August 12, 1966

Mr. E. Thomas Boulette, Ph.D
Senior Vice President - Nuclear
Boston Edison Company
Pilgrim Nuclear Power Station
RFD #1 Rocky Hill Road
Plymouth, MA 02360

SUBJECT: ISSUANCE OF AMENDMENT NO. 166 TO FACILITY OPERATING LICENSE NO. DPR-35, PILGRIM NUCLEAR POWER STATION (TAC NO. M95327)

Dear Mr. Boulette:

The Commission has issued the enclosed Amendment No. 166 to Facility Operating License No. DPR-35 for the Pilgrim Nuclear Power Station. This amendment is in response to your application dated May 1, 1996.

The proposed amendment will modify the definition of "Core Alteration," and the limiting condition for operation, Surveillance conditions and Bases section associated with Technical Specification 3.7.C, "Secondary Containment."

A copy of the related Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's biweekly Federal Register Notice.

Sincerely,

ORIGINAL SIGNED BY:

Alan Wang, Project Manager
Project Directorate I-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket No. 50-293

Enclosures: 1. Amendment No. 166 to License No. DPR-35
2. Safety Evaluation

cc w/encls: See next page

Distribution: See attached sheet

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

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Sincerely,

Alan Wang

Alan Wang, Project Manager
Project Directorate I-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket No. 50-293

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cc w/encls: See next page

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

BOSTON EDISON COMPANY

DOCKET NO. 50-293

PILGRIM NUCLEAR POWER STATION

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 166
License No. DPR-35

1. The Nuclear Regulatory Commission (the Commission or the NRC) has found that:

   A. The application for amendment filed by the Boston Edison Company (the licensee) dated May 1, 1996, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance: (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment.

3. This license amendment is effective as of its date of issuance and shall be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION

Jocelyn A. Mitchell

Jocelyn A. Mitchell, Acting Director
Project Directorate I-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: August 12, 1996

ATTACHMENT TO LICENSE AMENDMENT NO. 166

FACILITY OPERATING LICENSE NO. DPR-35

DOCKET NO. 50-293

Replace the following pages of the Appendix A Technical Specifications with the attached pages. The revised pages are identified by Amendment number and contain vertical lines indicating the area of change.

Remove	Insert
1-4	1-4
3/4.7-16	3/4.7-16
3/4.7-17	-
B3/4.7-13	B3/4.7-13

Q. Core Alteration - Core Alteration shall be the movement of any fuel, sources, or reactivity control components, within the reactor vessel with the vessel head removed, and fuel in the vessel. The following exceptions are not considered to be Core Alterations:

a. Movement of source range monitors, local power range monitors, intermediate range monitors, traversing incore probes, or special movable detectors (including undervessel replacement); and

b. Control rod movement, provided there are no fuel assemblies in the associated core cell.

Suspension of Core Alterations shall not preclude completion of movement of a component to a safe position.

R. Reactor Vessel Pressure - Unless otherwise indicated, reactor vessel pressures listed in the Technical Specifications are those measured by the reactor vessel steam space detectors.

S. Thermal Parameters

1. Minimum Critical Power Ratio (MCPR) - the value of critical power ratio associated with the most limiting assembly in the reactor core. Critical Power Ratio (CPR) is the ratio of that power in a fuel assembly, which is calculated to cause some point in the assembly to experience boiling transition, to the actual assembly operating power.

2. Transition Boiling - Transition boiling means the boiling regime between nucleate and film boiling. Transition boiling is the regime in which both nucleate and film boiling occur intermittently with neither type being completely stable.

3. Total Peaking Factor - The ratio of the fuel rod surface heat flux to the heat flux of an average rod in an identical geometry fuel assembly operating at the core average bundle power.

T. Instrumentation

1. Instrument Calibration - An instrument calibration means the adjustment of an instrument signal output so that it corresponds, within acceptable range, and accuracy, to a known value(s) of the parameter which the instrument monitors. Calibration shall encompass the entire instrument including actuation, alarm or trip.

2. Instrument Channel - An instrument channel means an arrangement of a sensor and auxiliary equipment required to generate and transmit to a trip system a single trip signal related to the plant parameter monitored by that instrument channel.

3. Instrument Functional Test - An instrument functional test means the injection of a simulated signal into the instrument primary sensor to verify the proper instrument channel response, alarm and/or initiating action.

4. Instrument Check - An instrument check is a qualitative determination of acceptable operability by observation of instrument behavior during operation. This determination shall include, where possible, comparison of the instrument with other independent instruments measuring the same variable.

LIMITING CONDITIONS FOR OPERATION

3.7 CONTAINMENT SYSTEMS (Cont)

Shutdown Transformer is required to be operable and capable of supplying power to the emergency bus.
-Fuel movement will not occur until the reactor vessel is flood up to elevation 114'.
-The train of CRHEAF without its safety related bus or without its emergency diesel generator will have power supplied from a normal offsite source via a non safety related bus. The normal offsite source consists of either the Startup Transformer or Unit Auxiliary Transformer (Backfeed Mode)

C. Secondary Containment

1. Secondary containment shall be OPERABLE when in the Run, Startup and Hot Shutdown MODES, during movement of irradiated fuel assemblies in the secondary containment, and during movement of new fuel over the spent fuel pool, and during CORE ALTERATIONS, and during operations with a potential for draining the reactor vessel (OPDRVs).

2. a. With Secondary Containment inoperable when in the Run, Startup and Hot Shutdown MODES, restore Secondary Containment to OPERABLE status within 4 hours.

b. Required Action and Completion Time of 2.a not met, be in Hot Shutdown in 12 hours **AND** Cold Shutdown within 36 hours.

c. With Secondary Containment inoperable during movement of irradiated fuel assemblies in the secondary containment, and during movement of new fuel over the spent fuel pool, and during CORE ALTERATIONS, and during OPDRVs, immediately
   1. Suspend movement of irradiated fuel assemblies in the secondary containment.
   AND
   2. Suspend movement of new fuel over the spent fuel pool.
   AND
   3. Suspend CORE ALTERATIONS.
   AND
   4. Initiate action to suspend OPDRVs.

SURVEILLANCE REQUIREMENTS

4.7 CONTAINMENT SYSTEMS (Cont)

C. Secondary Containment

1. Each refueling outage prior to refueling, secondary containment capability shall be demonstrated to maintain 1/4 inch of water vacuum under calm wind (5 mph) conditions with a filter train flow rate of not more than 4000 cfm.

BASES:

3/4.7 CONTAINMENT SYSTEMS (Cont)

C. Secondary Containment

The secondary containment is designed to minimize any ground level release of radioactive materials which might result from a serious accident. The reactor building provides secondary containment during reactor operation, when the drywell is sealed and in service; the reactor building provides primary containment when the reactor is shutdown and the drywell is open, as during refueling. Because the secondary containment is an integral part of the complete containment system, secondary containment is required at all times that primary containment is required as well as during refueling.

There are two principal accidents for which credit is taken for secondary containment operability. These are a loss of coolant accident (LOCA) and a fuel handling accident inside [secondary] containment. The secondary containment performs no active function in response to each of these limiting events; however, its leak tightness is required to ensure that the release of radioactive materials from the primary containment is restricted to those leakage paths and associated leakage rates assumed in the accident analysis and that fission products entrapped within the secondary containment structure will be treated by the SGT System prior to discharge to the environment.

An operable secondary containment provides a control volume into which fission products that bypass or leak from primary containment, or are released from the reactor coolant pressure boundary components located in secondary containment, can be diluted and processed prior to release to the environment. For the secondary containment to be considered operable, it must have adequate leak tightness to ensure that the required vacuum can be established and maintained.

If secondary containment is inoperable (when required to be operable), it must be restored to operable status within 4 hours. The 4 hour completion time provides a period of time to correct the problem that is commensurate with the importance of maintaining secondary containment during Run, Startup, and Hot Shutdown modes. This time period also ensures that the probability of an accident (requiring secondary containment operability) occurring during periods where secondary containment is inoperable is minimal.

If secondary containment cannot be restored to operable status within the required completion time, the plant must be brought to a mode in which the LCO does not apply. To achieve this status, the plant must be brought to at least Hot Shutdown within 12 hours and to Cold Shutdown within 36 hours. The allowed completion times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

Movement of irradiated fuel assemblies in the secondary containment, movement of new fuel over the spent fuel pool, core alterations, and OPDRVs can be postulated to cause fission product release to the secondary containment. In such cases, the secondary containment is the only barrier to release of fission products to the environment. Core alterations, movement of irradiated fuel assemblies, and movement of new fuel over the spent fuel pool must be immediately suspended if the secondary containment is inoperable.

Suspension of these activities shall not preclude completing an action that involves moving a component to a safe position. Also, action must be immediately initiated to suspend OPDRVs to minimize the probability of a vessel draindown and subsequent potential for fission product release. Actions must continue until OPDRVs are suspended.

Initiating reactor building isolation and operation of the standby gas treatment system to maintain at least a 1/4 inch of water negative pressure within the secondary containment provides an adequate test of the operation of the reactor building isolation valves, leak tightness of the reactor building and performance of the standby gas treatment system. Functionally testing the initiating sensors and associated trip channels demonstrates the capability for automatic actuation. Performing these tests prior to refueling will demonstrate secondary containment capability prior to the time the primary containment is opened for refueling. Periodic testing gives sufficient confidence of reactor building integrity and standby gas treatment system performance capability.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 166 TO FACILITY OPERATING LICENSE NO. DPR-35

BOSTON EDISON COMPANY

PILGRIM NUCLEAR POWER STATION

DOCKET NO. 50-293

1.0 INTRODUCTION

By application dated May 1, 1996, Boston Edison Company (the licensee) requested changes to the Technical Specifications (TSs) for the Pilgrim Nuclear Power Station. The proposed changes will modify the definition of "Core Alteration," and the limiting condition for operation, Surveillance conditions and Bases section associated with Technical Specification 3.7.C, "Secondary Containment."

2.0 DEFINITION OF CORE ALTERATION

The licensee's May 1, 1996, letter to the NRC proposes to modify definition 1.0.Q, "Alteration of the Reactor Core." The current TS defines core alteration as the act of moving any component in the region above the core support plate, below the upper grid and within the shroud. The definition excludes normal control rod movement with the control rod drive hydraulic system and normal core instrumentation movement. The definition is being modified so that the term will apply only to those activities that create the potential for a reactivity excursion. Those activities that could cause a reactivity excursion would warrant special precautions such as: secondary containment operable, control room emergency ventilation operable, minimum number of AC and DC power supplies operable and refueling interlocks operable.

The new definition would allow the movement of source range monitors, local power range monitors, intermediate range monitors, traversing incore probes, special movable detectors (including under vessel replacement), cameras, lights, tools, etc. Movement of items that require no special controls to prevent a reactivity excursion will not be considered a core alteration. For instance, removal of a control rod from a core cell where there are no associated fuel assemblies is not considered a core alteration. The removal of the four fuel bundles surrounding a control rod reduces the reactivity worth of the associated control rod to the point where removal of that rod no longer has the potential to cause a reactivity excursion. This fact is recognized in the design of the control rod velocity limiter which precludes removal of a control rod prior to the removal of the four adjacent fuel bundles.

In the refueling mode, the only mode in which core alterations are allowed, the one-rod-out interlock precludes moving more than a single control rod at a time and requires all other rods to be fully inserted. By the new definition, even though one rod movement is allowed by TS, this control rod movement would

now be considered a core alteration. This control rod movement will now require various precautions such as refueling interlocks, secondary containment and the SCRAM function to be operable. The staff has determined that this change provides the licensee some additional operational flexibility during refueling while still providing assurances that activities that could cause a reactivity excursion are defined as a core alteration and would warrant special precautions. In addition, the wording is consistent with the improved standard technical specifications (STS). Based on the above, the staff concludes that this TS change is acceptable.

3.0 SECONDARY CONTAINMENT

The licensee's May 1, 1996, letter to the NRC proposes to modify existing TS Sections 3.7.C.1 and 3.7.C.2, "Containment Systems," and the associated Bases section. In addition, Surveillance requirements 4.7.C.1.a and b are being deleted and Surveillance 4.7.C.1.c is being reworded for clarity and renumbered to reflect deletion of 4.7.C.1.a and b.

The TS for the secondary containment integrity is currently written to define when secondary containment is not required. If the secondary containment integrity cannot be maintained then the current TS require that actions be initiated to establish conditions for which secondary containment is not necessary. The proposed TS is written to define when secondary containment integrity is required and the actions to take if secondary containment is inoperable and the time frames for completing the actions.

The current TS requires the following four conditions to be satisfied when secondary containment integrity is not maintained:

a. The reactor is subcritical and Specification 3.3.A is met,
b. The reactor water temperature is below 212 °F and the reactor coolant system is vented,
c. No activity is being performed which can reduce the shutdown margin below that specified in Specification 3.3.A, and
d. The fuel cask or irradiated fuel is not being moved in the reactor building.

These conditions would require the plant to be either in the cold shutdown mode or in the refueling mode but with fuel not being moved. Specification 3.3.A, "Reactivity Margin - core loading," requires a reactivity condition such that the core could be made subcritical in the most reactive condition during the operating cycle with the strongest operable control rod in its full out position and all other rods fully inserted. The shutdown margin is determined as part of the reload analysis and confirmed by insequence criticality testing during startup and monthly monitoring of critical rod configuration during the cycle. In the shutdown or refueling mode all rods are inserted and only in the refueling mode can one rod be moved. This

control rod movement will require various precautions such as refueling interlocks, secondary containment and the SCRAM function be operable. This assures that Specification 3.3.A is maintained in the cold shutdown and refueling modes.

The revised TS would require that secondary containment integrity be operable in Run, Startup, and Hot Shutdown Modes, during movement of irradiated fuel assemblies in the secondary containment, and during movement of new fuel over the spent fuel pool, and during core alterations, and during operations with a potential for draining the reactor vessel. These conditions essentially include all conditions except cold shutdown and refueling mode when fuel is not being moved. Therefore, the applicability requirements for the secondary containment have not changed. In addition, as noted above, Specification 3.3.A is maintained in the cold shutdown and refueling modes when secondary containment is not necessary. The revised TS provides action statements and completion times specifying the actions to take if secondary containment is not operable. The previous TS had one action statement that required that, when the secondary containment integrity was needed but unavailable, the plant initiate actions to place the plant in a condition in which the secondary containment integrity was not necessary but with no time restraints. Therefore, the new TS is more restrictive as it requires specific actions and completion times. The staff has concluded that the revised TS specify more clearly when secondary containment integrity is required, what actions to take if secondary containment is inoperable, and time frames for completing the actions. Based on the above, the staff concludes that the revisions enhance the current TS by making them more definitive and supplementing them with action statements and required completion times and, therefore, the changes are acceptable.

The amendment deletes Surveillance requirements 4.7.C.1.a and b as they were required only during the preoperational testing. Surveillance 4.7.C.1.c was reworded and the changes were purely editorial in nature. In addition, Surveillance 4.7.C.1.c was renumbered to 4.7.C.1 to reflect the deletion of Surveillances 4.7.C.1.a and b. This was also an editorial change. Based on the above, the staff concluded that the proposed changes are acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Massachusetts State official was notified of the proposed issuance of the amendment. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes surveillance requirements. This also changes surveillance requirements. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (61 FR 28606). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: A. Wang

Date: August 12, 1996

DATED: August 12, 1996

AMENDMENT NO. 166 TO FACILITY OPERATING LICENSE NO. DPR-35-PILGRIM NUCLEAR POWER STATION

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