BOSTON EDISON COMPANY
800 BOYLSTON STREET
BOSTON, MASSACHUSETTS 02199

J. EDWARD HOWARD
VICE PRESIDENT
NUCLEAR

September 22, 1981

BECo. Ltr. 81-222

Proposed Change No. 81-04

Mr. Thomas A. Ippolito, Chief
Operating Reactors Branch #3
Division of Operating Reactors
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C 20555

License No. DPR-35
Docket No. 50-293

Reload 5 Submittal
and Request for Technical Specification Changes

Reference: a. "Generic Reload Fuel Application " NEDE-24011-P-A, July 1979 as ammended.

b. "Supplemental Reload Licensing Submittal for Pilgrim Nuclear Power Station Unit 1 Reload 5". Y1003J01A28, August 1981

c. Revision 1 to "Loss of Coolant Accident Analysis Report for Pilgrim Nuclear Power Station", NEDO-21696,

d. "Supplement 1 to Supplemental Reload Licensing Submittal for Pilgrim Nuclear Power Station Unit 1 Reload 4" NEDO-24224-1 March 1980.

Dear Sir:

The fifth refueling outage for Pilgrim Nuclear Power Station, Unit #1 is scheduled to commence in September 1981. Analyses (Reference b.) supporting and justifying the operation of Pilgrim I during Cycle 5 are hereby submitted for your reveiw.

Reference b supplements generic analyses previously submitted by General Electric by Reference a. Reference c updates the original Loss-of-Coolant Accident (LOCA) report by including MAPLHGR tables for more recent fuel types and by adding, as an appendix, a discussion of LOCA analyses with no core spray heat transfer credit.

Acol 5/1/40 w/check #4,600

This appendix is identical to ' analysis description submitted and reviewed as Reference d in connection with PNPS Reload 4.

Applicable changes to Appendix (Technical Specifications) to Facility Operating License (No. DPR-35) are also submitted for you review, approval and issuance pursuant to Section 50 of Title 10, Code of Federal Regulations.

Proposed Technical Specification Changes (Including Reasons)

It is proposed to modify the existing Technical Specifications as described in the attached pages. The changes are designed to allow operation after Reload 5.

1. Specification 3.11A

   Figure 3.11-6 which present the MAPLHGR for the new fuel type P8DRB265H is to be added, along with the associated textual changes on pages 205C and 205C-E. The figure is a plot generated by multiplying the normal MAPLHGR's by reducing factors to account for no core spray heat transfer credit as described in Appendix A of Reference c.

2. Specification 3.11C

   The operating MCPR Technical Specification has been revised to an "option B" format where the OLMCPR varies with measured scram times. The specification is based on measurements to the 30% inserted position which was chosen to coincide with present surveillance procedures at PNPS. The numerical values of the MCPR's are based on the CPR's from the Load Rejection w/o Bypass Transient given in Reference b.

Safety Considerations

Generic information relative to the reload fuel design and analyses of BWR fuel is presented in GE Licensing Topical Report NEDE-24011-P-A, "Generic Reload Fuel ' lication", July, 1979 (Reference a). This report is supplemented by pl specific information contained in Reference b. (The reference core loading for Reload 5 is identified in this later document.) Together, these two documents provide the bases for the safety analysis and safety evaluation for Reload 5, and the proposed Technical Specification changes associated with the reload. The following narrative summarizes those safety aspects which are reload specific.

The Reload 5 fuel assemlies are identical in mechanical design to P8 x 8R assemblies previously licensed and operated in the Pilgrim 1 Cycle 5.

The P8DRB265H assembly differs from P8DRB265L bundles presently in the core only in having a higher percentage of gadolinium in the poison rods. This change is accounted for in the reload analysis.

All transients which are the basis of the Pilgrim License were reviewed for Reload 5. Those transients which are critical with respect to safety margins and sensitive to the core reload parameter changes were reanalyzed. The most restrictive condition is calculated to occur as a result of a Generator Load Rejection without bypass. The analysis of this transient is done using Technical Specification scram times but the uncertainity penalty applied to the nominal results is based on sensitivity studies done by GE using a generic population of scram speed data. The proposed Technical Specification changes include a verification that PNPS is not outside this population, or if it is, the OLMCPR linearly approaches a conservative value of 1.40 for P8 x 8R fuel or 1.37 for 8 x 8 fuel. Operation within the proposed T.S. limit will avoid violation of the Safety Limit MCPR at any time during Cycle 6.

The reactor vessel overpressure protection is verified by the analysis of the closure of all main steam line isolation valves with an indirect (flux) scram. At the end of Cycle 6 with all safety relief valves operating and an indirect scram the peak vessel pressure remains 45 psi below the peak allowable ASME overpressure of 1375 psig at the vessel bottom.

Values of MAPLHGR for the new bundle type P8DRB265H have been calculated using the NRC approved methods described in Reference 2 and assuming no core spray heat transfer. This is the same method and asumption used to generate the MAPLHGR's for the present fuel types.

Review of the nuclear design of the Pilgrim Core with the Reload 5 fuel in place shows that the minimum shutdown margin with the strongest control rod fully withdrawn is calculated to be greater than 1.4% K/K, which exceeds the 0.25% K/K required by the Technical Specifications of the Pilgrim Nuclear Power Station plus the 0.04% K/K allowance for inverted tubes in the control rod blades.

The maximum incremental control rod worth using bank position withdrawal sequences in Cycle 6 is 0.70% K. This is below the Technical Specification limit of 1.0% K and assures the peak fuel enthalpy during a rod drop accident will be less than the 280 cal/gm (!) design limit.

The new fuel can be safely stored in the spent fuel pool since the maximum fuel loading and enrichment are within present Technical Specification limits of 16.0 gm U-235 per cm and 3.0 w/o U-235, respectively.

Conclusions

Based on the evaluation presented herein and the contents and analyses presented in Reference a. and b., it can be concluded that there is reasonable assurance that the health and safety of the public will not be endangered by operation of the Pilgrim Nuclear Power Station, Unit #1 following Reload No. 5.

This proposed amendment has been reviewed and approved by the Operations Review Committee and reviewed by the Nuclear Safety Review and Audit Committee.

Schedule

The Boston Edison Company tentatively plans to commence the refueling outage for Pilgrim I on September 26, 1981. Therefore, an expeditious review and approval of this submittal is requested.

Fee Consideration

In accordance with Section 170.12 of the Commission's Regulations, Boston Edison proposes this license change as Class III since it utilizes NRC approved topical reports as referenced. Accordingly, a check for Four Thousand Dollars ($4,000) is enclosed.

Should there by any questions regarding this submittal, please contact us.

Very truly yours

J Edward Howard

3 signed originals and 40 copies
Attachments - (1) Proposed Changes to Appendix A
(Technical Specifications)
(2) Reference (b)
(3) Reference (c)

Commonwealth of Massachusetts)
County of Suffolk)

Then personnally appeared before me J. Edward Howard, who, being duly sworn, did state that he is Vice President - Nuclear of Boston Edison Company, the applicant herein, and that he is duly authorized to execute and file the submittal contained herein in the name and on behalf of Boston Edison Company and that the statements in said submittal are true to the best of his knowledge and belief.

My Commission expires: July 6, 1984

Dorothy M. Lopes
Notary Public

ATTACHMENT (1)

Technical Specification pages

205 B

205 B-1

205 B-2

205 C

205 C-2

205 C-3

205 D

205 E-6