



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

SEP 8 1983

MEMORANDUM FOR: Richard W. Krimm
Assistant Associate Director
Office of Natural and Technological Hazards
Federal Emergency Management Agency

FROM: Edward L. Jordan, Director
Division of Emergency Preparedness
and Engineering Response
Office of Inspection and Enforcement

SUBJECT: REQUEST FOR ASSISTANCE CONCERNING
EMERGENCY PREPAREDNESS ISSUES AT
THE PILGRIM NUCLEAR POWER STATION

The purpose of this memorandum is to formally request the support of FEMA in responding to emergency preparedness issues which have been raised by the Massachusetts Public Interest Research Group (MASSPIRG) concerning the offsite emergency response plans and preparedness for the Pilgrim Nuclear Power Station in Plymouth, Massachusetts. This request is in accordance with the Memorandum of Understanding between FEMA and NRC dated November 4, 1980.

Pursuant to 10 CFR 2.206, a petition filed by Michael D. Ernst, Esq., on July 20, 1983 on behalf of MASSPIRG, requested that NRC take immediate action to remedy serious deficiencies in the offsite emergency response plans and preparedness for the Pilgrim Nuclear Power Station. The petition further requested that NRC (1) immediately start the four-month time period for correction of all deficiencies in the Pilgrim emergency plans and preparedness, and (2) determine whether the state of emergency preparedness in conjunction with the poor safety record at Pilgrim and the high summer population in the area warrant immediate shutdown or operation at reduced power. A copy of the MASSPIRG petition is enclosed.

MASSPIRG has alleged that serious deficiencies exist in the offsite emergency plans and preparedness for Pilgrim in four general areas (EPZ size, public information and education program, emergency warning system and public protective action plans). Their report entitled, "Blueprint For CHAOS II: Pilgrim Disaster Plans - Still A Disaster" is also enclosed for your information.

We recognize that some of these concerns may have already been addressed as part of FEMA's review of offsite preparedness in support of the Pilgrim facility. However, in view of the petition, we request that FEMA evaluate the

8309210496 XA

E/E-5

13-145

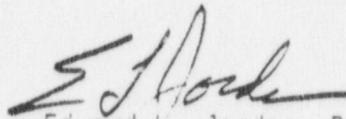
SEP 6 1983

Richard W. Krimm

-2-

issues raised in the petition and prepare a report on the adequacy of offsite plans and preparedness in these specific areas and the necessity for any corrective measures. The report should be in a format suitable for enclosure in an NRC reply to MASSPIRG and will be the basis for an NRC determination pursuant to 10 CFR 2.206. In order to provide the petitioner a reply within a reasonable time, as required by §2.206(b), the report should be completed by October 14, 1983.

If you have any questions regarding this request, please contact Don Perrotti (492-4871).



Edward L. Jordan, Director
Division of Emergency Preparedness
and Engineering Response
Office of Inspection and Enforcement

Enclosures:

1. Petition of MASSPIRG for
Emergency & Remedial Action
2. MASSPIRG Report, "CHAOS II"

cc w/encl. 1 only:

- R. C. DeYoung, IE
- T. E. Murley, Region I
- J. M. Taylor, IE
- S. A. Schwartz, IE
- F. G. Pagano, IE
- R. R. Bellamy, Region I
- F. Kantor, IE
- C. R. Van Niel, IE
- D. B. Matthews, IE
- D. J. Perrotti, IE
- C. A. Axelrad, IE

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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

In the Matter of)	
)	Docket No. 50-293
BOSTON EDISON COMPANY)	
(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.

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 marginally 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, 1986." 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 NRC (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 day of 1987.

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

Blank page insert diagram

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.

DISTRIBUTION:

Docket File w/incoming ltr only
NRC PDR
Local PDR
EDO #001953
EDO Reading
TMurley, JSniezek
FMiraglia
RStarostecki
SVarga
VNerses
MRushbrook
RWessman
GPA/PA
DMossburg, PMAS (EDO #001953)
PDI-3 R/F
DHagan
VStello
WClements, SECY, H-1149 (5)
OGC
JLieberman, OGC
ASLAB
ASLBP
ACRS (10)
JResner (2) (W-501)
JKudrick
ATHadani
WPaton
FCongel
SCollins, RI
JCraig
MRubin
JFouchard, PA
EFay, CA (5)
WRussell, RI
DMatthews
BClayton

Docket No.: 50-293

James M. Shannon, Attorney General
John W. McCormack State Office Building
One Ashburton Place
Boston, Massachusetts 02100-1698

Dear Mr. Shannon:

This is in further response to the Petition filed by Governor Michael S. Dukakis and you on behalf of the Commonwealth of Massachusetts and its citizens (Petitioners) with the Nuclear Regulatory Commission on October 15, 1987. The Petitioners request that the Director of the Office of Nuclear Reactor Regulation institute a proceeding pursuant to 10 CFR 2.202 to modify, suspend, or revoke the operating license held by the Boston Edison Company for the Pilgrim Nuclear Power Station.

As you may recall, you were notified in our letter dated November 13, 1987 that your Petition would be treated as a request for action according to 10 CFR 2.206 of the Commission's regulations. The staff has concluded its evaluation of the information contained in the Petition concerning the need for a probabilistic risk assessment and, for the reasons stated in the enclosed "Interim Director's Decision under 10 CFR 2.206," that portion of your Petition is denied. The portion of your Petition covering the management and the emergency preparedness 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,

Thomas E. Murley, Director
Office of Nuclear Reactor Regulation

Enclosures:

1. Interim Director's Decision
2. Federal Register Notice

E/E

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

OFFICE OF NUCLEAR REACTOR REGULATION
DR. THOMAS E. MURLEY, DIRECTOR

In the matter of)	Docket No. 50-293
)	
Boston Edison Company)	(10 CFR 2.206)
(Pilgrim Nuclear Power Station))	

Interim Director's Decision Under 10 CFR 2.206

INTRODUCTION

On October 15, 1987, Massachusetts Governor Michael S. Dukakis and Attorney General James M. Shannon filed a Petition on behalf of the Commonwealth of Massachusetts and its citizens (Petitioners) with the Nuclear Regulatory Commission requesting that the Director of the Office of Nuclear Reactor Regulation (NRR) institute a proceeding to modify, suspend, or revoke the operating license held by Boston Edison Company (BECo, the licensee) 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 for Pilgrim and all indicated safety modifications are implemented, (2) modify the Pilgrim 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 adequate emergency plans, and (3) issue an Order, effective immediately, to modify the Pilgrim license to preclude the licensee from taking any steps in its power ascension program until a formal adjudicatory hearing is held and findings of fact are made concerning safety questions raised regarding Pilgrim.

The relief sought by the Petitioners is based on allegations of:

- (1) evidence of continuing serious managerial deficiencies at Pilgrim,
- (2) evidence that a plant-specific PRA as well as the implementation of any safety modifications indicated thereby should be required prior to Pilgrim's restart, and (3) 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 Pilgrim.

On November 13, 1987, the Director acknowledged receipt of the Petition. He advised the Petitioners that their Petition would be treated under the requirements of 10 CFR 2.206 of the Commission's regulations and that appropriate action would be taken within a reasonable time. Notice of receipt of the Petition was published in the Federal Register (52 FR 44503).

On December 17, 1987, Governor Dukakis wrote a letter to NRC Chairman Zech and restated the position of the Commonwealth of Massachusetts that an adjudicatory hearing should be held before any decision is reached on the plant's future. On January 6, 1988, NRC Chairman Zech wrote Governor Dukakis stating that the series of planned meetings described in Chairman Zech's letter would result in more citizens being heard by the Commission than would have been

likely if an adjudicatory hearing had been held.

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 adjudicatory 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, 825 F.2d 46, (4th Cir. 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).

For the reasons stated below, the Petitioners' request, insofar as it relates to the conduct of a PRA, is denied; a final decision with respect to the management and emergency preparedness issues is deferred.

BACKGROUND

The NRC staff found the overall performance at Pilgrim acceptable during the assessment period covered by the 1985 Systematic Assessment of Licensee Performance (SALP No. 85-99). ^{1/} There was sufficient concern, however, about

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.

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 performance 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, as stated 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 the belief that "...performance in the operation of the facility was found acceptable although some areas were only minimally acceptable."

On April 12, 1986, the licensee shut down Pilgrim because of equipment problems and operational difficulties. The NRC Regional Administrator (at that time, Dr. Thomas E. Murley) 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 the reactor could be

restarted. These issues included certain technical issues (overdue surveillances, malfunction of recirculation pump motor-generator field breakers, seismic qualification of emergency diesel-generator phase differential relays, and completion ^{of} modifications required by Appendix R to 10 CFR Part 50) 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, Pilgrim remains shut down. The staff has 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 dealing effectively with identified problems and is making progress toward improving 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 and preparedness issues have been evaluated by the Federal Emergency Management Agency (FEMA). The results of FEMA's review are documented in the report entitled, "Self-Initiated Review and Interim Finding for the Pilgrim Nuclear Power Station," dated August 4, 1987. In response to the FEMA findings, the licensee, local communities in the area surrounding Pilgrim, and the Commonwealth of Massachusetts are working together to resolve emergency preparedness concerns. This effort is still in progress.

The NRC asked the licensee to submit a readiness report at least 45 days before the planned restart of the plant. In response to this request, the licensee submitted a report entitled, "Pilgrim Nuclear Power Station Restart Plan (Plan)," on July 30, 1987. This Plan, which consists of two volumes, describes not only the programs, plans, and actions considered necessary by BECo management for a safe and reliable restart, but also the longer term actions that are designed to ensure that there is continuing improvement in the safe operation of Pilgrim Station. Specifically, Volume 1 of the Plan contains descriptions of all the utility's programs that are either in progress or planned to correct and prevent recurrence of previously identified weaknesses, as well as a very limited discussion of the early results of some of the programmatic efforts already undertaken. Volume 2, which contains a series of appendices, is designed to provide ^{the Status} ~~periodic updates~~ of the licensee's efforts to meet commitments or resolve concerns in specific performance areas identified by either the licensee, NRC, or the Institute for Nuclear Plant Operations (INPO). X

On October 26, 1987 and January 4, 1988, the licensee provided revisions to Volume 2 of the Plan, ~~to document the progress being made in meeting specific commitments or resolving specific concerns.~~ X The licensee plans to submit a final update (to be presented as a Plan revision) on the overall progress of the Plan approximately three weeks before the scheduled restart of the Pilgrim Nuclear Power Station.

Because NRC is preparing to assess the overall effectiveness of the Plan in resolving previously identified weaknesses, NRC has welcomed public comments on the perceived strengths and weaknesses of both the programmatic

-7-

efforts contained in the Plan (Volume 1) and the success of specific actions in meeting specific commitments/concerns (Volume 2). NRC provided a specific opportunity for such public comments on February 18, 1988, and will factor the resulting oral and written comments into its assessment of the operational readiness of the Pilgrim Nuclear Station.

A discussion of each of the three bases for this Petition follows.

DISCUSSION

A. Management

The Petitioners allege that serious managerial deficiencies continue to exist at Pilgrim. As the bases for their Petition, the Petitioners cite: (#1) consistently low ratings in SALP reports; (#2) the licensee's inability to sustain performance improvements when they were made; (#3) the licensee's poor enforcement record regarding the severity level and number of violations; and (#4) recent news articles concerning security problems and the use of excessive overtime. Documents cited by the Petitioners include SALP reports 85-99 and 86-99 and Inspection Reports 85-36 through 87-04.

The Petitioners provided no ^{substantial} new information or evidence that was not known to the NRC when it issued the "Interim Director's Decision under 10 CFR 2.206," dated August 21, 1987 (hereinafter referred to as the Golden Interim Decision) in response to the Petition filed on July 15, 1986, by Massachusetts State Senator William B. Golden and others, also alleging deficiencies in the licensee's management. A copy of the Golden Interim Decision is attached to this Decision and incorporated by reference; we will not repeat the discussion of the management issue given in that Decision. X

Because the Pilgrim Station is 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 the Petitioners' request at this time. A final Director's Decision regarding management issues is deferred until (1) the management deficiencies have been suitably addressed by the licensee and (2) the NRC staff completes its assessment of the licensee's efforts. The management portion of this Petition will, therefore, be addressed in a subsequent decision.

B. Probabilistic Risk Assessment and Attendant Plant Modifications

The Petitioners have requested that the Pilgrim operating license be modified to require, prior to restart from the current outage, a plant-specific probabilistic risk assessment PRA and implementation of all safety modifications indicated therein. The Petitioners assert that such a requirement is necessary because of three factors that influence the potential consequences of a postulated severe accident at Pilgrim Station. These factors are: (1) a vulnerable primary containment (Mark I design), (2) a secondary containment (reactor building) not designed to provide an effective backup barrier, and (3) a large population in the immediate vicinity of the plant. Central to the Petitioners' request is the assertion that these three factors preclude consideration of the findings in NUREG-1150 concerning the remote probability of a severe accident and attendant early fatalities. ^{2/}

2/ The Reactor Risk Reference Document Draft (NUREG 1150)

Finally, the Petitioners maintain that the licensee, by its voluntary action in initiating a Safety Enhancement Program has, in effect, raised as a restart issue the question of the adequacy of the proposed plant modifications that are part of the Safety Enhancement Program.

On August 8, 1985, the NRC issued in 10 CFR Part 50 its "Policy Statement on Severe Reactor Accidents Regarding Future Designs and Existing Plants," hereafter referred to as the Severe Accident Policy Statement. Through this policy statement, the Commission sought to describe and clarify the position it intended to use to resolve safety issues related to reactor accidents more severe than design-basis accidents (i.e., those accidents considered in the licensing of nuclear power plants). In the Severe Accident Policy Statement, the Commission reaffirmed its position that existing plants pose no undue risk to public health and safety. Therefore, unless significant new safety information arises contradicting this finding, the Commission concluded that no further regulatory action was needed. This finding was based on the results of currently available information, including current and past probabilistic risk analyses. Although such studies had been performed for reference (or surrogate) plants, the accumulated evidence supported a generic finding. However, to verify this conclusion of acceptable risk on a plant-specific basis, in the Policy Statement the Commission indicated its intent to require that individual licensees perform a limited scope safety analysis of severe accidents to identify plant-specific vulnerabilities. Further in the statement, the Commission clarified its position that issues related to the possible need

-10-

for safety measures to control or mitigate severe accidents were beyond the scope of proceedings that might arise for an operating reactor.

Since issuance of the Severe Accident Policy Statement, additional evidence from ongoing probabilistic risk studies has confirmed the Commission's finding that no further regulatory action is needed. As acknowledged by the Petitioners, the comprehensive assessment documented in NUREG-1150 concluded that the probability of a severe accident with early fatalities is extremely remote.

However, the Petitioners incorrectly assert that the finding of NUREG-1150 is not applicable to Pilgrim because of the characteristics cited by the Petitioners: a Mark I containment, an ineffective secondary containment, and a large surrounding population. Although it is inappropriate to apply the specific numerical risk estimates from NUREG-1150 to Pilgrim, it is also inappropriate for the Petitioners to conclude that unacceptable risk follows by virtue of the fact that Pilgrim uses a Mark I containment design.

In the Golden Interim Decision, the staff provided a discussion of the design basis and adequacy of the Pilgrim containment. The Petition has not identified any issues not previously considered by the staff and included in the Golden Interim Decision.

The performance of Mark I containments during severe reactor accidents has been included in staff considerations since the beginning of probabilistic risk assessments for nuclear reactors. In the first major effort to assess risk probabilistically, the 1975 Reactor Safety Study (WASH-1400), one of the reactors studied was the Peach Bottom boiling water reactor, which employs a

Mark I containment. Further, the more recent comprehensive risk study documented in NUREG-1150 also evaluated the risk posed by the Peach Bottom plant. Both studies provide a basis for concluding that the Peach Bottom Mark I containment is a suitable surrogate for other Mark I containments, such as Pilgrim. Therefore, assertions that generic or reference risk studies are inapplicable to Pilgrim because Pilgrim has a Mark I containment are unfounded.

A comparison of the Pilgrim and Peach Bottom containment designs reveals that the primary containments are identical in concept and very similar in design details. Likewise, the secondary containment design is similar between the two plants. The Petitioners' discussion of "blow panels" in the Pilgrim secondary containment design as a unique design feature is incorrect. This feature is common to both Pilgrim and Peach Bottom, and was considered in the risk assessment of Peach Bottom, which concluded that the risk associated with severe accidents was acceptably low. One measure of a containment's capability to deal with reactor accidents is the ratio of containment volume to reactor power. By this measure the Pilgrim containment is comparable to that of the Peach Bottom plant.

It is reasonable to expect that in the rather populous northeastern United States, nuclear power plants sited there would have surrounding population densities about the U.S. average for nuclear power plants located elsewhere. Using 1982 data based on the 1980 census, the population (about 41,000) surrounding Pilgrim up to a radius of 10 miles ranked 26th of 80 sites in operation or in the licensing process at that time. As of 1987, the

-12-

population residing within a 10 mile radius of the plant is estimated by the licensee to be about 62,000 with about 70,000 residing within the 10 mile Emergency Planning Zone (EPZ). The Commission has not required the conduct of a PRA based upon population considerations. Moreover, several other nuclear plants in areas of high population density (Beaver Valley, Turkey Point) have not been required to conduct a PRA. } ~~2/01~~

Accordingly, there is not sufficient evidence of significant risk vulnerabilities associated with the primary and secondary containment design or unique population considerations to warrant the requirement for a plant-specific PRA prior to restart of Pilgrim.

With regard to the Safety Enhancement Program, the staff also addressed this matter in the Golden Interim Decision. The staff is reviewing the modifications associated with the Safety Enhancement Program to ensure that they have no overall adverse safety impact on existing systems. Moreover, the licensee's initiative to improve plant safety beyond the point of complying with NRC regulations is not a basis for opening the issue of the efficacy of any proposed plant modifications.

Because the Petitioners have not identified any unique or unacceptable severe accident risk for the Pilgrim plant nor documented that it poses an unreasonable threat to public health and safety, there is no merit in their request that restart be delayed until a PRA is conducted. Therefore, this request is denied.

C. Emergency Preparedness

The Petitioners allege deficiencies in the current state of emergency planning and preparedness for Pilgrim Station. The Petitioners cite assessments performed by the Federal Emergency Management Agency (FEMA) ^{3/} and the Massachusetts Executive Office of Public Safety ^{4/} that conclude that emergency planning and preparedness at Pilgrim are inadequate to protect the health and safety of the public in the event of an accident. The Petitioners state that both agencies have identified deficiencies in (1) evacuation plans for public and private schools as well as day care centers, (2) evacuation plans for the special needs population, (3) evacuation plans for the transport-dependent population, (4) identifiable public shelters for the beach population, (5) a reception center for people evacuating by the northern route, and (6) the overall progress in planning and the apparent diminution in the state of emergency preparedness.

FEMA forwarded its report on the adequacy of emergency preparedness at Pilgrim to the NRC on August 6, 1987. In this report, FEMA specifically addressed the information provided in the First Barry Report in developing

3/ Federal Emergency Management Agency "Self-Initiated Review and Interim Finding for the Pilgrim Nuclear Power Station," dated August 4, 1987.

4/ Massachusetts Executive Office of Public Safety, Secretary of Public Safety, Charles V. Barry, "Report to the Governor on Emergency Preparedness for an Accident at the Pilgrim Nuclear Power Station," dated December 16, 1986 (the "First Barry Report").

its findings. On August 18, 1987, the NRC requested that the licensee provide an action plan and schedule for assisting the Commonwealth of Massachusetts and local governments in addressing the FEMA-identified emergency planning issues for Pilgrim. The NRC stated that it viewed the emergency planning issues to be a matter of serious concern and that the determination to restart the plant will involve, in part, consideration of the resolution of the emergency planning issues identified by FEMA. (A similar conclusion was stated in the Golden Interim Decision).

By letter dated September 17, 1987, the licensee submitted an action plan and schedule summarizing the status of the issues and the assistance being provided by the licensee to the Commonwealth and local authorities in the improvement of their emergency response programs. These efforts have included the development of an updated evacuation time estimate (ETE) study and traffic management plan, a study to identify public shelters for the beach population, and the identification of and provision for the special-needs and transportation-dependent populations within the 10-mile emergency planning zone (EPZ). In addition, the licensee is providing professional planners to assist local governments and the Commonwealth in upgrading their plans and in the development of a new training program for offsite emergency response personnel.

The Petitioners acknowledge the progress made toward improving emergency preparedness, including identification of school/day care populations, estimates of available resources to evacuate these populations, an updated ETE study, and estimates of the beach population and sheltering data. However, the Petitioners

-15-

continue to identify concerns regarding the current planning efforts involving the identification of the special-needs and transport-dependent populations, shortcomings in the ETE study, inadequacies in the sheltering data, determination of a replacement for the northern reception center, and the conduct of an exercise. On December 17, 1987, Governor Dukakis forwarded to the NRC a report prepared by Secretary Barry entitled "Report on Emergency Preparedness for an Accident at Pilgrim Nuclear Power Station" (Second Barry Report). In this report, Secretary Barry provided additional information and background concerning the issues raised in the Petition.

The inadequacies in emergency planning and preparedness at Pilgrim have been well documented by FEMA in its self-initiated review, which was based on information provided by Commonwealth and local officials, members of the public, and other sources, including the First Barry Report. The Commonwealth, local governments within the EPZ, and the two emergency reception center communities are in the process of addressing these inadequacies with the assistance of the licensee.

On October 26, 1987, the licensee provided additional information on beach population and sheltering to the Commonwealth. This letter was augmented by a letter to the Commonwealth dated December 23, 1987, that forwarded a report entitled "Reception Center Feasibility Analysis."

The current status of the efforts to improve the offsite emergency response programs is as follows:

- Drafts of the local emergency plans have been completed. Four of these drafts have been forwarded by the Commonwealth to FEMA for technical review.

-16-

- Drafts of the local emergency plan implementing procedures are being prepared.
- The draft Massachusetts Civil Defense Agency Area II Plan is complete and being reviewed by the Commonwealth.
- The draft of the Commonwealth Plan for Pilgrim is nearing completion.
- A training program has been jointly developed by the licensee and the Massachusetts Civil Defense Agency. The training program has been provided to the Massachusetts Civil Defense Agency, which has approved it and is reviewing the attendant lesson plans or they are being developed.

The NRC will continue to monitor the progress of the licensee's efforts to assist Massachusetts and local governments in improving their emergency response programs. The licensee ^{has indicated his commitment} ~~projects that the work~~ to upgrade the offsite emergency response programs ~~will extend into early 1988~~ and has committed to conduct a full-participation exercise following the completion of these efforts. On September 17, 1987, the licensee requested an exemption from the NRC requirement to conduct a biennial full-participation exercise in 1987. On December 9, 1987, the NRC granted the exemption, stipulating that the licensee is to conduct a full-participation exercise for Pilgrim no later than June 30, 1988.

In view of the extensive ongoing efforts to improve emergency preparedness and the decisions of the NRC not to permit Pilgrim to resume operation until the NRC determines that the health and safety of the public can be protected, a decision on this portion of the Petitioners' request is deferred. However, the determination as to whether to restart Pilgrim will involve consideration of ~~the~~ the emergency planning issues identified by FEMA. X

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 and emergency preparedness issues. These portions 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 actions in regard to the probabilistic risk assessment and attendant plant modifications. 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

Attachment:
Golden Interim Decision



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

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,

Thomas E. Murley, Director
Office of Nuclear Reactor Regulation

Enclosures:

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

cc: See next page

E/E-2

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,

Thomas E. Murley, Director
Office of Nuclear Reactor Regulation

Enclosures:

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

cc: See next page

*See previous concurrence

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

FOR THE NUCLEAR REGULATORY COMMISSION

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

PDI-3
JHolonich
06/ /87

PDI-3
RWessman
06/ /87

PDI-3
MRushbrook
06/ /87

OGC
06/ /87

PDI-3
VNerses
06/ /87

cc:

Mr. K. P. Roberts, Nuclear Operations
Pilgrim Nuclear Power Station
Boston Edison Company
RFD #1, Rocky Hill Road
Plymouth, Massachusetts 02360

Resident Inspector's Office
U. S. Nuclear Regulatory Commission
Post Office Box 867
Plymouth, Massachusetts 02360

Chairman, Board of Selectmen
11 Lincoln Street
Plymouth, Massachusetts 02360

Office of the Commissioner
Massachusetts Department of
Environmental Quality Engineering
One Winter Street
Boston, Massachusetts 02108

Office of the Attorney General
1 Ashburton Place
19th Floor
Boston, Massachusetts 02108

Mr. Robert M. Hallisey, Director
Radiation Control Program
Massachusetts Department of
Public Health
150 Tremont Street, 2nd Floor
Boston, Massachusetts 02111

Regional Administrator, Region I
U. S. Nuclear Regulatory Commission
631 Park Avenue
King of Prussia, Pennsylvania 19406

Mr. James D. Keyes
Regulatory Affairs and Programs Group
Leader
Boston Edison Company
25 Braintree Hill Park
Braintree, Massachusetts 02184

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

Mr. Richard N. Swanson, Manager
Nuclear Engineering Department
Boston Edison Company
25 Braintree Hill Park
Braintree, Massachusetts 02184

Ms. Elaine D. Robinson
Nuclear Information Manager
Pilgrim Nuclear Power Station
RFD #1, Rocky Hill Road
Plymouth, Massachusetts 02360

Ms. J. Rachel Shimshak
Massachusetts Public Interest
Research Group
29 Temple Place
Boston, Massachusetts 02111

Mr. Richard W. Krimm
Assistant Associate Director
Office of Natural and Technological
Hazards Programs
Federal Emergency Management Agency
Washington, D.C. 20472

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

OFFICE OF NUCLEAR REACTOR REGULATION
DR. THOMAS E. MURLEY, DIRECTOR

In the matter of)	Docket No. 50-293
)	
Boston Edison Company)	(10 CFR 2.206)
(Pilgrim Nuclear Power Station))	

Interim Director's Decision Under 10 CFR 2.206

INTRODUCTION

On October 15, 1987, Massachusetts Governor Michael S. Dukakis and Attorney General James M. Shannon filed a Petition on behalf of the Commonwealth of Massachusetts and its citizens (Petitioners) with the Nuclear Regulatory Commission requesting that the Director of the Office of Nuclear Reactor Regulation (NRR) institute a proceeding to modify, suspend, or revoke the operating license held by Boston Edison Company (BECo, the licensee) 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 for Pilgrim and all indicated safety modifications are implemented, (2) modify the Pilgrim 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 adequate emergency plans, and (3) issue an Order, effective immediately, to modify the Pilgrim license to preclude the licensee from taking any steps in its power ascension program until a formal adjudicatory hearing is held and findings of fact are made concerning safety questions raised regarding Pilgrim.

The relief sought by the Petitioners is based on allegations of:

- (1) evidence of continuing serious managerial deficiencies at Pilgrim,
- (2) evidence that a plant-specific PRA as well as the implementation of any safety modifications indicated thereby should be required prior to Pilgrim's restart, and
- (3) 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 Pilgrim.

On November 13, 1987, the Director acknowledged receipt of the Petition. He advised the Petitioners that their Petition would be treated under the requirements of 10 CFR 2.206 of the Commission's regulations and that appropriate action would be taken within a reasonable time. Notice of receipt of the Petition was published in the Federal Register (52 FR 44503).

On December 17, 1987, Governor Dukakis wrote a letter to NRC Chairman Zech and restated the position of the Commonwealth of Massachusetts that an adjudicatory hearing should be held before any decision is reached on the plant's future. On January 6, 1988, NRC Chairman Zech wrote Governor Dukakis stating that the series of planned meetings described in Chairman Zech's letter would result in more citizens being heard by the Commission than would have been likely if an adjudicatory hearing had been held.

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 adjudicatory 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, 825 F.2d 46, (4th Cir. 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).

For the reasons stated below, the Petitioners' request, insofar as it relates to the conduct of a PRA, is denied; a final decision with respect to the management and emergency preparedness issues is deferred.

BACKGROUND

The NRC staff found the overall performance at Pilgrim acceptable during the assessment period covered by the 1985 Systematic Assessment of Licensee Performance (SALP No. 85-99). ^{1/} There was sufficient concern, however, about

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.

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 performance 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, as stated 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 the belief that "...performance in the operation of the facility was found acceptable although some areas were only minimally acceptable."

On April 12, 1986, the licensee shut down Pilgrim because of equipment problems and operational difficulties. The NRC Regional Administrator (at that time, Dr. Thomas E. Murley) 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 the reactor could be

restarted. These issues included certain technical issues (overdue surveillances, malfunction of recirculation pump motor-generator field breakers, seismic qualification of emergency diesel-generator phase differential relays, and completion modifications required by Appendix R to 10 CFR Part 50) 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, Pilgrim remains shut down. The staff has 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 dealing effectively with identified problems and is making progress toward improving 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 and preparedness issues have been evaluated by the Federal Emergency Management Agency (FEMA). The results of FEMA's review are documented in the report entitled, "Self-Initiated Review and Interim Finding for the Pilgrim Nuclear Power Station," dated August 4, 1987. In response to the FEMA findings, the licensee, local communities in the area surrounding Pilgrim, and the Commonwealth of Massachusetts are working together to resolve emergency preparedness concerns. This effort is still in progress.

-6-

The NRC asked the licensee to submit a readiness report at least 45 days before the planned restart of the plant. In response to this request, the licensee submitted a report entitled, "Pilgrim Nuclear Power Station Restart Plan (Plan)," on July 30, 1987. This Plan, which consists of two volumes, describes not only the programs, plans, and actions considered necessary by BECo management for a safe and reliable restart, but also the longer term actions that are designed to ensure that there is continuing improvement in the safe operation of Pilgrim Station. Specifically, Volume 1 of the Plan contains descriptions of all the utility's programs that are either in progress or planned to correct and prevent recurrence of previously identified weaknesses, as well as a very limited discussion of the early results of some of the programmatic efforts already undertaken. Volume 2, which contains a series of appendices, is designed to provide periodic updates of the licensee's efforts to meet commitments or resolve concerns in specific performance areas identified by either the licensee, NRC, or the Institute for Nuclear Plant Operations (INPO).

On October 26, 1987 and January 4, 1988, the licensee provided revisions to Volume 2 of the Plan to document the progress being made in meeting specific commitments or resolving specific concerns. The licensee plans to submit a final update (to be presented as a Plan revision) on the overall progress of the Plan approximately three weeks before the scheduled restart of the Pilgrim Nuclear Power Station.

Because NRC is preparing to assess the overall effectiveness of the Plan in resolving previously identified weaknesses, NRC has welcomed public comments on the perceived strengths and weaknesses of both the programmatic

efforts contained in the Plan (Volume 1) and the success of specific actions in meeting specific commitments/concerns (Volume 2). NRC provided a specific opportunity for such public comments on February 18, 1988, and will factor the resulting oral and written comments into its assessment of the operational readiness of the Pilgrim Nuclear Station.

A discussion of each of the three bases for this Petition follows.

DISCUSSION

A. Management

The Petitioners allege that serious managerial deficiencies continue to exist at Pilgrim. As the bases for their Petition, the Petitioners cite: (#1) consistently low ratings in SALP reports; (#2) the licensee's inability to sustain performance improvements when they were made; (#3) the licensee's poor enforcement record regarding the severity level and number of violations; and (#4) recent news articles concerning security problems and the use of excessive overtime. Documents cited by the Petitioners include SALP reports 85-99 and 86-99 and Inspection Reports 85-36 through 87-04.

The Petitioners provided no new information or evidence that was not known to the NRC when it issued the "Interim Director's Decision under 10 CFR 2.206," dated August 21, 1987 (hereinafter referred to as the Golden Interim Decision) in response to the Petition filed on July 15, 1986, by Massachusetts State Senator William B. Golden and others, also alleging deficiencies in the licensee's management. A copy of the Golden Interim Decision is attached to this Decision and incorporated by reference; we will not repeat the discussion of the management issue given in that Decision.

Because the Pilgrim Station is 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 the Petitioners' request at this time. A final Director's Decision regarding management issues is deferred until (1) the management deficiencies have been suitably addressed by the licensee and (2) the NRC staff completes its assessment of the licensee's efforts. The management portion of this Petition will, therefore, be addressed in a subsequent decision.

B. Probabilistic Risk Assessment and Attendant Plant Modifications

The Petitioners have requested that the Pilgrim operating license be modified to require, prior to restart from the current outage, a plant-specific probabilistic risk assessment PRA and implementation of all safety modifications indicated therein. The Petitioners assert that such a requirement is necessary because of three factors that influence the potential consequences of a postulated severe accident at Pilgrim Station. These factors are: (1) a vulnerable primary containment (Mark I design), (2) a secondary containment (reactor building) not designed to provide an effective backup barrier, and (3) a large population in the immediate vicinity of the plant. Central to the Petitioners' request is the assertion that these three factors preclude consideration of the findings in NUREG-1150 concerning the remote probability of a severe accident and attendant early fatalities. ^{2/}

2/ The Reactor Risk Reference Document Draft (NUREG 1150)

Finally, the Petitioners maintain that the licensee, by its voluntary action in initiating a Safety Enhancement Program has, in effect, raised as a restart issue the question of the adequacy of the proposed plant modifications that are part of the Safety Enhancement Program.

On August 8, 1985, the NRC issued in 10 CFR Part 50 its "Policy Statement on Severe Reactor Accidents Regarding Future Designs and Existing Plants," hereafter referred to as the Severe Accident Policy Statement. Through this policy statement, the Commission sought to describe and clarify the position it intended to use to resolve safety issues related to reactor accidents more severe than design-basis accidents (i.e., those accidents considered in the licensing of nuclear power plants). In the Severe Accident Policy Statement, the Commission reaffirmed its position that existing plants pose no undue risk to public health and safety. Therefore, unless significant new safety information arises contradicting this finding, the Commission concluded that no further regulatory action was needed. This finding was based on the results of currently available information, including current and past probabilistic risk analyses. Although such studies had been performed for reference (or surrogate) plants, the accumulated evidence supported a generic finding. However, to verify this conclusion of acceptable risk on a plant-specific basis, in the Policy Statement the Commission indicated its intent to require that individual licensees perform a limited scope safety analysis of severe accidents to identify plant-specific vulnerabilities. Further in the statement, the Commission clarified its position that issues related to the possible need

for safety measures to control or mitigate severe accidents were beyond the scope of proceedings that might arise for an operating reactor.

Since issuance of the Severe Accident Policy Statement, additional evidence from ongoing probabilistic risk studies has confirmed the Commission's finding that no further regulatory action is needed. As acknowledged by the Petitioners, the comprehensive assessment documented in NUREG-1150 concluded that the probability of a severe accident with early fatalities is extremely remote.

However, the Petitioner incorrectly assert that the finding of NUREG-1150 is not applicable to Pilgrim because of the characteristics cited by the Petitioners: a Mark I containment, an ineffective secondary containment, and a large surrounding population. Although it is inappropriate to apply the specific numerical risk estimates from NUREG-1150 to Pilgrim, it is also inappropriate for the Petitioners to conclude that unacceptable risk follows by virtue of the fact that Pilgrim uses a Mark I containment design.

In the Golden Interim Decision, the staff provided a discussion of the design basis and adequacy of the Pilgrim containment. The Petition has not identified any issues not previously considered by the staff and included in the Golden Interim Decision.

The performance of Mark I containments during severe reactor accidents has been included in staff considerations since the beginning of probabilistic risk assessments for nuclear reactors. In the first major effort to assess risk probabilistically, the 1975 Reactor Safety Study (WASH-1400), one of the reactors studied was the Peach Bottom boiling water reactor, which employs a

-11-

Mark I containment. Further, the more recent comprehensive risk study documented in NUREG-1150 also evaluated the risk posed by the Peach Bottom plant. Both studies provide a basis for concluding that the Peach Bottom Mark I containment is a suitable surrogate for other Mark I containments, such as Pilgrim. Therefore, assertions that generic or reference risk studies are inapplicable to Pilgrim because Pilgrim has a Mark I containment are unfounded.

A comparison of the Pilgrim and Peach Bottom containment designs reveals that the primary containments are identical in concept and very similar in design details. Likewise, the secondary containment design is similar between the two plants. The Petitioners' discussion of "blow panels" in the Pilgrim secondary containment design as a unique design feature is incorrect. This feature is common to both Pilgrim and Peach Bottom, and was considered in the risk assessment of Peach Bottom, which concluded that the risk associated with severe accidents was acceptably low. One measure of a containment's capability to deal with reactor accidents is the ratio of containment volume to reactor power. By this measure the Pilgrim containment is comparable to that of the Peach Bottom plant.

It is reasonable to expect that in the rather populous northeastern United States, nuclear power plants sited there would have surrounding population densities about the U.S. average for nuclear power plants located elsewhere. Using 1982 data based on the 1980 census, the population (about 41,000) surrounding Pilgrim up to a radius of 10 miles ranked 26th of 80 sites in operation or in the licensing process at that time. As of 1987, the

-12-

population residing within a 10 mile radius of the plant is estimated by the licensee to be about 62,000 with about 70,000 residing within the 10 mile Emergency Planning Zone (EPZ). The Commission has not required the conduct of a PRA based upon population considerations. Moreover, several other nuclear plants in areas of high population density (Beaver Valley, Turkey Point) have not been required to conduct a PRA.

Accordingly, there is not sufficient evidence of significant risk vulnerabilities associated with the primary and secondary containment design or unique population considerations to warrant the requirement for a plant-specific PRA prior to restart of Pilgrim.

With regard to the Safety Enhancement Program, the staff also addressed this matter in the Golden Interim Decision. The staff is reviewing the modifications associated with the Safety Enhancement Program to ensure that they have no overall adverse safety impact on existing systems. Moreover, the licensee's initiative to improve plant safety beyond the point of complying with NRC regulations is not a basis for opening the issue of the efficacy of any proposed plant modifications.

Because the Petitioners have not identified any unique or unacceptable severe accident risk for the Pilgrim plant nor documented that it poses an unreasonable threat to public health and safety, there is no merit in their request that restart be delayed until a PRA is conducted. Therefore, this request is denied.

C. Emergency Preparedness

The Petitioners allege deficiencies in the current state of emergency planning and preparedness for Pilgrim Station. The Petitioners cite assessments performed by the Federal Emergency Management Agency (FEMA) ^{3/} and the Massachusetts Executive Office of Public Safety ^{4/} that conclude that emergency planning and preparedness at Pilgrim are inadequate to protect the health and safety of the public in the event of an accident. The Petitioners state that both agencies have identified deficiencies in (1) evacuation plans for public and private schools as well as day care centers, (2) evacuation plans for the special needs population, (3) evacuation plans for the transport-dependent population, (4) identifiable public shelters for the beach population, (5) a reception center for people evacuating by the northern route, and (6) the overall progress in planning and the apparent diminution in the state of emergency preparedness.

FEMA forwarded its report on the adequacy of emergency preparedness at Pilgrim to the NRC on August 6, 1987. In this report, FEMA specifically addressed the information provided in the First Barry Report in developing

3/ Federal Emergency Management Agency "Self-Initiated Review and Interim Finding for the Pilgrim Nuclear Power Station," dated August 4, 1987.

4/ Massachusetts Executive Office of Public Safety, Secretary of Public Safety, Charles V. Barry, "Report to the Governor on Emergency Preparedness for an Accident at the Pilgrim Nuclear Power Station," dated December 16, 1986 (the "First Barry Report").

its findings. On August 18, 1987, the NRC requested that the licensee provide an action plan and schedule for assisting the Commonwealth of Massachusetts and local governments in addressing the FEMA-identified emergency planning issues for Pilgrim. The NRC stated that it viewed the emergency planning issues to be a matter of serious concern and that the determination to restart the plant will involve, in part, consideration of the resolution of the emergency planning issues identified by FEMA. (A similar conclusion was stated in the Golden Interim Decision).

By letter dated September 17, 1987, the licensee submitted an action plan and schedule summarizing the status of the issues and the assistance being provided by the licensee to the Commonwealth and local authorities in the improvement of their emergency response programs. These efforts have included the development of an updated evacuation time estimate (ETE) study and traffic management plan, a study to identify public shelters for the beach population, and the identification of and provision for the special-needs and transportation-dependent populations within the 10-mile emergency planning zone (EPZ). In addition, the licensee is providing professional planners to assist local governments and the Commonwealth in upgrading their plans and in the development of a new training program for offsite emergency response personnel.

The Petitioners acknowledge the progress made toward improving emergency preparedness, including identification of school/day care populations, estimates of available resources to evacuate these populations, an updated ETE study, and estimates of the beach population and sheltering data. However, the Petitioners

-15-

continue to identify concerns regarding the current planning efforts involving the identification of the special-needs and transport-dependent populations, shortcomings in the ETE study, inadequacies in the sheltering data, determination of a replacement for the northern reception center, and the conduct of an exercise. On December 17, 1987, Governor Dukakis forwarded to the NRC a report prepared by Secretary Barry entitled "Report on Emergency Preparedness for an Accident at Pilgrim Nuclear Power Station" (Second Barry Report). In this report, Secretary Barry provided additional information and background concerning the issues raised in the Petition.

The inadequacies in emergency planning and preparedness at Pilgrim have been well documented by FEMA in its self-initiated review, which was based on information provided by Commonwealth and local officials, members of the public, and other sources, including the First Barry Report. The Commonwealth, local governments within the EPZ, and the two emergency reception center communities are in the process of addressing these inadequacies with the assistance of the licensee.

On October 26, 1987, the licensee provided additional information on beach population and sheltering to the Commonwealth. This letter was augmented by a letter to the Commonwealth dated December 23, 1987, that forwarded a report entitled "Reception Center Feasibility Analysis."

The current status of the efforts to improve the offsite emergency response programs is as follows:

- Drafts of the local emergency plans have been completed. Four of these drafts have been forwarded by the Commonwealth to FEMA for technical review.

-16-

- Drafts of the local emergency plan implementing procedures are being prepared.
- The draft Massachusetts Civil Defense Agency Area II Plan is complete and being reviewed by the Commonwealth.
- The draft of the Commonwealth Plan for Pilgrim is nearing completion.
- A training program has been jointly developed by the licensee and the Massachusetts Civil Defense Agency. The training program has been provided to the Massachusetts Civil Defense Agency, which has approved it and is reviewing the attendant lesson plans or they are being developed.

The NRC will continue to monitor the progress of the licensee's efforts to assist Massachusetts and local governments in improving their emergency response programs. The licensee projects that the work to upgrade the offsite emergency response programs will extend into early 1988 and has committed to conduct a full-participation exercise following the completion of these efforts. On September 17, 1987, the licensee requested an exemption from the NRC requirement to conduct a biennial full-participation exercise in 1987. On December 9, 1987, the NRC granted the exemption, stipulating that the licensee is to conduct a full-participation exercise for Pilgrim no later than June 30, 1988.

-17-

In view of the extensive ongoing efforts to improve emergency preparedness and the decisions of the NRC not to permit Pilgrim to resume operation until the NRC determines that the health and safety of the public can be protected, a decision on this portion of the Petitioners' request is deferred. However, the determination as to whether to restart Pilgrim will involve consideration of each of the emergency planning issues identified by FEMA.

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 and emergency preparedness issues. These portions 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 actions in regard to the probabilistic risk assessment and attendant plant modifications. Accordingly, the Petitioners' request for action pursuant to 10 CFR 2. 206 on this issue is denied.

-18-

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

Attachment:
Golden Interim Decision