDIX I: BECo. SALP HISTORY TABULATION

<u>Inspec. Period</u>	<u>Plant Oper.</u>	<u>Radiol. Control</u>	<u>Maint.</u>	<u>Surveil.</u>	<u>Fire Prot.</u>	<u>Emergen. Prepared</u>
01/01/80 12/31/80	2	3	2	2	2	2
09/01/80 08/31/81	3	2	3	2	2	1
09/01/81 06/30/82	3	2	2	2	3	1
07/01/82 06/30/83	2	2	2	1	1	1
07/01/83 09/30/84	2	3	1	1	2	3
10/01/84 10/31/85	3	3	2	2	-	3
11/01/85 01/31/87	2	3	2	3	3	2
<u>Inspec. Period</u>	<u>Secur. Safegds</u>	<u>Out.Mgt. Mod.Act</u>	<u>Licen. Activ.</u>	<u>Eng/Corp Tech.Sup</u>	<u>Train Qual.Ef</u>	<u>Quality Assuran</u>
01/01/80 12/31/80	2	3	-	-	-	3
09/01/80 08/31/81	2	2	-	-	-	3
09/01/81 06/30/82	2	2	2	-	-	-
07/01/82 06/30/83	2	-	1	-	-	-
07/01/83 09/30/84	2	1	1	-	-	-
10/01/84 10/31/85	2	1	1	-	-	-
11/01/85 01/31/87	3	1	2	1	2	3

APPENDIX II: BECo. VIOLATIONS TABULATIONS

SEVERITY LEVEL III VIOLATIONS: 9/1/81-1/31/87

Functional Area	1981	1982	1983	1984	1985	1986	1987
Plant Operations	3						
Radiological Controls	1			2		1	
Maintenance							
Surveillance							
Fire Protection							
Emergency Preparedness		1					
Security/Safeguards	1	1	1		1		?
Outage Mgt ...							
Licensing Activities							
Training ... Eff'ness							
Assurance of Quality							
Engineer/Corp. Support							

BECo. VIOLATIONS BY SEVERITY LEVEL: 9/1/81-1/31/87

Severity Level	81/82	82/83	83/84	84/85	85/87
I					
II					
III	7	1	1	2	1
IV	9	9	18	17	21
V	20	20	6	5	6
VI	2				
Deviations	2	3	1	3	1
Total Violations	40	33	26	27	29

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE COMMISSION

In the matter of

BOSTON EDISON COMPANY

(Pilgrim Nuclear Power Station, Unit 1)

Docket No. 50-293

AFFIDAVIT OF STEVEN C. SHOLLY

Steven C. Sholly, being on oath, deposes and says as follows:

1. I am an Associate Consultant with MHB Technical Associates, 1723 Hamilton Avenue, Suite K, San Jose, California, 95125. A statement of my professional qualifications is attached hereto and marked Attachment A. In brief, I have more than six years experience in the review, analysis, interpretation, and application of probabilistic risk assessment to the analysis of safety issues related to commercial nuclear power plants, including issues related to radiological emergency planning. I have served as a member of the peer review group for the NRC publication NUREG-1050 (1984) (Probabilistic Risk Assessment (PRA) Reference Document, September 1984), and have more recently served as a member of the Containment Performance Design Objective Workshop, the Panel on ACRS Effectiveness (1985), and the Severe Accident Policy Implementation External Events Workshop (1987). I have previously testified as an expert witness on probabilistic risk assessment and emergency planning matters in NRC proceedings on the Catawba Units 1 and 2, Indian Point Units 2 and 3, and Shoreham Unit 1 nuclear plants, and also in the Public Inquiry regarding the proposed Sizewell-B nuclear plant in the United Kingdom. In addition, I have co-authored two major reviews of source term

and risk estimate issues published in NRC reports NUREG-0956 and NUREG-1150. I have also performed reviews of various technical aspects of the Shoreham, Limerick, Indian Point, Sizewell, Zion, Seabrook, Millstone-3, and Oconee-3 probabilistic risk assessments and the Vermont Yankee Containment Safety Study.

2. MHB Technical Associates ("MHB") has been requested by the Nuclear Safety Division, Department of the Attorney General, The Commonwealth of Massachusetts, to evaluate the increase in risk resulting from a startup program for return to power from the current refueling and modifications outage for the Pilgrim Nuclear Power Station, Unit 1 (PNPS-1).
3. In its current configuration (refueled) and considering the duration of the current shutdown, Pilgrim currently poses very little risk to the public health and safety. This is due to the multiplicity of systems theoretically available to inject water into the reactor vessel and due to the low decay heat level present in the fuel. In the event of a core heatup transient with the plant in its current configuration, considerable time would elapse between initiation of coolant loss and the onset of fuel damage, time during which measures could be taken to initiate coolant makeup and/or other recovery and mitigative actions. Moreover, in theory a longer time period is available within which to implement offsite protective actions due to the slower accident progression time compared with accidents at higher power levels.
4. Boston Edison Company (BECO), the licensee for Pilgrim, currently envisions restart power ascension program with a minimal number of hold points. In brief, BECO proposes to institute holds on restart (pending approval from NRC in accord with Confirmatory Action Letter No. 86-10), recovery from reactor mode switch testing prior to conducting a test for shutdown from outside the control room, and prior to movement of the scram set point above 95% power. [See, Boston Edison Company, Pilgrim Nuclear Power Station Restart Plan, pages IV-29 to IV-31.] The details of the power ascension program in Attachment 13 of the Pilgrim Nuclear Power Station Restart Plan have not yet been provided.

5. My current understanding of the BECO power ascension program is that the program would result in a relatively rapid ascension from the current shutdown condition to full-power operation. In so doing, the risk to the public health and safety posed by operations at the Pilgrim plant will be increased markedly.

6. The Commission has concluded generally that the risks from 5% power operation are negligible. [See, for example, SECY-84-155, 12 April 1984, and attachments; and letter dated 15 June 1984 from Nunzio J. Palladino to Hon. Edward J. Markey, and attachments.] The evaluations upon which the Commission has drawn these conclusions, however, were for plants with very little operating history and no spent fuel pool inventory. Clearly, Pilgrim is different in this regard, with a substantial long-half-life fission product inventory present in both the refueled reactor core and the spent fuel pool. Moreover, these evaluations did not consider the unique risks posed by accidents resulting from externally-initiated events (specifically, in this case, seismic events). In my opinion, the presence of more than 1100 spent fuel assemblies, prior operation of two-thirds of the core at equivalent full power for most of an operating cycle, and the matter of external events render the circumstances at Pilgrim sufficiently different from those previously evaluated for 5% power operation that the previous evaluations understate, perhaps significantly, the risk posed by operation of Pilgrim at 5% of full power. This conclusion is further supported by the likelihood that the primary containment will not be inerted until operation above 5% power is commenced. In my opinion, virtually any severe accident at 5% power with the containment de-inerted will result in early containment failure (due to hydrogen burn or hydrogen detonation in the primary containment, and/or other causes).

7. As power level increases, risk to the public increases. This is due to several factors, including a marked increase in volatile fission product inventory and a marked increase in decay heat level, which results in accident progression times which are much shorter than at low power levels. This reduces the amount of time available for implementation of recovery and/or mitigation

actions and reduces the amount of time available to implement offsite protective measures.

8. A full-scope probabilistic risk assessment for the Pilgrim plant has been in progress for several years. It is my understanding that this study is nearly completed. It is my expectation that this study will identify seismic initiating events as a significant contributor to core melt frequency (i.e., contributing 10% or more to core melt frequency from all causes). This expectation is based on my familiarity with seismic risk assessments performed on similar designs and performed on other plants in the general region of Pilgrim (e.g., Shoreham, Seabrook Units 1 and 2, Millstone Unit 3, and Limerick Units 1 and 2). Seismically-initiated accident sequences are accompanied by potentially severe impacts on offsite emergency response even when there are fully-approved and operational emergency plans. In the case of Pilgrim, the current status of emergency planning is such that there is not adequate assurance that protective actions can and will be taken in the event of an accident. Given the more severe conditions of a seismically-initiated accident scenario, this conclusion is all the more applicable.
9. A study of risk at 25% power for the Shoreham nuclear plant, which possesses a nuclear steam supply system which is grossly similar to Pilgrim, indicates that the core melt frequency for operations at up to 25% of full power may not differ dramatically from the core melt frequency at full power. The 25% power PRA estimates a core melt frequency of 2.8×10^{-5} per reactor-year. [See, E.T. Burns, S. Mays, and T. Mairs, Probabilistic Risk Assessment of the Shoreham Nuclear Power Station: Initial Power Operation Limited to 25% of Full Power, Delian Corporation, prepared for Long Island Lighting Company, April 1987, page 4-12.] The full power PRA analyses for Shoreham estimated a core melt frequency of about 6.5×10^{-5} per reactor-year. [See, Science Applications, Inc., Final Report: Probabilistic Risk Assessment, Shoreham Nuclear Power Station, prepared for Long Island Lighting Company, 24 June 1983, page 4; and V. Joksimovich, et al., Major Common-Cause Initiating Events Study: Shoreham Nuclear Power Station, NUS Corporation, NUS Report No. NUS-4617, prepared for Long Island Lighting Company, February 1985, page 1-3]

This represents less than a factor of three difference in the likelihood of a core melt accident at 25% power versus full power. Although this assessment is for Shoreham and not for Pilgrim, it suggests that the likelihood of an accident is not markedly different for 25% power versus 100% power.

10. Further, a limited-scope PRA of Shoreham at 5% power was prepared for LILCO. This study, which did not include external events, concluded that the core melt frequency for 5% power operation was about 4.9×10^{-6} per reactor-year. [See, Delian Corporation and Science Applications, Inc., *Probabilistic Risk Assessment, Shoreham Nuclear Power Station, Low Power Operation Up to 5% of Full Power*, prepared for Long Island Lighting Company, draft, May 1984, page 78.] This indicates that core melt frequency at 5% power is significantly reduced from 25% power or full power, by a factor of roughly 20, but not nearly as significantly reduced as previously predicted by the NRC staff, which predicted a reduction factor of 1,000 or more. ^{1/} Moreover, the 5% power reduction factor of 20 is an underestimate since the 5% power estimates do not include external events.
11. The 5%, 25%, and 100% power PRA studies for Shoreham indicate, in my opinion, that the core power level for Pilgrim will have at best a moderate impact on the likelihood of an accident. Considering the uncertainties involved, the likelihood of an accident may be nearly indistinguishable at the various power levels indicated above. Moreover, the Shoreham results are lower than the core melt frequency estimates for many other plants. A Brookhaven National Laboratory review of the Shoreham PRA for internal events only estimated a core melt frequency of 1×10^{-4} per reactor-year. An average value for full-scope PRAs completed to date is of the order of 3×10^{-4} per reactor-year.

^{1/} The NRC staff, in SECY-84-156, predicted core melt frequency reduction factors for various classes of BWR accidents ranging from 1,000 to 100,000. [See, SECY-84-156, Enclosure 1, "Staff Review Process for 5 Percent Power Operation", page 2.] Thus, in the aggregate, the NRC staff would have expected a core melt frequency reduction of at least 1,000, compared with the Shoreham value of 20. The results for Shoreham indicate a reduction factor approximately 50 times less than the NRC staff expected based on engineering judgment.

12. These results are especially significant for a plant with a containment design similar to Pilgrim. Pilgrim employs a steel Mark I pressure suppression containment. Such containments have been estimated in a variety of studies sponsored by IDCOR, NRC, and utilities to have an early containment failure probability -- given a severe accident -- in a range from 10-90%. This means that there is a significant chance that, given a severe accident, the accident will be accompanied by a large early release of radioactivity to the environment.

13. The Pilgrim plant, like all Mark I containment design plants, also employs a secondary containment, usually referred to as a reactor building. This structure is not designed to withstand the high internal pressures which would accompany a severe accident, and is unlikely to survive in a leak-tight condition following primary containment failure. High pressure in the secondary containment due to a severe accident would be produced by a combination of blowdown due to primary containment failure, primary containment leakage, primary containment venting, and burning of combustible gases. Indeed, Mark I plants are designed with both internal and external "blow-out panels" which are designed to relieve pressure. In the case of Pilgrim, there are blow-out panels at the refueling deck elevation which relieve pressure directly to the environment. In my opinion, there is little basis for assuming that releases from the primary containment will be significantly mitigated by the presence of the secondary containment.

13. Based on the above considerations, it is my opinion that Pilgrim Unit 1 should not be restarted until the offsite emergency response plans are upgraded and evaluated to adequately protect the public health and safety. Further, it is my recommendation that BECO be required to promptly submit the Pilgrim probabilistic risk assessment study to the NRC for public review and evaluation prior to restart. The review of such a study should indicate whether there

remain significant operational risks which must be ameliorated in order to provide adequate protection to the public health and safety.

Steven C. Sholly
Steven C. Sholly
Associate Consultant

GENERAL ACKNOWLEDGMENT

NO. 01

State of California
County of Santa Clara } SS.

On this the 14th day of October 1987, before me,

Myrna L. Barry
the undersigned Notary Public, personally appeared

Steven C. Sholly



personally known to me
 proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) 15 subscribed to the within instrument, and acknowledged that he executed it. WITNESS my hand and official seal.

Myrna L. Barry
Notary's Signature

ATTACHMENT A

PROFESSIONAL QUALIFICATIONS OF STEVEN C. SHOLLY

STEVEN C. SHOLLY
MHB Technical Associates
1723 Hamilton Avenue
Suite K
San Jose, California 95125
(408) 266-2716

EXPERIENCE:

September 1985 - PRESENT

Associate - MHB Technical Associates, San Jose, California

Associate in energy consulting firm that specializes in technical and economic assessments of energy production facilities, especially nuclear, for local, state, and federal governments and private organizations. MHB is extensively involved in regulatory proceedings and the preparation of studies and reports. Conduct research, write reports, participate in discovery process in regulatory proceedings, develop testimony and other documents for regulatory proceedings, and respond to client inquiries. Clients have included: State of California, State of New York, State of Illinois.

February 1981 - September 1985

Technical Research Associate and Risk Analyst - Union of Concerned Scientists, Washington, D.C.

Research associate and risk analyst for public interest group based in Cambridge, Massachusetts, that specializes in examining the impact of advanced technologies on society, principally in the areas of arms control and energy. Technical work focused on nuclear power plant safety, with emphasis on probabilistic risk assessment, radiological emergency planning and preparedness, and generic safety issues. Conducted research, prepared reports and studies, participated in administrative proceedings before the U.S. Nuclear Regulatory Commission, developed testimony, analyzed NRC rule-making proposals and draft reports and prepared comments thereon, and responded to inquiries from sponsors, the general public, and the media. Participated as a member of the Panel on ACRS Effectiveness (1985), the Panel on Regulatory Uses of Probabilistic Risk Assessment (Peer Review of NUREG-1050; 1984), Invited Observer to NRC Peer Review meetings on the source term reassessment (BMI-2104; 1983-1984), and the Independent Advisory Committee on Nuclear Risk for the Nuclear Risk Task Force of the National Association of Insurance Commissioners (1984).

January 1980 - January 1981

Project Director and Research Coordinator - Three Mile Island Public Interest Resource Center, Harrisburg, Pennsylvania

Provided administrative direction and coordinated research projects for a public interest group based in Harrisburg, Pennsylvania, centered around issues related to the Three Mile Island Nuclear Power Plant. Prepared fundraising proposals, tracked progress of U.S. Nuclear Regulatory Commission, U.S. Department of Energy, and General Public Utilities activities concerning cleanup of Three Mile Island Unit 2 and preparation for restart of Three Mile Island Unit 1, and monitored developments related to emergency planning, the financial health of General Public Utilities, and NRC rulemaking actions related to Three Mile Island.

July 1978 - January 1980

Chief Biological Process Operator - Wastewater Treatment Plant, Derry Township Municipal Authority, Hershey, Pennsylvania

Chief Biological Process Operator at a 2.5 million gallon per day tertiary, activated sludge, wastewater treatment plant. Responsible for biological process monitoring and control, including analysis of physical, chemical, and biological test results, process fluid and mass flow management, micro-biological analysis of activated sludge, and maintenance of detailed process logs for input into state and federal reports on treatment process and effluent quality. Received certification from the Commonwealth of Pennsylvania as a wastewater treatment plant operator. Member of Water Pollution Control Association of Pennsylvania, Central Section, 1980.

July 1977 - July 1978

Wastewater Treatment Plant Operator - Borough of Lemoyne, Lemoyne, Pennsylvania

Wastewater treatment plant operator at 2.0 million gallon per day secondary, activated sludge, wastewater treatment plant. Performed tasks as assigned by supervisors, including simple physical and chemical tests on wastewater streams, maintenance and operation of plant equipment, and maintenance of the collection system.

September 1976 - June 1977

Science Teacher - West Shore School District, Camp Hill, Pennsylvania

Taught Earth and Space Science at ninth grade level. Developed and implemented new course materials on plate tectonics, environmental geology, and space science. Served as Assistant Coach of the district gymnastics team.

September 1975 - June 1976

Science Teacher - Carlisle Area School District, Carlisle, Pennsylvania

Taught Earth and Space Science and Environmental Science at ninth grade level. Developed and implemented new course materials on plate tectonics, environmental geology, noise pollution, water pollution, and energy. Served as Advisor to the Science Projects Club.

EDUCATION:

B.S., Education, majors in Earth and Space Science and General Science, minor in Environmental Education, Shippensburg State College, Shippensburg, Pennsylvania, 1975.

Graduate coursework in Land Use Planning, Shippensburg State College, Shippensburg, Pennsylvania, 1977-1978.

PUBLICATIONS:

1. "Determining Mercalli Intensities from Newspaper Reports," Journal of Geological Education, Vol. 25, 1977.
2. A Critique of: An Independent Assessment of Evacuation Times for Three Mile Island Nuclear Power Plant, Three Mile Island Public Interest Resource Center, Harrisburg, Pennsylvania, January 1981.
3. A Brief Review and Critique of the Rockland County Radiological Emergency Preparedness Plan, Union of Concerned Scientists, prepared for Rockland County Emergency Planning Personnel and the Chairman of the County Legislature, Washington, D.C., August 17, 1981.
4. The Necessity for a Prompt Public Alerting Capability in the Plume Exposure Pathway EPZ at Nuclear Power Plant Sites, Union of Concerned Scientists, Critical Mass Energy Project, Nuclear Information and Resource Service, Environmental Action, and New York Public Interest Research Group, Washington, D.C., August 27, 1981. *
5. "Union of Concerned Scientists, Inc., Comments on Notice of Proposed Rulemaking, Amendment to 10 CFR 50, Appendix E, Section IV.D.3," Union of Concerned Scientists, Washington, D.C., October 21, 1981. *
6. "The Evolution of Emergency Planning Rules," in The Indian Point Book: A Briefing on the Safety Investigation of the Indian Point Nuclear Power Plants, Anne Witte, editor, Union of Concerned Scientists (Washington, D.C.) and New York Public Interest Research Group (New York, NY), 1982.
7. "Union of Concerned Scientists Comments, Proposed Rule, 10 CFR Part 50, Emergency Planning and Preparedness: Exercises, Clarification of Regulations, 46 F.R. 61134," Union of Concerned Scientists, Washington, D.C., January 15, 1982. *

8. Testimony of Robert D. Pollard and Steven C. Sholly before the Subcommittee on Energy and the Environment, Committee on Interior and Insular Affairs, U.S. House of Representatives, Middletown, Pennsylvania, March 29, 1982, available from the Union of Concerned Scientists.
9. "Union of Concerned Scientists Detailed Comments on Petition for Rulemaking by Citizen's Task Force, Emergency Planning, 10 CFR Parts 50 and 70, Docket No. PRM-50-31, 47 F.R. 12639," Union of Concerned Scientists, Washington, D.C., May 24, 1982.
10. Supplements to the Testimony of Ellyn R. Weiss, Esq., General Counsel, Union of Concerned Scientists, before the Subcommittee on Energy Conservation and Power, Committee on Energy and Commerce, U.S. House of Representatives, Union of Concerned Scientists, Washington, D.C., August 16, 1982.
11. Testimony of Steven C. Sholly, Union of Concerned Scientists, Washington, D.C., on behalf of the New York Public Interest Research Group, Inc., before the Special Committee on Nuclear Power Safety of the Assembly of the State of New York, hearings on Legislative Oversight of the Emergency Radiologic Preparedness Act, Chapter 708, Laws of 1981, September 2, 1982.
12. "Comments on 'Draft Supplement to Final Environmental Statement Related to Construction and Operation of Clinch River Breeder Reactor Plant'," Docket No. 50-537, Union of Concerned Scientists, Washington, D.C., September 13, 1982. *
13. "Union of Concerned Scientists Comments on 'Report to the County Commissioners', by the Advisory Committee on Radiological Emergency Plan for Columbia County, Pennsylvania," Union of Concerned Scientists, Washington, D.C., September 15, 1982.
14. "Radiological Emergency Planning for Nuclear Reactor Accidents," presented to Kernenergie Ontmanteld Congress, Rotterdam, The Netherlands, Union of Concerned Scientists, Washington, D.C., October 8, 1982.
15. "Nuclear Reactor Accident Consequences: Implications for Radiological Emergency Planning," presented to the Citizen's Advisory Committee to Review Rockland County's Own Nuclear Evacuation and Preparedness Plan and General Disaster Preparedness Plan, Union of Concerned Scientists, Washington, D.C., November 19, 1982.
16. Testimony of Steven C. Sholly before the Subcommittee on Oversight and Investigations, Committee on Interior and Insular Affairs, U.S. House of Representatives, Washington, D.C., Union of Concerned Scientists, December 13, 1982.
17. Testimony of Gordon R. Thompson and Steven C. Sholly on Commission Question Two, Contentions 2.1(a) and 2.1(d), Union of Concerned Scientists and New York Public Interest Research Group, before the U.S. Nuclear Regulatory Commission Atomic Safety and Licensing Board, in the Matter of Consolidated Edison Company of New York (Indian Point Unit 2) and the Power Authority of the State of New York (Indian Point Unit 3), Docket Nos. 50-247-SP and 50-286-SP, December 28, 1982. *

18. Testimony of Steven C. Sholly on the Consequences of Accidents at Indian Point (Commission Question One and Board Question 1.1, Union of Concerned Scientists and New York Public Interest Research Group, before the U.S. Nuclear Regulatory Commission Atomic Safety and Licensing Board, in the Matter of Consolidated Edison Company of New York (Indian Point Unit 2) and the Power Authority of the State of New York (Indian Point Unit 3), Docket Nos. 50-247-SP and 50-286-SP, February 7, 1983, as corrected February 16, 1983. *
19. Testimony of Steven C. Sholly on Commission Question Five, Union of Concerned Scientists and New York Public Interest Research Group, before the U.S. Nuclear Regulatory Commission Atomic Safety and Licensing Board, in the Matter of Consolidated Edison Company of New York (Indian Point Unit 2) and the Power Authority of the State of New York (Indian Point Unit 3), Docket Nos. 50-247-SP and 50-286-SP, March 22, 1983. *
20. "Nuclear Reactor Accidents and Accident Consequences: Planning for the Worst," Union of Concerned Scientists, Washington, D.C., presented at Critical Mass '83, March 26, 1983.
21. Testimony of Steven C. Sholly on Emergency Planning and Preparedness at Commercial Nuclear Power Plants, Union of Concerned Scientists, Washington, D.C., before the Subcommittee on Nuclear Regulation, Committee on Environment and Public Works, U.S. Senate, April 15, 1983, (with "Union of Concerned Scientists' Response to Questions for the Record from Senator Alan K. Simpson," Steven C. Sholly and Michael E. Faden).
22. "PRA: What Can it Really Tell Us About Public Risk from Nuclear Accidents?," Union of Concerned Scientists, Washington, D.C., presentation to the 14th Annual Meeting, Seacoast Anti-Pollution League, May 4, 1983.
23. "Probabilistic Risk Assessment: The Impact of Uncertainties on Radiological Emergency Planning and Preparedness Considerations," Union of Concerned Scientists, Washington, D.C., June 28, 1983.
24. "Response to GAO Questions on NRC's Use of PRA," Union of Concerned Scientists, Washington, D.C., October 6, 1983, attachment to letter dated October 6, 1983, from Steven C. Sholly to John E. Bagnulo (GAO, Washington, D.C.).
25. The Impact of "External Events" on Radiological Emergency Response Planning Considerations, Union of Concerned Scientists, Washington, D.C., December 22, 1983, attachment to letter dated December 22, 1983, from Steven C. Sholly to NRC Commissioner James K. Asselstine.
26. Sizewell 'B' Public Inquiry, Proof of Evidence on: Safety and Waste Management Implications of the Sizewell PWR, Gordon Thompson, with supporting evidence by Steven Sholly, on behalf of the Town and Country Planning Association, February 1984, including Annex G, "A review of Probabilistic Risk Analysis and its Application to the Sizewell PWR," Steven Sholly and Gordon Thompson, (August 11, 1983), and Annex O, "Emergency Planning in the UK and the US: A Comparison," Steven Sholly and Gordon Thompson (October 24, 1983).

27. Testimony of Steven C. Sholly on Emergency Planning Contention Number Eleven, Union of Concerned Scientists, Washington, D.C., on behalf of the Palmetto Alliance and the Carolina Environmental Study Group, before the U.S. Nuclear Regulatory Commission Atomic Safety and Licensing Board, in the Matter of Duke Power Company, et. al. (Catawba Nuclear Station, Units 1 and 2), Docket Nos. 50-413 and 50-414, April 16, 1984. *
28. "Risk Indicators Relevant to Assessing Nuclear Accident Liability Premiums," in Preliminary Report to the Independent Advisory Committee to the NAIC Nuclear Risk Task Force, December 11, 1984, Steven C. Sholly, Union of Concerned Scientists, Washington, D.C.
29. "Union of Concerned Scientists' and Nuclear Information and Resource Service's Joint Comments on NRC's Proposal to Bar from Licensing Proceedings the Consideration of Earthquake Effects on Emergency Planning," Union of Concerned Scientists and Nuclear Information and Resource Service, Washington, D.C., Diane Curran and Elynn R. Weiss (with input from Steven C. Sholly), February 28, 1985. *
30. "Severe Accident Source Terms: A Presentation to the Commissioners on the Status of a Review of the NRC's Source Term Reassessment Study by the Union of Concerned Scientists," Union of Concerned Scientists, Washington, D.C., April 3, 1985. *
31. "Severe Accident Source Terms for Light Water Nuclear Power Plants: A Presentation to the Illinois Department of Nuclear Safety on the Status of a Review of the NRC's Source Term Reassessment Study (STRS) by the Union of Concerned Scientists," Union of Concerned Scientists, Washington, D.C., May 13, 1985.
32. The Source Term Debate: A Review of the Current Basis for Predicting Severe Accident Source Terms with Special Emphasis on the NRC Source Term Reassessment Program (NUREG-0956), Union of Concerned Scientists, Cambridge, Massachusetts, Steven C. Sholly and Gordon Thompson, January 1986.
33. Direct Testimony of Dale G. Bridenbaugh, Gregory C. Minor, Lynn K. Price, and Steven C. Sholly on behalf of State of Connecticut Department of Public Utility Control, Prosecutorial Division and Division of Consumer Counsel, regarding the prudence of expenditures on Millstone Unit III, February 18, 1986.
34. Implications of the Chernobyl-4 Accident for Nuclear Emergency Planning for the State of New York, prepared for the State of New York Consumer Protection Board, by MHB Technical Associates, June 1986.
35. Review of Vermont Yankee Containment Safety Study and Analysis of Containment Venting Issues for the Vermont Yankee Nuclear Power Plant, prepared for New England Coalition on Nuclear Pollution, Inc., December 16, 1986.

36. Affidavit of Steven C. Sholly before the Atomic Safety and Licensing Board, in the matter of Public Service Company of New Hampshire, et al., regarding Seabrook Station Units 1 and 2 Off-site Emergency Planning Issues, Docket Nos. 50-443-OL & 50-444-OL, January 23, 1987.
37. Direct Testimony of Richard B. Hubbard and Steven C. Sholly on behalf of California Public Utilities Commission, regarding Diablo Canyon Rate Case, PG&E's Failure to Establish Its Committed Design QA Program, Application Nos. 84-06-014 and 85-08-025, Exhibit No. 10,935, March, 1987.
38. Testimony of Gregory C. Minor, Steven C. Sholly et. al. on behalf of Suffolk County, regarding LILCO's Reception Centers (Planning Basis), before the Atomic Safety and Licensing Board, in the matter of Long Island Lighting Company, Shoreham Nuclear Power Station Unit 1, Docket No. 50-322-OL-3, April 13, 1987.
39. Rebuttal Testimony of Gregory C. Minor and Steven C. Sholly on behalf of Suffolk County regarding LILCO's Reception Centers (Addressing Testimony of Lewis G. Hulman), Docket No. 50-322-OL-3, May 27, 1987.
40. Review of Selected Aspects of NUREG-1150, "Reactor Risk Reference Document," prepared for the Illinois Department of Nuclear Safety by MHB Technical Associates, September 1987.

* Available from the U.S. Nuclear Regulatory Commission, Public Document Room, Lobby, 1717 H Street, N.W., Washington, D.C.



CONNECTICUT YANKEE

On April 16, the plant shutdown because of problems with turbine control valve #4. After chemistry holds and a load runback, the plant reached full power (94%) on April 21st. The Institute for Nuclear Power Operations (INPO) will conduct its annual critique of plant operations beginning on June 8th.

MAINE YANKEE

Maine Yankee shutdown for refueling is proceeding generally according to schedule with startup expected in early June. Very small cracks found in the disks of both low pressure turbine rotors have necessitated the replacement of one and the repair of the other.

YANKEE

Yankee began its 18th refueling on May 2nd. The last cycle of the plant produced more than 2 million megawatthours over a 17 month period with a capacity factor of 93 percent.

PILGRIM

Pilgrim remained off-line during the month.

VERMONT YANKEE

On April 4, Vermont Yankee came down in power and took the turbine off-line to repair a small steam leak in a main steam drain line. The plant came back on-line the same day and operated at full power for the remainder of the month.

MILLSTONE 1 & 2

Millstone Unit 1 operated routinely for the month of April. A scheduled refueling outage will begin in mid-June and last for approximately 10 weeks. Millstone Unit 2 operated routinely except for a trip on April 16 due to a generator exciter field circuit breaker opening on presumed bistable transformer fault indication. Instruments in place to monitor the suspect bistable. The unit returned to service after a 20 hour outage on April 18.

MILLSTONE 3

Millstone Unit 3 returned to service after a scheduled outage. After startup on April 11, the unit tripped on the next day while at 10 percent power level due to steam generator low level when turbine driven feed pump oscillated. Feedwater regulating control valve failed to open on demand due to a control air leak. The unit returned to service on April 14 after being out for 29 hours.





UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
631 PARK AVENUE
KING OF PRUSSIA, PENNSYLVANIA 19406

AUG 27 1986

Docket No. 50-293

Boston Edison Company M/C Nuclear
ATTN: Mr. James M. Lydon
Chief Operating Officer
800 Boylston Street
Boston, Massachusetts 02199

Gentlemen:

Subject: Confirmatory Action Letter 86-10

This letter is to provide further guidance on the requirements we expect to be met prior to the restart of the Pilgrim plant. We acknowledge receipt of Boston Edison Company's (BECO) letter of June 16, 1986, in response to Confirmatory Action Letter (CAL) 86-10. Your actions with regard to the issues in CAL 86-10 appear to be thorough and technically sound. My staff has a few remaining questions, which have been discussed with your staff and which will be documented in Inspection Report 50-293/86-25.

In addition to the specific plant hardware issues involved with CAL 86-10, several other issues have been identified that require resolution prior to restart of the Pilgrim plant. Specific technical issues of concern include: overdue surveillances, malfunction of recirculation motor generator set field breakers, seismic qualification of emergency diesel generator differential relays, and completion of Appendix R modifications. Please be prepared to discuss these issues at our next management meeting at the plant on September 9, 1986. We would also like to hear at this meeting the scope and status of all your programs related to restart of Pilgrim. These include (a) the results of your six week action plan for improvements, (b) the role of BECO safety review committees, including the Program For Excellence Task Force, in assessing readiness for restart, and (c) the readiness of the plant and corporate staff to support plant startup, testing, and operations.

In light of the number and scope of the outstanding issues, I am not prepared to approve restart of the Pilgrim facility until you provide a written report that documents BECO's formal assessment of the readiness for restart operation. This assessment should include your detailed check list for assuring that all outstanding items have been satisfactorily resolved and that plant systems have been restored and prepared for operation. A formal restart program and schedule should also be submitted for NRC review and approval. This program should include hold points at appropriate stages such as criticality, completion of mode switch testing, and at specific milestones during ascension to full power. Authorization to proceed beyond each hold point will be contingent upon my approval and will be based on my staff's evaluation of the operational performance of the plant. We will have substantially augmented NRC inspection coverage during this restart period.

Please plan to submit your readiness assessment and restart program and schedule at least forty-five days before your planned startup from the current outage. My decision on restart will be based in part on our review of these documents.

Your cooperation is appreciated.

Sincerely,

Thomas E. Murley

Thomas E. Murley
Regional Administrator

cc:

L. Oxsen, Vice President, Nuclear Operations
A. E. Pedersen, Station Manager
Paul Levy, Chairman, Department of Public Utilities
Edward R. MacCormack, Senior Regulatory Affairs and Program Engineer
Chairman, Board of Selectmen
Plymouth Civil Defense Director
The Honorable E. J. Markey
J. D. Keyes
Senator Edward P. Kirby
The Honorable Peter V. Forman
Sharon Pollard
Public Document Room (PDR)
Local Public Document Room (LPDR)
Nuclear Safety Information Center (NSIC)
NRC Resident Inspector
Commonwealth of Massachusetts (2)



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
631 PARK AVENUE
KING OF PRUSSIA, PENNSYLVANIA 19406

APR 08 1997

Docket No. 50-293

Boston Edison Company M/C Nuclear
ATTN: Mr. Ralph Bird
Senior Vice President - Nuclear
800 Boylston Street
Boston, Massachusetts 02199

Gentlemen:

Subject: Systematic Assessment of Licensee Performance (SALP) Report
No. 50-293/86-99

The Region I SALP Board has reviewed and evaluated the performance of activities at the Pilgrim Nuclear Power Station for the period November 1, 1985 through January 31, 1987. The results are presented in the enclosed report. A meeting to discuss this assessment will be scheduled for a mutually acceptable date. The meeting will be held on or near the site so that appropriate senior corporate management and plant officials can discuss with us the strengths and weaknesses noted. It is our intent that this meeting be combined with the periodic management meeting to review improvement program status.

The SALP Board identified significant recurring program weaknesses in some functional areas. Improvements, such as in the area of emergency preparedness, were also noted. However, the SALP Board found the rate of such change was slow during most of the assessment period.

We recognize that the Boston Edison Company (BECO) has made significant staffing and hardware commitments to improve performance at the Pilgrim Station and we believe they are beginning to have a positive impact. As you are aware, the NRC is looking for progress in correcting the previously identified long term problems at the Pilgrim Station prior to plant restart, particularly in those functional areas with a Category 3 rating.

In preparation for the SALP meeting, please be prepared to discuss your evaluation of our assessment and the status of your performance improvement programs. Any comments you may have regarding our report may be discussed at the meeting. Additionally, you may provide written comments within 30 days after the meeting. Following our meeting and receipt of your written response, the enclosed report, your response, and a summary of our findings and planned actions will be placed in the NRC Public Document Room.

TABLE 4
ENFORCEMENT SUMMARY (11/01/85 - 01/31/87)
PILGRIM NUCLEAR POWER STATION

A. Number and Severity Level of Violations

Severity Level I	0
Severity Level II	0
Severity Level III	1
Severity Level IV	21
Severity Level V	6
Deviation	1
Total	29

B. Violations Vs. Functional Area

Functional Areas	Severity Levels						Total
	I	II	III	IV	V	Dev	
1. Plant Operations	-	-	-	-	1	-	1
2. Radiological Controls	-	-	1	3	-	-	4
3. Maintenance	-	-	-	1	-	-	1
4. Surveillance	-	-	-	6	3	-	9
5. Fire Protection	-	-	-	5	-	1	6
6. Emergency Preparedness	-	-	-	-	-	-	0
7. Security Safeguards	-	-	-	1	1	-	2
8. Outage Management and Modification Activities	-	-	-	1	1	-	2
9. Licensing Activities	-	-	-	-	-	-	0
10. Training and Qualification Effectiveness	-	-	-	-	-	-	0
11. Assurance of Quality	-	-	-	4	-	-	4
12. Engineering and Corporate Technical Support	-	-	-	-	-	-	-
Totals	0	0	1	21	6	1	29

TABLE 4 (Continued)

C. Summary

Inspection Report Number	Severity Level	Functional Area	Violation
85-32	V	Surveillance	Instrument channel tests were not being performed monthly for the reactor building vent and stack waste gas monitors.
85-32	V	Security Safeguards	Failure to perform a proper search of a package brought into the protected area.
86-01	V	Plant Operations	Post trip review 86-01 and 86-02 lacked required recorder charts. Inadequate control room log entries on disabled annunciators.
86-04	III	Radiological Controls	A waste shipment of solid metallic oxides on non-compacted trash lacked required strong packaging and quality control measures.
86-06	IV	Surveillance	Replacement squib charges were installed in the standby liquid control system from a batch that had not been tested during a manual initiation of the Standby Liquid Control System.
86-10	IV	Radiological Controls	Radiation surveys of packaged irradiated reactor components were not documented on appropriate radiation survey forms and maps.
86-10	IV	Assurance of Quality	Quality control measures were not taken in transferring radioactive waste shipments.

TABLE 4 (Continued)

C. Summary

Inspection Report Number	Severity Level	Functional Area	Violation
86-14	IV	Assurance of Quality	Previously identified inadequacies involving surveillance testing of the high pressure coolant injection system were not corrected for six months.
86-14	V	Surveillance	Failure to properly control measuring and test equipment.
86-21	IV	Surveillance	Battery rated load discharge Test procedure was not updated to reflect system alterations and restorations.
86-25	IV	Assurance of Quality	Failure and Malfunction Report was not completed by engineering personnel after they identified deficient station fire barriers.
86-25	V	Surveillance	Surveillance tests were performed without independent verification of system response and system restoration.
86-25	Deviation	Fire Protection	Failure to comply with the commitment to conduct quarterly fire brigade drills for all fire brigade members.
86-34	IV	Security Safeguards	Improper package search and inadequate follow up.
86-36	IV	Fire Protection	Fire brigade members had not received the required training.
86-36	IV	Fire Protection	Fire watches failed to perform the required hourly patrol of the motor generator set room.

TABLE 4 (Continued)

C. Summary

Inspection Report Number	Severity Level	Functional Area	Violation
86-37	IV	Fire Protection	Inadequate fire brigade drill.
86-37	IV	Modifications	Safety-related modifications were not performed in accordance with applicable design requirements.
86-38	IV	Fire Protection	Adequate procedures and drawings had not been established for the station fire water system.
86-44	IV	Radiological Controls	Failure to implement a radiological control procedure for checking vehicles leaving the site.
87-01	IV	Surveillance	Failure to adhere to the procedure governing surveillance testing of the Post Accident Sampling System (PASS) system.
87-01	IV	Maintenance	Lack of procedure guidance on maintenance of the heat tracing control circuit relays for the PASS system.
87-03	IV	Fire Protection	Failure to take required action for inoperable fire protection equipment.
87-03	IV	Radiological Controls	Failure to control a master key to all locked high radiated areas.
87-03	IV	Assurance of Quality	Failure and Malfunction Report not completed after a safety-related bus transfer did not occur during a surveillance test.

TABLE 4 (Continued)

C. Summary

Inspection Report Number	Severity Level	Functional Area	Violation
87-04	IV	Surveillance	A surveillance test on Standby Gas Treatment System failed to meet the intent of the Tech Spec requirements.
87-04	IV	Surveillance	Failure to calibrate measuring and test equipment.
87-04	V	Modification	Performing post-modification test on the refuel bridge without approved procedure changes.
87-04	IV	Surveillance	Master test program procedures do not adequately address surveillance test and post modification test programs.



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KING OF PRUSSIA, PENNSYLVANIA 19406

MAY 23 1986

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MAY 30 1986

E. P. D.

Docket No. 50-293

Boston Edison Company M/C Nuclear
ATTN: Mr. William D. Harrington
Senior Vice President, Nuclear
800 Boylston Street
Boston, Massachusetts 02199

Gentlemen:

Subject: Systematic Assessment of Licensee Performance (SALP)
Report No. 50-293/85-99

This letter refers to the Systematic Assessment of Licensee Performance (SALP) of the Pilgrim Nuclear Power Station for the period of October 1, 1984 through October 31, 1985, initially forwarded to you by our February 18, 1986 letter (Enclosure 1). This SALP evaluation was discussed with you and your staff at a meeting held in Plymouth, Massachusetts on March 5, 1986 (see Enclosure 2 for attendees). We have reviewed your March 26, 1986 written comments (Enclosure 3) and herewith transmit the final report (Enclosure 4).

Overall, your performance in the operation of the facility was found acceptable although some areas were only minimally acceptable.

As projected in our letter of February 18, 1986, a special in-depth team inspection was conducted from February 18 to March 7, 1986 (Inspection Report No. 50-293/86-06) to determine the underlying reasons for the poor performance discussed above. The team found that improvements were inhibited by (1) incomplete staffing, in particular operators and key mid-level supervisory personnel, (2) a prevailing view in the organization that the improvements made to date have corrected the problems, (3) reluctance, by management, to acknowledge some problems identified by the NRC, and (4) dependence on third parties to identify problems rather than implementing an effective program for self-identification of weaknesses. We believe these findings confirmed the SALP Board conclusions.

We acknowledge your discussion of program and staffing improvements in plant operations, radiological controls and emergency preparedness. However, we believe that the success of your programs depends upon resolution of the four principal factors inhibiting improvement noted above which, in turn, depends heavily on management attitudes and aggressive followup. In this regard we request that you be prepared to discuss the scope, content and schedule of each improvement program at a management meeting scheduled for 1:00 p.m. on June 12, 1986 at the NRC Region I Office.

TABLE 4

ENFORCEMENT SUMMARY (10/1/84 - 10/31/85)

PILGRIM NUCLEAR POWER STATION

<u>FUNCTIONAL AREAS</u>	<u>Severity Levels</u>						<u>Total</u>
	<u>I</u>	<u>II</u>	<u>III</u>	<u>IV</u>	<u>V</u>	<u>DEV</u>	
A. Plant Operations	-	-	-	4	2	-	6
B. Radiological Controls	-	-	1	1	1	2	5
C. Maintenance & Modifications	-	-	-	1	-	-	1
D. Surveillance	-	-	-	9	2	1	12
E. Emergency Preparedness	-	-	-	2	-	-	2
F. Security & Safeguards	-	-	1	-	-	-	1
G. Refueling & Outage Management	-	-	-	-	-	-	0
H. Licensing Activities	-	-	-	-	-	-	0
Totals by Severity Level	0	0	2	17	5	3	27

TABLE 5

ENFORCEMENT DATAPILGRIM NUCLEAR POWER STATION

<u>Insp. No.</u>	<u>Insp. Date</u>	<u>Severity Level</u>	<u>Functional Area</u>	<u>Violation</u>
84-36	11/1-11/85	IV	Plant Operations	Failure to conduct an adequate shift turnover for control room personnel during refueling
		IV	Plant Operations	Failure to continuously monitor source range monitors during refueling
84-39	11/21-12/31/84	IV	Surveillance	Failure to promptly identify conditions adverse to quality (i.e. failure to initiate Failure and Malfunction Reports)
84-41	12/10-13/84	IV	Emergency Preparedness	Failure to disseminate emergency planning information
		IV	Emergency Preparedness	Failure to update the emergency plan and procedures
84-44	12/18-19/84	III	Radiological Controls	Failure to follow radiation work permit instructions and failure to establish a procedure for a remote reading teledosimetry system
85-01	1/1-31/85	V	Plant Operations	Failure to maintain control room staffing at levels required by 10 CFR 50.54
		IV	Surveillance	Failure to test the containment cooling subsystem immediately when the low pressure coolant injection system was inoperable
85-03	2/1/85-3/4/85	IV	Surveillance	Failure to conduct surveillance tests for the reactor protection system (six examples)
		IV	Surveillance	Failure to conduct rod block surveillance tests (five examples)

<u>Insp. No.</u>	<u>Insp. Date</u>	<u>Severity Level</u>	<u>Functional Area</u>	<u>Violation</u>
		IV	Plant Operations	Failure to promptly correct conditions adverse to quality (i.e. failure to take timely action on Quality Assurance surveillance findings)
		V	Surveillance	Failure to use the most current revision of the surveillance test procedure
		V	Surveillance	Failure to calibrate test equipment within the calibrated period
85-06	3/5/85-4/1/85	V	Plant Operations	Failure to maintain an uncalibrated local power range monitor in a bypassed state
		IV	Maintenance	Failure to conduct a dioctyl phthalate test of HEPA filters following maintenance on the standby gas treatment system
85-13	5/20-24 '85	V	Radiological Controls	Failure to have the Operations Review Committee (ORC) review two radiological procedures and failure to control work in the fuel pool with a maintenance request
		Deviation	Radiological Controls	Failure to conduct an adequate review of systems that could generate an uncontrolled, unmonitored radioactive effluent release, as recommended in IE Bulletin 80-10
85-17	6/13/85-7/15/85	IV	Surveillance	Failure to conduct a surveillance test of the 250 V battery system required by the technical specification and to follow station procedures for additional battery tests
		IV	Radiological Controls	Failure to specify high radiation area surveillance frequencies on radiation work permits

<u>Insp. No.</u>	<u>Insp. Date</u>	<u>Severity Level</u>	<u>Functional Area</u>	<u>Violation</u>
		Deviation	Surveillance	Failure to conduct inservice tests as specified in an NRC submittal
85-20	7/16/85- 8/19/85	IV	Surveillance	Failure to maintain the trip level setting for the "B" and "C" main steam line high radiation monitors within technical specification limits
85-21	7/16/85- 7/30/85	IV	Surveillance	Failure to maintain secondary containment
		IV	Surveillance	Failure to test alternate safety system when an emergency diesel generator was found to be inoperable
		IV	Surveillance	Failure to initiate Failure and Malfunction Reports as required by station procedures
85-24	8/6-8/85	III	Security	Failure to maintain an adequate vital area barrier
85-26	8/20/85- 9/23/85	IV	Plant Operations	Failure to properly authorize excessive licensed operator overtime as required by station procedures (thirty-five instances)
85-27	9/16/85- 9/20/85	Deviation	Radiological Controls	Failure to install a protective conduit



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Docket No. 50-293

JUN 19 1985

Boston Edison Company M/C Nuclear
ATTN: Mr. William D. Harrington
Senior Vice President, Nuclear
800 Boylston Street
Boston, Massachusetts 02199

RECEIVED
JUN 24 1985
W. D. H.

Gentlemen:

Subject: Systematic Assessment of Licensee Performance (SALP) Report No. 50-293/84-34 and Your Reply Letter BECo 85-031 Dated February 12, 1985

Thank you for your reply to SALP Report No. 50-293/84-34. In your letter you presented additional information concerning assessments and requested we reconsider some of the assessments to better account for the assessment period's extraordinary circumstances (i.e., the extended outage for piping replacement).

Based on our discussions with you at the January 23, 1985 management meeting and the information presented in your reply letter, the SALP Board found it appropriate to revise the declining trend of the Category 2 rating for fire protection/house-keeping to a Category 2 rating with a consistent trend. We feel this is appropriate as we may not have properly accounted for the extended outage in our evaluation for trend. However, we continue to feel that the extent of contamination that existed throughout the plant was inconsistent with a Category 1 rating. The enclosed SALP Report has been supplemented to reflect this change. The SALP Board also found that the other ratings should remain unchanged.

With regard to the current status of your operations, we acknowledge the improving trend of your performance in the plant operations and maintenance areas and encourage you to continue your efforts in these areas. Further, we note the progress being made in implementing your recently established Radiological Improvement Program and encourage your efforts to decontaminate the plant, to reduce plant radiation levels, to enhance oversight of the radiation protection program, and to establish support for the program by plant personnel.

Your cooperation with us is appreciated.

Sincerely,

Thomas E. Murley
Regional Administrator

TABLE 2
VIOLATION SUMMARY (7/1/83 - 9/30/84)
PILGRIM NUCLEAR POWER STATION

A. Number and Severity Level of Violations

Severity Level I	0
Severity Level II	0
Severity Level III	1
Severity Level IV	18
Severity Level V	6
Deviation	<u>1</u>
Total	26*

B. Violations Vs. Functional Area

<u>Functional Areas</u>	<u>Severity Level</u>						
	<u>I</u>	<u>II</u>	<u>III</u>	<u>IV</u>	<u>V</u>	<u>DEV</u>	
A. <u>Plant Operations</u>				2	5		
B. <u>Radiological Controls*</u>			1	7	1	1	
C. <u>Maintenance</u>				2			
D. <u>Surveillance</u>				1			
E. <u>Fire Protection and Housekeeping</u>							
F. <u>Emergency Preparedness</u>							
G. <u>Security and Safeguards</u>				6			
H. <u>Refueling and Outage Management</u>							
I. <u>Licensing Activities</u>							
	Totals*			1	18	6	1

*Totals do not include three apparent violations and one apparent deviation in the area of radiological controls that were identified during inspection 84-25. NRC enforcement action was under review at the end of the assessment period.

C. Summary

<u>Inspection Report No.</u>	<u>Inspection Date</u>	<u>Severity Level</u>	<u>Functional Area</u>	<u>Violation</u>
83-19	8/16-10/3/83	V	A	Failure to review and update special orders
		V	A	Failure to vent piping from the high point in the core spray system
83-20	8/8-12/83	IV	B	Failure to follow a Radiation Work Permit
83-21	8/22-24/83	V	A	Failure to schedule external audits
		V	A	Failure to document deficiencies in deficiency reports
83-23	10/4-11/7/83	IV	D	Failure to conduct an in-service test on a high pressure coolant injection (HPCI) valve
		IV	C	Failure to review a procedure for procuring safety-related items.
83-24	11/8-12/31/83	IV	A	Failure to record reactor vessel cool down rate
84-03	1/20-27/84	III	B	Failure to label a container of licensed material, use extremity dosimetry, and instruct workers on radiation levels
84-04	2/7-3/12/84	IV	A	Failure to maintain a procedure for the proper operation of the containment atmospheric dilution system
84-06	2/13-17/84	IV	B	Failure to follow a radiation work permit

<u>Inspection Report No.</u>	<u>Inspection Date</u>	<u>Severity Level</u>	<u>Functional Area</u>	<u>Violation</u>
84-11	4/23-27/84	IV	C	Failure to maintain a procedure for controlling welding slag
84-13	4/24-27/84	IV	B	Failure to properly review and approve contractor procedures involving transportation of radioactive materials
		IV	B	Failure to comply with the requirements of a Certificate of Compliance for a transport package
		V	B	Failure to properly document a quality assurance program for transport packages
		DEV	B	Failure to fulfill a transportation training commitment
84-14	5/9-11/84	IV	B	Failure to instruct workers on the presence of radioactive materials
		IV	B	Failure to survey radiation hazards
		IV	B	Failure to implement procedures consistent with 10 CFR 20
84-22	7/16-20/84	IV	G	Failure to control a security key card
		IV	G	Failure to maintain photo ID badges
		IV	G	Failure to respond to two vital area alarms
		IV	G	Failure to maintain one guard radio and one offsite communications net operable

<u>Inspection Report No.</u>	<u>Inspection Date</u>	<u>Severity Level</u>	<u>Functional Area</u>	<u>Violation</u>
		IV	G	Failure to maintain effective compensatory measures.
		IV	G	Failure to maintain effective compensatory measures.
84-25	8/6-10/84	*	B	Failure to perform radiation surveys
		*	B	Failure to instruct workers on radiation hazards
		*	B	Failure to properly approve procedures
		*	B	Failure to implement recommendations in Regulatory Guide 8.8
84-26	8/28-10/8/84	V	A	Failure to properly approve QA program related procedures

*Apparent violations and deviations. Enforcement action was under review at the end of the assessment period.



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KING OF PRUSSIA, PENNSYLVANIA 19406

SEP 14 1983

Docket No. 50-293

Boston Edison Company M/C Nuclear
ATTN: Mr. William D. Harrington
Senior Vice President, Nuclear
800 Boylston Street
Boston, Massachusetts 02199

RECEIVED

SEP 15 1983

Gentlemen:

W. D. H.

SUBJECT: SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE (SALP)

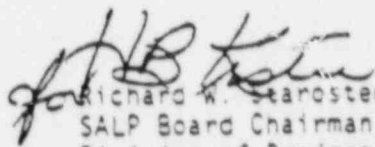
The NRC Region I SALP Board conducted a review on August 25, 1983, and evaluated the performance of activities associated with the Pilgrim Nuclear Power Station. The results of this assessment are documented in the enclosed SALP Board Report. A meeting has been scheduled for September 21, 1983, at Braintree, Ma. to discuss this assessment.

At the meeting, you should be prepared to discuss our assessment and your plans to improve performance. Any comments you may have regarding our report may be discussed at the meeting. Additionally, you may provide written comments within 20 days after the meeting.

Following our meeting and receipt of your response, the enclosed report, your response, and a summary of our findings and planned actions will be placed in the NRC Public Document Room.

Your cooperation is appreciated.

Sincerely,


Richard W. Starostecki
SALP Board Chairman, Director
Division of Project and
Resident Programs

Enclosure: As Stated

cc w/encl:

A. V. Morisi, Manager, Nuclear Operations Support
C. J. Mathis, Station Manager

TABLE 4
VIOLATIONS (7/1/82 - 6/30/83)
PILGRIM NUCLEAR POWER STATION

A. Number and Severity Level of Violations

Severity Level I	0	
Severity Level II	0	
Severity Level III	1	
Severity Level IV	9	
Severity Level V	20	
Deviations	3	
Total Violations	30	Total Deviations 3

B. Violations Vs. Functional Area

FUNCTIONAL AREAS	<u>Severity Levels</u>					
	I	II	III	IV	V	DEV
1. Plant Operations				4	8	
2. Radiological Controls				1	7	1
3. Maintenance				1		1
4. Surveillance						
5. Fire Protection/Housekeeping					3	1
6. Emergency Preparedness						
7. Security and Safeguards			1	3	2	
8. Refueling						
9. Licensing Activities						
Totals	0	0	1	9	20	3

Total Violations = 30

Total Deviations = 3

TABLE 4 (Continued)

<u>Summary</u>					
<u>Inspection No1</u>	<u>Inspection Date</u>	<u>Subject</u>	<u>Requirements</u>	<u>Severity</u>	<u>Area</u>
82-19	June 14 - August 1	Blocking open a fire door without proper controls	T.S.	V	5
		Failure to evaluate fire loading prior to moving combustibles into safety related area	T.S.	V	5
		Failure to translate design bases into drawings	10CFR50 App. B	V	1
		Failure to perform an adequate safety evaluation prior to changing a station valve lineup procedure	10CFR50.59	V	1
		Failure to maintain a fire door position continuously annunciated	T.S.	V	5
		Failure to perform daily checks of non-alarmed fire doors as committed to the NRC	Fire Protection Review	D	5
82-22	August 2 -	Failure to make a prompt notification	T.S.	IV	1
		Failure to make a 50.72 notification	10CFR50	V	1
		Failure to perform a leak rate test required by the LCO for an inoperable Vacuum Breaker Alarm System	T.S.	IV	1

TABLE 4 (Continued)

Summary

<u>Inspection No.</u>	<u>Inspection Date</u>	<u>Subject</u>	<u>Requirements</u>	<u>Severity</u>	<u>Area</u>
82-24	September 7 - October 18	Failure to revise procedures for radioactive discharges as committed to the NRC	Licensee Response to Violation 81-19-01	D	2
82-29	October 19 - November 15	Improper equipment tagging	T.S.	V	1
		Failure to properly set a main steam safety valve			
		Failure to properly control distribution of the Q-List	10CFR50 App. B	IV	1
		Failure to use proper methods of access control	Security Plan	V	7
		Failure to prevent unauthorized entry into vital area or followup on a security deficiency	Security Plan	IV	7
N/A(1)	January 31, 1983	Safeguards information not properly controlled resulting in a loss of copy of the site physical Security Plan	10CFR73.21	III	7
83-03	January 25 February 28	Failure to perform chemistry samples	T.S.	V	2(1)*
		Failure to assure that training certification forms were completed prior to watch assignment	10CFR50 App. B	V	1
		Failure to properly control high pressure gas cylinders	T.S.	V	1(5)*

TABLE 4 (Continued)

<u>Summary</u>					
<u>Inspection No.</u>	<u>Inspection Date</u>	<u>Subject</u>	<u>Requirements</u>	<u>Severity</u>	<u>Area</u>
83-07	March 22- April 18	Failure to implement a station procedure for inspection and cleaning of the SBT System inlet plenum	T.S.	V	2(3)*
83-08	May 9 - May 13	Failure to conduct an audit of the Radiological Environmental Monitoring Program report when required	T.S.	V	2
83-09	April 4 - May 3	Accepting, in receipt inspection, material not in conformance with the P.O. Requirements	10CFR50 App. B	V	1
		Failure to maintain the Q-List	10CFR50 App. B	IV	1
		(2) Failure to update the FSAR	10CFR50.71(e)	V	1
		Failure to perform preventive maintenance as committed to the NRC	IEB 79-09 Commitment	D	3
83-10	April 19 - May 23	Safeguards information not properly controlled	10CFR73.21	IV	7
		Security access card key not properly controlled	Security Plan	IV	7



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NUCLEAR REGULATORY COMMISSION
REGION I
631 PARK AVENUE
KING OF PRUSSIA, PENNSYLVANIA 19406

NOV 15 1982

Docket No. 50-293

Boston Edison Company M/C Nuclear
ATTN: Mr. William D. Harrington
Senior Vice President, Nuclear
800 Boylston Street
Boston, Massachusetts 02199

Gentlemen:

Subject: Systematic Assessment of Licensee Performance (SALP)

This letter and its enclosures document NRC's assessment of the performance of licensed activities at the Pilgrim Nuclear Power Station for the period September 1, 1981, to June 30, 1982. The enclosed SALP Report, dated August 12, 1982, includes performance assessments for each of the nine functional areas which were evaluated. These individual assessments were discussed with you and your staff by Mr. R. W. Starostecki of this office on September 1, 1982, at the Boston Edison Company offices in Braintree, MA.

Our overall assessment of the performance of NRC licensed activities at the Pilgrim facility is that improvement has occurred since the organizational and personnel changes which took place earlier this year. There now appears to be a satisfactory level of management attention and involvement in plant safety matters. This has enhanced the plant's performance with respect to operational safety. We recognize that efforts are underway to improve the management systems and utilization of resources at the Pilgrim facility. These changes and plans are documented in the Performance Improvement Plan which were submitted to the NRC on July 30, 1982. However, we also realize that it will be several months before some of these improvements will be completed. Although performance has improved recently, some shortcomings have been noted and we have included them in this report. In particular, we believe additional attention is warranted on your part in the areas of day-to-day plant operations and fire protection/prevention activities. We will be increasing our attention to these areas to ascertain if identified weaknesses are being corrected.

In the meeting of September 1, 1982, the NRC staff benefited from your comments concerning the SALP Program and the functional area performance assessments. I have also reviewed your letter of September 20, 1982 and have included responses to your comments in this package. The SALP Board also considered your concerns and I had the benefit of their input. The results of these considerations are presented below.

TABLE 5
VIOLATIONS (9/1/81 - 6/30/82)
PILGRIM NUCLEAR POWER STATION

A. Number and Severity Level of Violations

a. Interim NRC Policy Severity Level (September 1, 1981 - March 9, 1982)

Severity Level I	0
Severity Level II	0
Severity Level III	6
Severity Level IV	5
Severity Level V	17
Severity Level VI	2
Deviation	1

b. NRC Policy Severity Levels (March 10, 1982 - June 30, 1982*)

Severity Level I	0
Severity Level II	0
Severity Level III	1
Severity Level IV	4
Severity Level V	3
Deviation	1
Total Violations	38

Total Deviations 2

B. Violations Vs. Functional Area

(1) September 1, 1981 - March 9, 1982

FUNCTIONAL AREAS	Severity Levels						
	I	II	III	IV	V	VI	DEV
1. Plant Operations	0	0	3	3	5	0	0
2. Radiological Controls	0	0	1	1	3	0	1
3. Maintenance	0	0	0	0	2	0	0
4. Surveillance	0	0	0	1	1	1	0
5. Fire Protection	0	0	0	0	5	0	0
6. Emergency Preparedness	0	0	1	0	0	0	0
7. Security & Safeguards	0	0	1	0	0	0	0
8. Refueling	0	0	0	0	1	0	0
9. Licensing Activities	0	0	0	0	0	1	0
Totals	0	0	6	5	17	2	1

TABLE 5 (Continued)

B. Violations Vs. Functional Area

(2) March 10, 1982 - June 30, 1982*

FUNCTIONAL AREAS	<u>Severity Levels</u>					DEV
	I	II	III	IV	V	
1. Plant Operations	0	0	0	1	1	1
2. Radiological Controls*	0	0	0	1	0	0
3. Maintenance	0	0	0	1	0	0
4. Surveillance	0	0	0	0	2	0
5. Fire Protection*	0	0	0	0	0	0
6. Emergency Preparedness	0	0	0	0	0	0
7. Security & Safeguards	0	0	1	0	0	0
8. Refueling	0	0	0	1	0	0
9. Licensing Activities	0	0	0	1	0	0
Totals	0	0	1	4	3	1

Total Violations = 38
Total Deviations = 2

* Does not include the following reports, not yet issued:

- 82-19 - Resident Inspector
- 82-20 - Special Health Physics

TABLE 5 (Continued)

C. Summary

Inspection No.	Inspection Date	Subject	Req.	Sev.	Area
81-18	June 15 - Sept. 30	Failure to have an operable combustible gas control system (multiple examples of design errors, procedural and drawing errors, and inadequate safety reviews)	10 CFR 50.44	III	1 (9)*
81-18	June 15 - Sept. 30	Failure to inform the NRC of the erroneous statement that an installed system met the requirements of 10 CFR 50.44 - Material False Statement	T.S.	III	1 (9)*
81-19	August 18 - Sept. 30	Failure to follow station procedure	T.S.	V	1
81-19	August 18 - Sept. 30	Failure to perform a safety evaluation prior to disabling protection for an RHR pump	10 CFR 50.59	IV	1
81-21	August 31 - Oct. 2	Failure to post a high radiation area	T.S.	IV	2
81-21	August 31 - Oct. 2	Failure to adhere to radiation protection procedures for radiation work permits.	T.S.	V	2
81-21	August 31 - Oct. 2	Failure to post copies of NOV's involving radiation protection	10 CFR 19	V	2
81-22	Sept. 16 - Sept. 17	RCIC containment isolation valves were left open when their control instrumentation was inoperable	T.S.	III	1
81-24	Dec. 1, 1981- Jan. 18, 1982	Operation at drywell temperatures above FSAR description without adequate safety evaluations	10 CFR 50.59	IV	1
81-24	Dec. 1, 1981- Jan. 18, 1982	Failure to adequately prepare and implement procedures for coping with high drywell temperatures	T.S.	V	1(4)*

TABLE 5 (Continued)

C. Summary

Inspection No.	Date	Subject	Req.	Sev.	Area
81-24	1981- Jan. 18, 1982	Failure to promptly evaluate and correct conditions adverse to quality	10 CFR 50 App B	V	1
81-24	Dec. 1, 1981- Jan. 18, 1982	Security access card keys not properly controlled	Security III Plan		7
81-24	Dec. 1, 1981- Jan. 18, 1982	Combustibles were not removed from area near hot work	T.S.	V	5
81-24	Dec. 1, 1981- Jan. 18, 1982	Improper equipment tagging	T.S.	V	1 (3)
81-25	Oct. 15 - Oct. 18, 1981	Failure to have all ORC members present at a pre-refueling meeting	T.S.	V	8
81-26	July 20, 1981	Transported radioactive materials with liquid in drums	10 CFR 30.41	III	2
81-35	Nov. 1 - Nov. 30	Control/Storage of combustible gas cylinders was not in accordance with station procedures	T.S.	V	5
81-35	Nov. 1 - Nov. 30	Failure to establish and implement procedures for the control of combustible scrap, waste, debris	T.S.	V	5
81-35	Nov. 1 - Nov. 30	Failure to establish and implement procedures for the control of combustible oil	T.S.	V	5
81-35	Nov. 1 - Nov. 30	Control of foreign material during repairs to MSIV's was not in accordance with procedure	T.S.	V	3
81-36	Nov. 30, 1981- Dec. 4, 1981	A master surveillance schedule was not established	T.S.	VI	4
81-36	Nov. 30, 1981- Dec. 4, 1981	T.S. Amendments were not properly entered into controlled volumes	T.S. VI		9 (1)

TABLE 5 (Continued)

C. Summary

Inspection No.	Inspection Date	Subject	Req.	Sev.	Area
81-36	Nov. 30, 1981- Dec. 4, 1981	Program and procedures were not established for housekeeping and system cleaning that meet the standards stated in the QA Manual	10 CFR 50 App B QAM	V	3 (5) *
82-01	Jan. 18, 1982- Feb. 28, 1982	Workers were not properly instructed of the storage and transfer of radioactive resins	10 CFR 19.12	V	2
82-01	Jan. 18, 1982- Feb. 28, 1982	Procedures were not adequately established and implemented to provide required numbers of SCBA units for fighting fires	T.S.	V	5
82-02	Jan. 1 - Jan. 15, 1982	Uncalibrated brush recorders were used during RPS surveillance	10 CFR 50 App B	V	4
82-02	Jan. 1 - Jan. 15, 1982	Maintenance activities were performed without using approved procedures	T.S.	IV	3
82-02	Jan. 1 - Jan. 15, 1982	Instrumentation was not calibrated at frequency specified in station procedures	T.S.	V	4
82-02	Jan. 1 - Jan. 15, 1982	Improper control of access to Vital Areas	Security III Plan		7
82-04	Jan. 25 - Jan. 29, 1982	Failure to implement procedures for LLRT and drawing change revisions	T.S.	V	4 (1) *
82-04	Jan. 25 - Jan. 29, 1982	Drawings and procedures did not identify the as-built condition of valves in piping systems	10 CFR 50 App B	IV	1
82-05	Feb. 1 - Feb. 5, 1982	Untimely corrective action to internal QA Audit Deficiency Reports	10 CFR 50 App B	V	1
82-06	Feb. 10 - Feb. 12, 1982	Training and requal. program for personnel who operate and process radioactive waste not implemented as committed	Commitment DEV IEB 79-19		2



TABLE 5 (Continued)

C. Summary

Inspection No.	Inspection Date	Subject	Req.	Sev.	Area
N/A	Feb. 12, 1982	Prompt Notification System (sirens) not installed by February 1, 1982	10 CFR 50.54	III	6
82-10	March 1 - April 4, 1982	Performed maintenance on valve with red tag attached	T.S.	V	1 (3) *
82-10	March 1 - April 4, 1982	Plant shielding study mod. (truck lock door panel) not completed as stated in response to NRR	NUREG 0737	DEV	6
82-11	Feb. 25 - Feb. 28, 1982	An unauthorized adjustment was made to a leaking flange during the conduct of the PCILR:	10 CFR 50 App J	IV	4
82-12	April 5 - May 9, 1982	Failure to follow actions required by T.S. with inoperable reactor vessel water level instrumentation	T.S.	IV	1
82-13	April 12 - April 16, 1982	Inadequate design control, for interfaces and verification	10 CFR 50 App B	IV	9 (5) *
82-16	May 10 - June 13, 1982	Failure to lock or control access to a high radiation area (stuck TIP drive)	T.S.	IV	2

() * secondary area involved

Testimony Submitted by
Stephen J. Sweeney
President and Chief Executive Officer
Boston Edison Company
to the
U.S. House of Representatives
Subcommittee on Energy Conservation and Power
of the
Committee on Energy and Commerce
July 16, 1986

Get 3 copies from [unclear] - 1915

INTRODUCTION

Boston Edison Company appreciates the opportunity to address a number of issues involving the Pilgrim Nuclear Power Station which are of concern to this committee, the Nuclear Regulatory Commission and to me personally. At the outset let me stress that most of the issues raised by the NRC in various reports and by this committee were of concern to me more than a year ago and that corrective actions were underway as early as September 1985. As discussed in the following pages, those actions are meeting with success.

In today's environment, public concern about nuclear power is heightened substantially. Public confidence in the technology and the institutions involved with it is at a low point.

Boston Edison Company has a great deal of work to do in this environment to gain public confidence in our ability to manage and run Pilgrim Station. I personally will not be satisfied until we have achieved a level of public and regulatory confidence that allows Pilgrim Station to place among the best. We have made an internal commitment to measure ourselves against the best, which is a significant change in how we are approaching our current problems.

As will be evident in reviewing our testimony, we were historically plagued by not looking outside to measure our success and to undertake the intensive self-criticism necessary to assess performance honestly and objectively. That has changed. We are moving in a new direction, one based on rising standards of excellence which are set, not by regulation, but by the performance of those plants judged to be among the best.

It should be noted that the concerns we are addressing today are different from those for which we were fined in 1982. The issues then were safety-related and failure to comply with regulations. Today, the issues are not directly related either to compliance or to safety. They instead involve a rising standard of performance going far beyond mere compliance with rules to a much broader dimension in the regulatory process. That new dimension is one that dictates comparisons and success is measured by relative performance. We endorse it.

Before discussing our current activities, let me offer perspectives on three time frames.

The first time frame is 1972 to 1979 and Three Mile Island. Our major management shortcoming then was the failure to recognize fully that the operational and managerial demands placed on a nuclear power plant are very different from those of a conventional fossil-fired power plant. Boston Edison structured its nuclear organization as part of a traditional operating arm. While many members of the Pilgrim Station organization recognized the differences in the technologies, they had limited success in arguing for the resources necessary to meet a set of standards that already were rising fairly rapidly. This was also a period of poor quality fuel which resulted in significant internal radiological problems that affected the plant for years.

Then came Three Mile Island. From March 1979 until early 1982 the same structure, under one vice president, attempted to deal with the post-TMI demands on operations and engineering, while at the same time pursuing a construction permit for a second unit at Pilgrim Station. The staff increased dramatically to 200, 300 and then 400 people. It was an unreasonable workload for the structure and we paid a costly penalty for not recognizing it -- \$550,000 in early 1982.

From 1982 until mid-1985, we operated with a new and improved management structure that recognized the unique nature of nuclear power plants and the demands of the post-TMI period. We committed the financial and human resources necessary to upgrade equipment and hardware and to install various improvement programs to meet NRC concerns. More than \$300 million went into hardware improvements, the staff grew from 400 to nearly 600 people and the organization was restructured under a senior vice president and two vice presidents. We achieved a significant measure of success for which we were recognized by the NRC and in the plant's outstanding operating performance in both 1983 and 1985.

But in managing the equipment improvements and the new management systems and programs we put in place, we didn't focus enough on what was going on outside the company in the industry and within the NRC. What we didn't see because we were so internally focused was the fact that the industry itself and the NRC were looking under, behind and around all of the hardware and management programs reaching for excellence.

In our case, not seeing that put us in a defensive posture. We weren't identifying weaknesses that were inhibiting continued improvement ourselves. We weren't being self-critical, others had to tell us what was wrong. We weren't holding managers accountable enough for the end result of an action or inaction. We weren't working well enough together.

Those problems were very real, very serious and of great concern to me and to the Board of Directors. I became particularly concerned about management performance, not management systems and programs, but the results of those systems and programs as measured by effectiveness. In mid-1985, I asked the Vice President of Nuclear Operations to investigate my concerns, which he shared, and issue a report. As he progressed through the study, he

and other managers began identifying needs. In September 1985, we increased the operator staff by a third. In December, we reorganized plant management to improve reporting relationships and build in greater accountability.

In February 1986, the NRC issued their report. They said the same thing: We had attitude problems that were seriously interfering with our ability to get the results we should be seeing given our financial and human resource commitments.

By March, we had taken a number of other actions, all of which are detailed in the following pages. We began eliminating those old attitudes that were not serving us well and began to inject the nuclear organization with the skills and perspectives necessary to achieve a measure of performance which would place us among the best. In the same time frame we made further human resource commitments. We increased our emergency planning complement five-fold, we increased the number of radiological technicians 35 percent and we implemented an apprentice program for the long-term development of skilled personnel.

The shutdown on April 12 gave us an opportunity to accelerate that change. A different approach to problem solving was taken. It stressed a more deliberative and integrated effort at identifying root causes and taking corrective action. In early May, a new plant manager and a new operations section head were brought on board, nearly rounding out a new 16 member plant management team. Of the 16, 11 were new in their positions in the past 8 months and 5 were new to the company. We have new perspectives. We have people with strong nuclear navy backgrounds, people with NRC inspection experience and people who grew up professionally not in conventional fossil-fired power plants, but in nuclear plants.

On May 27, having accepted that management is just as important as equipment, we took the unprecedented step of giving the new plant manager and his new team additional time, while the unit was shut down, to become familiar with the issues, to accelerate the development of new programs and, most importantly, to infuse the organization with attitudes and behavior that will make those programs work. These are attitudes that demand self-criticism, demand accountability, demand teamwork and demand results which go far beyond mere compliance with a set of rules, regulations and technical specifications.

Excellence is our goal. But excellence is, after all, an attitude which accepts nothing less. Achieving excellence will not be easy; we know that. We know our problems. We have made the human resource and financial commitment to solve them. We know what has to be done and we are doing it. As a result, I am confident we will, in time, demonstrate to you, to the Nuclear Regulatory Commission and the public that we have responded effectively to the concerns which are shared by all of us.


As a final point, I know that an important question on the minds of many people is "why should Boston Edison be believed today given the problems over the years at Pilgrim Station?"

I hope I already answered that question in part. It is perhaps the most difficult question and can only be answered fully by performance over time. But in closing I would underscore two major differences today from the past. The first is our forceful acceptance of the need for us to measure our performance against an ever increasing set of standards set by those plants judged by industry and the NRC to be among the best.

The second is the fact that we have adopted the basic principles and criteria for good management that are applied to the nuclear navy. They are the same principles and criteria that are in evidence at all of the top rated plants.

This is a demanding industry with a vital role in the social and economic health of the country. It operates in a demanding regulatory climate as evidenced by this hearing today. For us as a company with a single unit to succeed in this environment means that we must impose on ourselves the highest standards of performance found in the industry. We are doing just that.

The balance of this filed testimony is arranged in the order of the six sections on which you requested information in your letter of July 2, 1986. We have repeated your request at the beginning of each section.


BOSTON EDISON
Executive Offices
200 State Street
Boston, Massachusetts 02109

Ralph G. Bird
Senior Vice President - Nuclear

July 8, 1987

BECO Ltr. 87-111

Mr. Steven A. Varga, Director
Division of Reactor Projects, I/II
United States Nuclear Regulatory Commission
Washington, D. C. 20555

License DPR-35
Docket 50-293

INFORMATION REGARDING PILGRIM STATION
SAFETY ENHANCEMENT PROGRAM

Reference: NRC Letter, Proposed Enhancement to the Mark I Containment -
Pilgrim Station, dated April 30, 1987

Dear Mr. Varga:

As agreed during July 1, 1987 discussions between Frank Miraglia, USNRC, and John Fulton, Boston Edison Company (BECO), we are submitting this response to your letter to BECO dated April 30, 1987. Enclosed for your information is a detailed description of the Safety Enhancement Program (SEP) hardware changes that BECO has voluntarily elected to implement for Pilgrim Nuclear Power Station (PNPS). The description of procedural changes and personnel training will be furnished under separate cover. A current implementation schedule for the SEP modifications will also be furnished separately. A condition is that the modifications scheduled during the current outage do not require prior governmental approval. Should this condition not be met for any of these voluntary modifications, with the result that the current implementation schedule must be extended, then BECO will be unable to implement the affected modifications during the current outage.

Additional documentation will be available for review by the NRC Staff at BECO's Braintree offices or the PNPS site. Cognizant BECO personnel will be available at those locations for discussion with the Staff.

Current evaluations of the benefit from the SEP modifications are based primarily upon extensive, although still preliminary, analyses and qualitative engineering judgments. Final quantitative analysis must, in accordance with the stated long term goal of the SEP, await final identification of modifications and completion of the Individual Plant Evaluation (IPE). BECO understands that the NRC intends to issue later this year a generic letter requiring all plants to perform an IPE as part of the

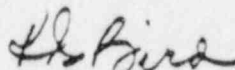
Mr. Steven Janga

-2-

July 8, 1987

closure of the Commission's Severe Accident Policy Statement. When that requirement is issued, BECo expects to complete the IPE and promptly make the results available in accordance with the review process prescribed by the generic letter.

Please feel free to contact me or Edward Howard, of my staff at (617) 349-3900 if you have any questions concerning the matter addressed in this response.


R. G. Bird

Enclosures

cc: Nuclear Regulatory Commission
Document Control Desk
Washington, D. C. 20555

Nuclear Regulatory Commission
Region I
631 Park Avenue
King of Prussia, PA 19406

Senior NRC Resident Inspector
Pilgrim Nuclear Power Station

Mr. R. H. Wessman, Project Manager
Division of Reactor Projects, I/II
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
7920 Norfolk Avenue
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Michael S. Dukakis
Governor

Charles V. Barry
Secretary

The Commonwealth of Massachusetts

Executive Office of Public Safety

One Ashburton Place

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EXECUTIVE SUMMARY OF THE PROGRESS REPORT ON EMERGENCY PREPAREDNESS FOR AN ACCIDENT AT PILGRIM NUCLEAR POWER STATION

I. EXECUTIVE SUMMARY

On December 16, 1986, I transmitted to the Governor a comprehensive report on safety at Pilgrim Nuclear Power Station. This is a progress report about the activities by state and local government, the Boston Edison Company, the U.S. Nuclear Regulatory Commission and the Federal Emergency Management Agency since that time to address the concerns we found.

In April of 1986, operation of Pilgrim Station was halted because of several mechanical problems. The U.S. Nuclear Regulatory Commission has ordered that the Boston Edison Company keep the plant shut until a variety of corrections regarding the management and operation of Pilgrim Station have been made. As of this date, Pilgrim remains closed, although Boston Edison has asked the NRC for permission to restart the facility.

In my December, 1986 report, I concluded that Radiological Emergency Response Plans for the Pilgrim facility were not adequate to protect the public health and safety. I further identified serious problems regarding the management of the power plant and the engineering safety of the reactor. In my view, these three issues -- emergency planning, plant management, and reactor safety -- were so serious and the weaknesses and deficiencies so severe that I recommended that the plant should not be allowed to restart unless and until these concerns had been satisfactorily addressed.

There has been a considerable amount of activity at all levels to address these concerns since my report was issued. In some cases substantial progress has been made. In particular, the Massachusetts Civil Defense Agency and Office of Emergency Preparedness has devoted all available staff and resources to the effort of developing the best possible emergency response plans.

MCDA/OEP has instituted a planning process at the state and local level and revisions are well under way. In addition, a new system has been installed for off-site notification in the event of an accident at Pilgrim Station. We now have the advantage of a new Nuclear Safety Emergency Preparedness Program and a professional staff which for the first time is dedicated to off-site emergency preparedness and planning. This new program and staff are the result of the Governor's initiative in the Fiscal Year 1988 budget. The Governor has requested additional funds for the new program as a supplementary appropriation for the current fiscal year.

Nonetheless, I continue to make the finding that adequate plans for response to an accident at Pilgrim Station do not exist, and I reaffirm my earlier position that the Pilgrim facility should not be allowed to restart until such plans have been fully developed and have been demonstrated to be workable and effective through a graded exercise of all plans and facilities.

This finding is based on the fact that in every critical area in which I found a deficiency to exist in my December, 1986 report substantial work remains to be done before a determination of adequacy can be made. For example, analysis of a new Evacuation Time Estimate and Traffic Management Study by state and local authorities is still underway. The ETE is one of the most critical pieces of information in the entire process and the foundation of effective emergency planning. Our preliminary review of the ETE suggests that more resources are required to successfully implement the traffic management plan. The shelter survey which was prepared by Boston Edison has been returned to the company for further study because it was found to be woefully inadequate.

Plans and implementing procedures for special needs populations remain incomplete, and it may be necessary to undertake an additional survey of people who would need assistance in emergency response or to do further statistical analysis of this matter. The development of implementing procedures and the identification of resources to care for school age populations also requires additional work. In regard to the adequacy of reception centers, the question of need for a facility to serve people in the northern portion of the EPZ remains open. We cannot make decisions on the need for or identification of a third reception center until Boston Edison has provided us with an analysis of the adequacy of the existing two reception facilities.

With regard to plant management, we have seen numerous changes in Boston Edison's personnel and organization for management of Pilgrim Station. The most notable change is the appointment of Mr. Ralph G. Bird as Senior Vice President, Nuclear, who directly reports to the company's chief executive officer. Yet despite these changes, I cannot say at this time that the management problems have been fully resolved. For example, we are concerned about recent incidents including violation of NRC regulations in the area of plant security, and allegations of excessive overtime worked by utility employees. We are also concerned by Boston Edison's action to refuel Pilgrim Station without having responded to my objections and the objections of several state legislators.

The Systematic Assessment of Licensee Performance (SALP) performed by the NRC is the most comprehensive study and report on nuclear management at Pilgrim Station. The last SALP report was issued on April 8, 1987 and it showed deterioration in several aspects of nuclear management since the last report. Until a similarly comprehensive analysis of management under the new organization has been conducted and the above concerns resolved, I cannot say that our management concerns have been addressed.

With regard to reactor safety issues, we have carefully reviewed Boston Edison's "Safety Enhancement Program" (SEP). The SEP has been undertaken since the issuance of a "Draft Generic Letter" from Mr. Robert Bernero of the NRC concerning safety at Mark I containment structures such as the Pilgrim containment. We have two major concerns in the area of reactor safety.

First, despite the fact that the NRC letter was prompted by a finding that there was a high probability of Mark I containment failure during certain severe accident scenarios, the NRC has yet to adopt an official position regarding safety enhancement. Moreover, according to NRC Region I Administrator William Russell, with whom my staff and other state officials met at NRC's regional offices in King of Prussia, Pennsylvania on October 8, 1987, enhancement of the Mark I containment at Pilgrim is not an issue that the NRC believes must be finally resolved before restart.

Our second concern is the uncertainty that continues to exist about at least one feature of the Boston Edison SEP, the direct torus vent. No consensus has been reached on whether installation of the torus vent creates unreviewed

safety issues or if the torus vent is authorized, how it will be used in the event of a severe nuclear accident.

The findings of my December, 1986 report have been strengthened by two other analyses of safety at Pilgrim Station. The Special Joint Legislative Commission to Study Pilgrim Station has issued its report which further studies and documents many of the same safety concerns. In addition, the Federal Emergency Management Agency has issued a Self-Initiated Review of plans for response to an accident at Pilgrim Station. Based on several of the issues raised in my report FEMA has changed its interim finding and now agrees that the off-site plans for an accident at Pilgrim are not adequate.

FEMA has transmitted their new finding to the Nuclear Regulatory Commission. However, the NRC has yet to indicate whether or not development of adequate off-site plans will be a condition to the restart of Pilgrim. We are not satisfied with the view recently expressed by the NRC Region I staff that emergency planning problems must be "addressed" before restart. Such problems must be satisfactorily resolved before restart. Off-site response plans are just as important as nuclear management and reactor safety in protecting the public from an accidental release of radiation.

Therefore, for these reasons -- the absence of adequate emergency response plans, lack of demonstrable assurance that management problems have been solved, and uncertainty about the safety of the Mark I containment structure -- I continue to find that Boston Edison has not met the heavy burden of showing readiness to restart the Pilgrim Nuclear Power Plant. I also continue to believe that it remains to be seen if adequate emergency response plans can be developed and if all other safety issues can be resolved to our satisfaction.

Finally, I recommend that in light of the number of outstanding issues and their complexity, and Boston Edison's evident determination to press ahead with the effort to restart, that there should be a full scale public hearing by the NRC before any decision is made regarding the restart of Pilgrim Station.

October 14, 1987

CHARLES V. BARRY
SECRETARY OF PUBLIC SAFETY



MICHAEL S. DUKAKIS
GOVERNOR

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE DEPARTMENT

CIVIL DEFENSE AGENCY AND OFFICE OF EMERGENCY PREPAREDNESS
400 WORCESTER ROAD
P.O. BOX 1496
FRAMINGHAM, MASS. 01701-0317



ROBERT J. BOULAY
DIRECTOR

September 18, 1987

Mr. Ralph Bird
Senior Vice President
Boston Edison Company
800 Boylston Street
Boston, Massachusetts

Dear Mr. Bird:

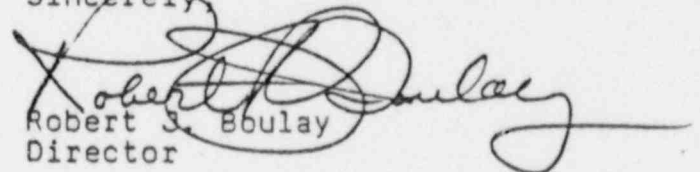
My staff has reviewed the August, 1987 "Study to Identify Potential Shelters in EPZ Coastal Region of the Pilgrim Nuclear Power Station," which was prepared for you by Stone and Webster.

We find that this study is deficient in several respects and that additional work is required to provide information to local officials which is sufficient to support development of implementable shelter utilization plans. I have attached a copy of a memorandum prepared by my staff which details our specific concerns regarding this study.

If you have any questions or observations regarding our evaluation, please contact Buzz Hausner of my staff.

Thank you for your cooperation in this matter.

Sincerely,


Robert J. Boulay
Director

cc: Assistant Secretary, Peter W. Agens, Jr.
Deputy Director, John L. Lovering
Mr. Buzz Hausner



MICHAEL S. DUKAKIS
GOVERNOR

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE DEPARTMENT

CIVIL DEFENSE AGENCY AND OFFICE OF EMERGENCY PREPAREDNESS
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FRAMINGHAM, MASS. 01701-0317



ROBERT J. BOULAY
DIRECTOR

TO: DIRECTOR BOULAY
FROM: BUZZ HAUSNER
IN RE: SHELTER SURVEY OF PILGRIM EPZ PREPARED BY BOSTON EDISON
COMPANY
DATE: SEPTEMBER 11, 1987

We have made a preliminary review of the shelter survey of the Pilgrim EPZ which was prepared by the Boston Edison Company and its consultants. While this document compiles some very useful data, we feel that more work must be done to estimate the effectiveness of shelter as a protective action.

Our principal concern is that we must be able to put data in the hands of local officials which are sufficient for the development of shelter utilization plans for all areas of all five communities within the Pilgrim EPZ. With this in mind, we have the following comments.

- The survey only covers an area approximately one mile wide along the coast. The shelter capabilities of the entire EPZ must be surveyed and reported.
- The survey does not separate out those structures which could "most reasonably" be used as shelters from those where shelter is less appropriate.

For instance, it would help to have a separate list of public buildings and facilities for each town, including an estimation of the actual useable shelter space and protective factors for shelter under government authority.

- Many of the shelters listed, such as jewelry stores and pharmacies are clearly not suitable for public shelter. In a severe emergency, every available resource will of course be put to use. However, to develop an implementable shelter utilization plan, local officials must be able to match estimated needs with the most appropriate resources available.

- Regarding protection of the beach population, the survey identifies shelters within a mile of the coast but does not indicate the distances that beach goers would have to travel to find shelter. In addition, the survey must demonstrate that adequate proximate shelter is available for the total population at the individual beaches.

For instance, Duxbury beach is about seven miles long and the survey should indicate the distance people at Saquish Head are required to travel to reach adequate shelter. Further, an implementable shelter utilization plan must demonstrate that the nearest shelter would not be full to capacity before the people at the most remote points of the beaches arrived.

- The survey must identify adequate shelter which is handicapped accessible.
- The survey does not distinguish between available space and usable space. For instance, residents of Plymouth have indicated to us that some basements listed in the survey are no more than crawl spaces. Crawl spaces cannot be considered for public shelter. Further, in most buildings, a good deal of floor area will be occupied by machinery, counters, office furniture, et cetera. The survey must identify accurately the actual useable shelter space available in each structure.
- Stone and Webster uses a FEMA nuclear attack value of ten square feet per person to estimate the potential population which can be sheltered. Local Civil Defense Officials may wish to allocate more space -- up to twenty square feet per person -- in their utilization plans. The value used in the survey overestimates the potential capacity of various buildings. We doubt that 17,000 people can be sheltered at Duxbury High School, or that 89,700 can be sheltered at the 5 Cordage Park Buildings.
- The survey must demonstrate that public shelters are free from asbestos and other environmental hazards.
- The report estimates residential "sheltering capability" in individual communities as between 53% and 81%. These figures indicate that a significant number of residents do not have adequate domestic shelter and emphasize the need for a full study of public shelter capacities throughout the entire EPZ.

Further, even if it can be established that the vast majority of residences offer adequate shelter, local officials must be prepared to offer public shelter of a known protective capability to residents who demand assistance.

- This report makes no definitive statement of what constitutes adequate shelter to protect people from the effects of a radiological release from Pilgrim Station. This is necessary to determine what facilities are most appropriate for a local shelter utilization plan and to determine the public shelter needs of each community.

In summary, we would say that this survey is a useful beginning but that much more work is required before we can assess our ability to develop implementable shelter utilization plans consistent with the public safety concerns in Secretary Barry's report to the Governor.

cc: Assistant Secretary Peter W. Agnes, Jr.
Deputy Director John L. Lovering



BOSTON EDISON
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800 Boylston Street
Boston, Massachusetts 02199

Ralph G. Bird
Senior Vice President -- Nuclear

September 17, 1987
BECO Ltr. #87-146

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

Docket 50-293
License No. DPR-35

Subject: Boston Edison Company Request for
Exemption from 10 CFR Part 50,
Appendix E, Section IV.F.

Dear Sir:

In accordance with 10 CFR section 50.12(a), Boston Edison Company requests that the Nuclear Regulatory Commission (NRC) grant a one-time exemption from the requirements of 10 CFR Part 50, Appendix E, Section IV.F., that would authorize the next biennial full participation emergency preparedness exercise for the Pilgrim Nuclear Power Station (Pilgrim) to be conducted in the second quarter of 1988. The schedule for future biennial exercises will not be affected by this one-time exemption, but rather will continue to provide that such exercises will be conducted every second year (i.e., the following biennial exercise will be held in 1989).

The proposed deferral of the full participation exercise has been discussed with the Commonwealth of Massachusetts (Commonwealth) and local emergency response officials. All of the parties have indicated that they support the proposal.

The request will not affect the onsite exercise at Pilgrim planned for December 9, 1987.

The requested exemption is necessary because the Commonwealth, the local governments within the ten-mile plume exposure pathway emergency planning zone (EPZ) and the two emergency reception center communities are at present engaged in implementing numerous improvements in their offsite emergency preparedness programs, with the assistance of Boston Edison. These improvements include revision of the emergency plans of the local governments, revision of the Massachusetts Civil Defense Agency (MCDA) Area II plan as well as the Commonwealth's state-wide plan, the development of revised related procedures, the development and implementation of training programs for officials and emergency personnel, and the upgrading of Emergency Operation Centers (EOC's). A substantial commitment of resources and time has been made to accomplish these improvements, and the work is expected to continue through the remainder of the year and early 1988.

In view of these extensive ongoing efforts, the Commonwealth and the local governments have indicated that they are not able to participate in an exercise during calendar year 1987. Moreover, it is apparent that under these circumstances, conduct of the full participation exercise will be much more effective after the ongoing improvements have been implemented. In granting one-time exemptions authorizing deferral of exercises for licensed plants in the past, the NRC has recognized that the most effective and beneficial exercises are those which include the full-scale participation of State and local governments and that it is appropriate to defer an exercise until program revisions or facility improvements have been completed.

Since the last full participation biennial exercise at Pilgrim, Boston Edison has held an onsite exercise at Pilgrim in December 1986; has held quarterly onsite drills in March, June and August of 1987; and has scheduled its annual onsite exercise for December 9, 1987 (in which the Commonwealth will exercise various offsite objectives as described in BECo Ltr. #87 -147 "Scheduling of Pilgrim Onsite Exercise"). The previous exercise and drills have included limited participation by the Commonwealth, and the March and June 1987 drills included limited participation by several of the towns. The towns within the EPZ have also cooperated in the full scale siren test reviewed by FEMA, which was conducted on September 29, 1986. In addition to its activities involving Pilgrim, the Commonwealth has also participated in full participation exercises at the Yankee Nuclear Power Station in June 1986 and is scheduled to participate in a full participation exercise at the Vermont Yankee Nuclear Generating Station during the week of November 29, 1987.

This request meets a number of the special circumstances listed in Section 50.12(a)(2)

First, granting the request will provide only temporary relief from the applicable regulation and the licensee has made good faith efforts to comply with the regulation. Over the past year, Boston Edison has assisted Commonwealth and local authorities in a variety of ways to accomplish as many improvements as possible in their offsite emergency response programs. For example, Boston Edison has developed substantive information for the enhancement of those programs. The major products of this effort include the "Pilgrim Station Evacuation Time Estimates and Traffic Management Plan Update" (August 18, 1987) prepared by KLD Associates, Inc. and "A Study to Identify Potential Shelters in the EPZ Coastline Region of Pilgrim Nuclear Power Station" (August 1987) prepared by Stone & Webster Engineering Corporation, as well as information generated in surveys to identify the special needs and transportation dependent populations within the EPZ.

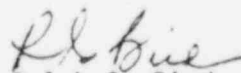
In addition, Boston Edison is providing assistance to the local governments in their offsite emergency program enhancement efforts in accordance with the Massachusetts Civil Defense Act of 1950 (Chapter 639, Section 15, Acts of 1950 as amended). This assistance includes the provision of two professional planners to work under the direction of the officials of each town within the EPZ in upgrading its plan, procedures and training; one

professional planner to assist each reception center community; and four professional planners working under the direction of MCDA in the upgrading of the MCDA Area II and Commonwealth program. In the first half of 1987, Boston Edison provided introductory emergency training to about 350 personnel within the five towns in the EPZ and enhanced introductory training modules are currently being prepared for review by the MCDA prior to further implementation. The planners provided by Boston Edison have also begun to prepare task-based modules for training of specific categories of emergency personnel and will be available to participate in the training programs. In addition, Boston Edison is executing agreements with each of the five towns within the EPZ, as well as the two reception center communities, for assistance in the renovation of their EOC's. Moreover, four of the five EPZ towns and both reception center communities, to date, have accepted BECo's offer of funding support for full-time civil defense staff positions.

Second, literal compliance with the regulation would not serve its underlying purpose and would result in undue hardship to Commonwealth and local emergency response agencies by requiring an exercise of portions of the offsite emergency plans that are in the process of significant revision and improvement. This would necessarily involve disruption of the ongoing process of implementing these changes, and consequently, the imposition of additional costs and delay in accomplishing the planned improvements. The NRC's emergency exercise requirements clearly were not intended to disrupt the orderly implementation of improvements in such manner.

Finally, because granting the request will allow work to proceed without disruption, it will result in a net benefit to the public health and safety. The NRC has acknowledged that flexibility is appropriate in applying emergency planning requirements. This flexible approach is especially appropriate in this case, where granting the request will facilitate more prompt and effective implementation of improvements.

For all these reasons, Boston Edison asks that NRC grant the requested exemption. In accordance with 10 CFR §170.12(c), a fee of one hundred and fifty dollars (\$150.00) will be electronically mailed to your offices. If you should require any additional information in connection with this request, please contact either myself or Mr. Ron Varley of my staff (telephone: 617 - 424-3832).


Ralph G. Bird

RAL/dlw

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