August 28, 1984

Docket No. 50-293

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Mr. William D. Harrington
Senior Vice President, Nuclear
Boston Edison Company
800 Boylston Street
Boston, Massachusetts 02199

Dear Mr. Harrington:

The Commission has issued the enclosed Amendment No. 77 to Facility Operating License No. DPR-35 for the Pilgrim Nuclear Power Station in response to your request dated March 20, 1984.

This amendment changes the Technical Specifications by extending the Power/Flow Map; requiring the rod block monitor maximum trip level to be set at 107% power for core flows of 100% rated or greater; and correcting a typographical error (from "REM" to "RBM"). These changes do not permit continuous operation at power levels greater than 100% of the present rating.

A copy of the related Safety Evaluation is also enclosed.

Sincerely,

Original signed by/

Paul H. Leech, Project Manager
Operating Reactors Branch #2
Division of Licensing

Enclosures:
1. Amendment No. 77 to
   License No. DPR-35
2. Safety Evaluation

cc w/enclosures:
See next page

DL:ORB#2	DL:ORB#2	DL:ORB#2	OELD	DL:AD-OR
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08/15/84	08/15/84	08/16/84	08/23/84	08/27/84

Mr. William D. Harrington
Boston Edison Company
Pilgrim Nuclear Power Station

cc:

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

BOSTON EDISON COMPANY

DOCKET NO. 50-293

PILGRIM NUCLEAR POWER STATION

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 77
License No. DPR-35

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

   A. The application for amendment by Boston Edison Company (the licensee) dated March 20, 1984 complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   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, and paragraph 3.B of Facility Operating License No. DPR-35 is hereby amended to read as follows:

B. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 77, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

DBVassallo

Domenic B. Vassallo, Chief
Operating Reactors Branch #2
Division of Licensing

Attachment:
Changes to the Technical
Specifications

Date of Issuance: August 28, 1984

ATTACHMENT TO LICENSE AMENDMENT NO. 77

FACILITY OPERATING LICENSE NO. DPR-35

DOCKET NO. 50-293

Replace the following pages of the Appendix "A" Technical Specifications with the enclosed pages. The revised pages are identified by amendment number and contain vertical lines indicating the areas of change.

Remove	Insert
55	55
205H	205H

NOTES FOR TABLE 3.2.C

1. For the startup and run positions of the Reactor Mode Selector Switch, there shall be two operable or tripped trip systems for each function. The SRM and IRM blocks need not be operable in "Run" mode, and the APRM and RBM rod blocks need not be operable in "Startup" mode. If the first column cannot be met for one of the two trip systems, this condition may exist for up to seven days provided that during that time the operable system is functionally tested immediately and daily thereafter; If this condition lasts longer than seven days, the system shall be tripped. If the first column cannot be met for both trip systems, the systems shall be tripped.

2. W is percent of drive flow required to produce a rated core flow of 69 Mlb/hr. Trip level setting is in percent of design power (1998 MWt). For flows of 100% or greater, the rod block monitor maximum trip level setting shall be 107% power.

3. IRM downscale is bypassed when it is on its lowest range.

4. This function is bypassed when the count rate is $\geq$ 100 cps.

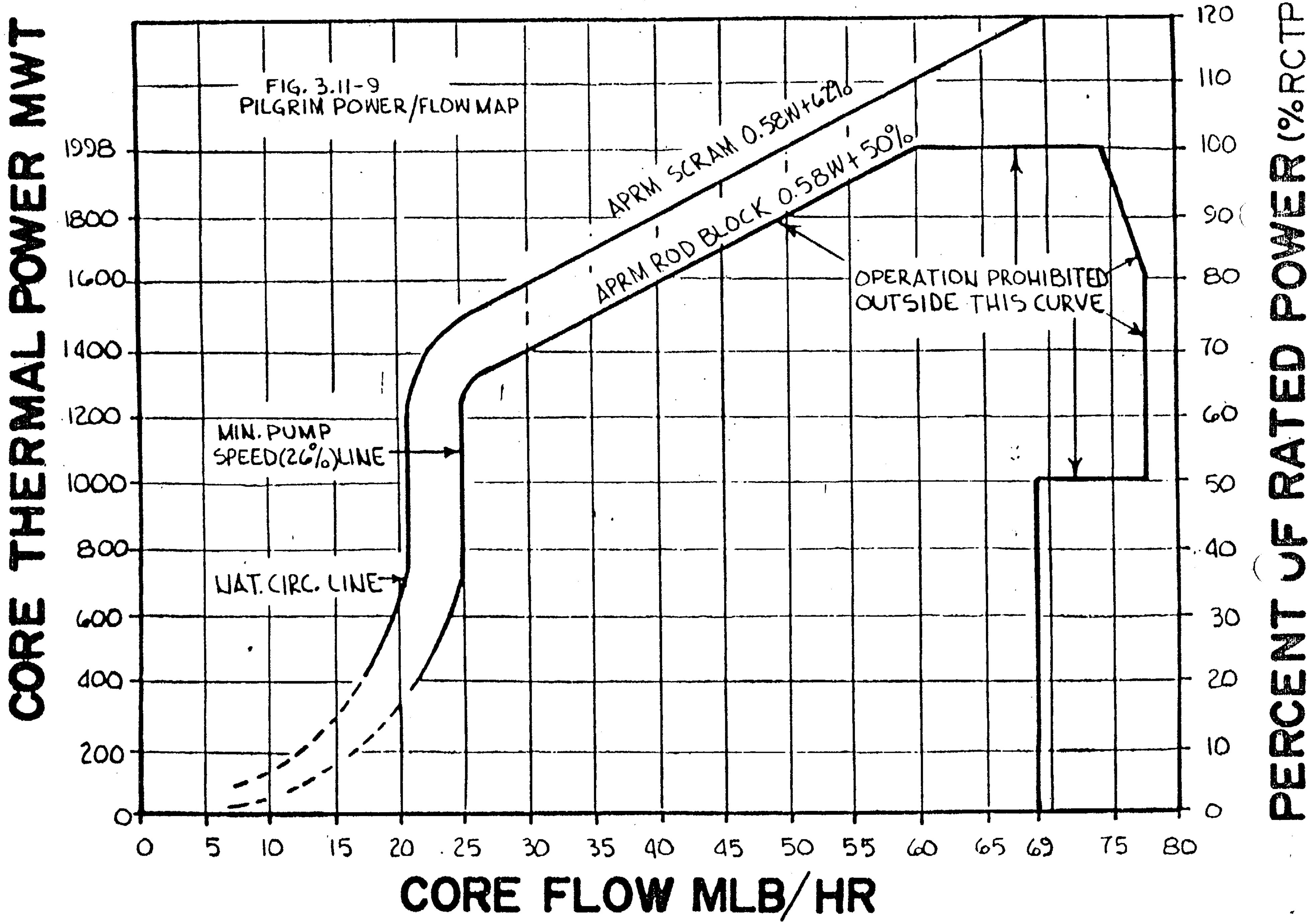
5. One of the four SRM inputs may be bypassed.

6. This SRM function is bypassed when the IRM range switches are on range 8 or above.

7. The trip is bypassed when the reactor power is $\leq$ 30%.

8. This function is bypassed when the mode switch is placed in Run.

9. If the number of operable channels is less than required by the minimum number of operable instrument channels per trip system requirement, place the inoperable channel in the tripped condition within one hour.



Amendment No. 77

205H

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 77 TO FACILITY OPERATING LICENSE NO. DPR-35

BOSTON EDISON COMPANY

PILGRIM NUCLEAR POWER STATION, UNIT 1

DOCKET NO. 50-293

1.0 Introduction

By letter dated March 20, 1984 (Ref. 1) the Boston Edison Company (BECo) requested permission to extend the operational envelope for the Pilgrim Nuclear Power Station. The proposed power/flow map shown in Figure 1-1 of Reference 2 shows an increase in core flow to operate within the region bounded by 100% power, 100% core flow and 100% power, 107.5% core flow throughout Cycle 6. Reference 3 supports proposed operation at End of Cycle (EOC) 6 and for exposure beyond EOC 6 with increased core flow. The conditions evaluated were 100% power operation beyond the standard EOC 6 conditions with a 43°F reduction in feedwater temperature followed by a natural reactivity coastdown to 80% power under conditions bounded by 112.5% core flow. The evaluation also includes continued operation in the region of the operating map bounded by the constant core flow line between 80% power, 112.5% core flow and 50% power, 112.5% core flow.

2.0 Evaluation

The limiting abnormal operational transients previously analyzed for rated flow operation as well as the loss of coolant accident (LOCA), fuel loading error accident, rod drop accident, and rod withdrawal error event were reevaluated for increased core flow operation. These events were also reevaluated for End of Cycle operation with increased core flow and the last stage feedwater heaters valved-out. The results show that the current Technical Specifications with incorporation of the minimum critical power ratio (MCPR) limits of Table 2-3 (Ref. 2) are adequate to preclude the violation of any safety limits during operation of Pilgrim within the proposed operating map for Cycle 6 and for exposures beyond EOC 6. The critical power ratios (CPRs) and the MCPR operating limits are given in Tables 2-2 and 2-3 of Reference 2. The MCPR limits must, however, be raised from 1.46 (8x8) and 1.49 (P8x8R) to the appropriate values given in Table 2-3.

At core flows greater than 100% rated, the rod withdrawal error becomes the limiting transient. However, by installing a constant 107% trip at flows greater than 100% rated, the flow dependence of the rod block trip is removed and the effects of this transient are mitigated. The proposed constant 107% power rod block trip is more conservative than the present flow-biased setpoint for flows greater than 100% rated.

We have reviewed the effect of increased pressure differences due to increased core flow on the reactor internal components, fuel channels, and fuel bundles and find that the design limits will not be exceeded.

The effect of the increased flow rate on the flow-induced vibration response of the reactor internals was also evaluated. Based on the results, we conclude that the reactor internals response to flow-induced vibration would be within acceptable limits for plant operation in the increased core flow region.

The increase in the feedwater nozzle usage factor due to the feedwater temperature reduction was evaluated for coastdown. The results show that the average additional fatigue usage due to rapid cycling that will occur on the feedwater nozzle would produce a usage factor greater than 1.0 in 36 to 37 years assuming 13-year refurbishment intervals. This refurbishment period can be reduced to 12 years in order to keep the 40-year usage factor below 1.0.

The thermal-hydraulic stability was evaluated for increased flow operation with the last stage feedwater heaters valved out-of-service. The overall results indicate that the thermal-hydraulic stability is acceptable for feedwater temperature reduction and increased core flow.

The impact of feedwater temperature reduction and increased core flow operation on the containment LOCA response was analyzed. The current containment LOCA response analyses results were found to be adequate for these extended operating conditions.

3.0 Summary

We find that approved thermal hydraulic methods have been used and that the results of the analyses support the proposed limit MCPRs, which avoid violation of the safety limit MCPR for design transients. We, therefore, conclude that the core flow increase beyond the rated flow will not adversely affect the licensee's capability to operate Pilgrim safely during extended flow operation.

Based on our review, we conclude that clipping the Rod Block Monitor at 107% of rated power will permit the plant to be operated within the limits shown on Technical Specification Figure 3.11-9. The proposed change in footnote 2 of Table 3.2.C requires this clipping. We therefore find that the proposed changes in the Technical Specifications are acceptable.

4.0 Environmental Consideration

This amendment involves a change in the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The 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 this amendment involves no significant hazards consideration and there has been no public comment on such finding. Accordingly, this 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 this amendment.

5.0 Conclusion

We have 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, and (2) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

6.0 References

1. Letter from W. D. Harrington, BECo, to D. B. Vassallo, NRC, dated March 20, 1984, "Proposed Technical Specification Change to Allow Increased Core Flow."

2. "Safety Review of Pilgrim Nuclear Power Station, Unit No. 1 at Core Flow Conditions Above Rated Flow Throughout Cycle 6," NEDO-30242, August 1983.

3. "Safety Review of Pilgrim Nuclear Power Station, Unit No. 1 at Core Flow Conditions Above Rated Flow Throughout Cycle 6," NEDO-30242, Supplement 1, September 1983.

Principal Contributor: L. Kopp

Dated: August 28, 1984