

**BOSTON EDISON**

Pilgrim Nuclear Power Station
Rocky Hill Road
Plymouth, Massachusetts 02360

10CFR50.90

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BECO 93-062

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

License DPR-35
Docket 50-293

**PROPOSED CHANGE TO TECHNICAL SPECIFICATIONS:
MAIN STEAM ISOLATION VALVE TURBINE INLET LOW PRESSURE SETPOINT**

Boston Edison Company (BECO) proposes the attached changes to Appendix A of Operating License No. DPR-35 in accordance with 10CFR50.90. One proposed change reduces the Main Steam Isolation Valve Low Turbine Inlet Pressure (MSIVLTIP) setpoint from ≥ 880 pounds per square inch gauge (psig) to ≥ 810 psig. This change is proposed to reduce potential spurious isolations caused by the existing higher setpoint. The other proposed change reduces the minimum pressure in the definition of RUN mode from 880 psig to 785 psig. This change is proposed to realize fully the potential of enhanced operating flexibility provided by the proposed reduction in the MSIVLTIP.

The requested changes are described in Attachment A. The revised Technical Specification pages are in Attachment B. Attachment C provides the existing pages marked-up to show the proposed changes. Attachment D is a copy of General Electric report #MDE-70-0586, "Evaluation of the Effect on Plant Operation of MSIV Low Turbine Inlet Pressure Isolation Setpoint Change for Pilgrim Nuclear Power Station". Attachment E is a copy of General Electric report "NEDO-31296".

E.T. Boulette
Senior Vice President - Nuclear

Commonwealth of Massachusetts)
County of Plymouth)

Then personally appeared before me, E. T. Boulette, who being duly sworn, did state that he is Senior Vice President - Nuclear of Boston Edison Company 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: October 5, 1995

DATE

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Attachments: (A) Description of Proposed Change
(B) Amended Technical Specification Pages
(C) Marked-up Pages from Current Technical Specifications
(D) MDE-70-0586, "Evaluation of the Effect on Plant Operation of MSIV Low Turbine Inlet Pressure Isolation Setpoint Change at Pilgrim Nuclear Power Station"
(E) NEDO-31296, "Safety Evaluation of MSIV Low Turbine Inlet Pressure Isolation Setpoint Change for Pilgrim Nuclear Power Station"

1 signed original and 37 copies

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ATTACHMENT A

Proposed Change

Two changes are proposed. One proposed change lowers the "Low Pressure Main Steam Line" setpoint from ≥ 880 psig to ≥ 810 psig. The other proposed change reduces the minimum pressure in the definition of RUN mode from 880 psig to 785 psig.

The specific changes are identified by change bars in the margins of the proposed pages in Attachment B, and by the marked-up current Technical Specification pages in Attachment C.

Reason for Change

The Main Steam Isolation Valve (MSIV) low-pressure isolation setpoint is part of the primary containment and reactor vessel isolation control system. It provides isolation in response to pressure regulator malfunctions. The setpoint should be high enough to provide timely detection of pressure regulator malfunctions and low enough to prevent spurious isolations. The current setpoint of ≥ 880 psig fulfills its detection function but has resulted in spurious isolations. Based on General Electric's analysis NEDO-31296, "Safety Evaluation of MSIV Low Turbine Inlet Pressure Isolation Setpoint Change for Pilgrim Nuclear Power Station", changing the setpoint to ≥ 810 psig provides protection against regulator malfunctions while providing greater margin against spurious isolations.

The reduced minimum pressure in the definition of RUN mode is to realize fully the potential of enhanced operating flexibility provided by the reduced MSIVLTIP setpoint. By reducing this setpoint to 785 psig, operators may switch to the RUN mode and exceed 25% power immediately upon clearing the MSIVLTIP setpoint during startups. A value of 785 psig for the minimum pressure in the definition of the RUN mode is consistent with the lower bound of the range of applicability of the GEXL correlation.

Safety Evaluation and Determination of No Significant Hazards Considerations

The Code of Federal Regulations (10CFR50.91) requires licensees requesting an amendment to provide an analysis, using the standards in 10CFR50.92, that determines whether a significant hazards consideration exists. The following analysis is provided in accordance with 10CFR50.91 and 10CFR50.92 for the proposed amendment to lower the MSIV Low Turbine Inlet Pressure (MSIVLTIP) setpoint from ≥ 880 psig to ≥ 810 psig and to lower the minimum pressure in the definition of RUN mode from 880 psig to 785 psig.

1. The operation of Pilgrim Station in accordance with the proposed amendment will not involve a significant increase in the probability or consequences of an accident previously identified.

The MSIVLTIP setpoint is associated with the primary containment and reactor vessel isolation control system. The safety purpose of this system is to automatically initiate closure of isolation valves to ensure radiological releases to the environs are less than the maximum allowed by 10CFR100. However, the MSIVLTIP setpoint does not affect the safety function of the primary containment and reactor vessel isolation control system. While the MSIV low-pressure setpoint can initiate isolation of the primary containment and reactor vessel, assessments of radiological

releases do not take credit for automatic isolation initiated by a trip of the MSIV low-pressure setpoint. For the design basis steam line break, radiological releases are assessed assuming automatic isolation initiated by a high steam line flow rate. For a small steam line break, radiological releases are assessed assuming automatic isolation initiated by high radiation in the steam tunnel or high temperature in the turbine building. MSIVLTIP setpoint is nevertheless important to power operations. The MSIVLTIP setpoint prevents excessive vessel depressurization should the nuclear system pressure regulator fail open. Excessive vessel depressurization can impose significant thermal stresses on the nuclear system process barrier, resulting in an increase in the nuclear system process barrier's lifetime fatigue usage factor. NEDO-31296 and BECO calculation I-N1-30 show the lifetime fatigue usage factor, assuming eight pressure regulator failure (open) events, is not significantly increased by reducing the allowable value MSIVLTIP setpoint from ≥ 880 to ≥ 810 psig.

Other potential effects were analyzed:

- a. Reducing the MSIVLTIP setpoint will have no impact on the Minimum Critical Power Ratio (MCPR). As noted in the analysis (NEDO-31296), MSIV closure following a pressure regulator failure transient with the current setpoint of ≥ 880 psig corresponds to a neutron flux of less than 1%. This result is based on the assumption Turbine Control Valves (TCVs) open instantaneously upon failure of the pressure regulator. A lower setpoint will postpone MSIV closure. However, this postponement is not of concern because MCPR is not near the safety limit due to the very low reactor powers involved and remain bounded by the MCPR associated with the transients in the reload license submittal. This conclusion remains valid in the event the TCV's open slowly.
- b. Reducing the MSIV low-pressure isolation setpoint does result in an extended depressurization time prior to isolation. An extended depressurization results in a greater bulk water level swell with the potential of reaching the steam line nozzle, thereby trapping liquid in the steam line between the vessel and the in-board MSIV. However, a GE analysis of this event (MDE-70-0586), using a bounding set of initial conditions chosen to maximize the severity of the water level swell, shows water level will not increase to the bottom of the steam line nozzle elevation. Hence, no liquid would be trapped in the steam lines, and SRV performance would not be affected.
- c. If the MSIV low-pressure isolation setpoint were removed, a rapid depressurization of the reactor vessel due to a pressure regulator failure while the reactor is near full power could result in differential pressures across the fuel channels sufficient to cause mechanical deformation of the channels. From a safety perspective, these deformations are bounded by the deformations associated with the steam line break accident and do not challenge Pilgrim's accident analysis.
- d. Reducing the MSIV low-pressure setpoint to ≥ 810 psig continues to provide automatic protection of the low-pressure core thermal power safety limit ($\leq 25\%$ of rated core thermal power for reactor pressure less than 785 psig).

The other proposed change reduces the minimum pressure in the definition of RUN mode from 880 psig to 785 psig. Reactor modes are determined by the position of the mode switch. The safety function of the mode switch is to select the necessary scram functions for various plant conditions. The mode switch also provides necessary scram bypasses to facilitate operation.

Reducing the minimum pressure for the reactor to be in the RUN mode affects none of these functions. Specifically, the scram on high flux at less than 25% power (with the reactor in STARTUP) will not be bypassed before 785 psig is exceeded. This pressure is the minimum pressure for using the minimum critical power ratio (MCPR) as the basis for fuel cladding protection. Below this pressure, the scram at less than 25% of rated power provides the basis for protecting fuel cladding.

Based on the results of the various analyses, reducing the MSIVLTIP setpoint from ≥ 880 psig and reducing the minimum pressure in the RUN mode definition to 785 psig will not result in a significant increase in the probability or consequences of an accident previously identified.

2. The operation of Pilgrim Station in accordance with the proposed amendment will not create the possibility of a new or different kind of accident from any accident previously analyzed.

This proposed change modifies an existing instrument setpoint and reduces the minimum pressure for the reactor to be in the RUN mode. No other modifications to Pilgrim are involved. All plant scenarios affected by this setpoint have been reanalyzed as described in the above Part 1. For this reason it is concluded that this change does not create a new or different kind of accident from any accident previously analyzed.

3. The operation of Pilgrim Station in accordance with the proposed amendment will not involve a significant reduction in the margin of safety.

As discussed in (1), the MSIVLTIP setpoint does not affect the safety function of the primary containment and reactor vessel isolation control system, and assessments of radiological releases related to 10CFR100 requirements do not take credit for it. Also, the MSIVLTIP does not affect the margin of safety for any system or component that is indirectly impacted by this setpoint function and the minimum pressure in which the reactor mode switch may be in RUN remains consistent with the bases for ensuring the integrity of the fuel cladding. Therefore, operating Pilgrim in accordance with the proposed changes does not involve a significant reduction in the margin of safety.

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

Schedule of Change

This change will be implemented within 30 days following BECo's receipt of its approval by the Commission.