



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 147 TO FACILITY OPERATING LICENSE NO. DPR-35  
BOSTON EDISON COMPANY  
PILGRIM NUCLEAR POWER STATION  
DOCKET NO. 50-293

1.0 INTRODUCTION

By letter dated February 7, 1992, Boston Edison Company (BECo/the licensee) submitted a request to amend license DPR-35, of Pilgrim Nuclear Power Station for proposed changes to the Technical Specifications (TS) (Ref. 1). The proposed TS changes would affect the Reactor Protection System (RPS) surveillance test intervals (STI) and allowable out-of-service times for repair to RPS instrument channels in accordance with 10 CFR 50.90. Changes to Control Rod Block and Primary Containment Isolation Systems (PCIS) instrumentation common to RPS are also proposed, delete the water level perturbation requirement, as well as appropriate bases changes. Administrative changes to clarify nomenclature, correct a typographical error and provide information to operators were also provided.

2.0 BACKGROUND

On July 8, 1983, the NRC staff issued Generic Letter (GL) 83-28, requesting that all licensees and applicants respond to the generic issues raised by analysis of the Salem anticipated transient without scram (ATWS) events (Ref. 2). The GL requested that licensees and applicants review existing STIs for RPS instrumentation required by TS to assure that current and proposed intervals for such testing are consistent with achieving high RPS availability. In late 1983, the staff issued NUREG-1024, "Technical Specifications - Enhancing the Safety Impact," which recommended that TS surveillance requirements and action statements be reviewed to assure that they have an adequate technical basis and minimize risk (Ref. 3). Probabilistic risk assessment (PRA) analysis may be used as a basis for TS changes. The BWR Owners Group (BWROG) formed a TS improvement Committee in late 1983 to develop a program that used PRA to identify improvements to STIs specified in BWR TS. The BWROG commissioned General Electric Company (GE) to perform a generic analysis which could be used by individual BWR plants.

3.0 EVALUATION

The licensee proposes to change the TS by increasing the RPS instrument functional test interval and calibration of analog trip units from 1-month intervals to every 3 months. Similar changes to test PCIS instruments common to RPS instrumentation are being proposed. The proposed changes can result in

reduced potential for human error rates during testing and reduce the potential for component wear-out caused by testing. This change should result in less reactor scrams and man-hours per year required to perform such testing.

Changes to the TS include a repair/test time interval of 12 and 6 hours. These surveillance and out-of-service times were selected to allow reasonable repair/test times without placing induced stress on plant personnel that can contribute to human error. These proposed changes are supported by studies made by GE for BWROG.

The BWROG submitted to the NRC for approval the GE Topical Reports (TR) NEDC-30844, which was a response to GL 83-28 and NEDC-30851P, "Technical Specification Improvement Analysis for BWR Reaction Protection Systems." Topical Reports NEDC-30844 and NEDC-30851P were approved by the NRC on July 15, 1987 (Ref. 4). The approval of the TRs required each licensee to assure that these generic TR enveloped their facilities.

In September 1987, an analysis specific to Pilgrim Nuclear Power Station (PNPS), MDE-31 30851P-A was performed by GE to confirm the applicability of the generic study to PNPS. This analysis was reviewed by BECo to ensure that design configuration differences from the generic study were properly evaluated. This analysis indicated that there was a slight increase in RPS failure frequency during the increased surveillance interval; however, this was more than offset by the expected reduction in inadvertent plant scrams and challenges to safe shutdown systems, reduced equipment test cycling wear, and diversion of personnel required to perform the tests. On April 27, 1988, the NRC issued a letter to the BWROG providing guidance and clarification regarding the NRC's requirement for confirmation of instrument drift allowance on trip setpoint (Ref. 5).

Prior to the April 27, 1988, NRC letter to the BWROG, BECo addressed instrument drift in a letter dated February 22, 1988. This letter supplied additional information to their December 23, 1985, proposed TS change concerning the out-of-service-time for testing and calibrating the RPS and PCIS systems. A Topical Report MDE-31-0286 compared the PNPS RPS instrumentation configuration, including the recently installed BECo Analog Trip System (ATS), against the BWR generic model. GE advised BECo that instrument drift was included for the ATS equipment only, and is based on equipment vendor information. The drift data in the generic analysis is applicable to PNPS (Ref. 6). The licensee stated that RPS instrument analog trip units setpoint calculations assume a drift over a 6-month period; therefore, setpoint changes to account for drift are not necessary.

The licensee proposes to delete the requirements to perturb reactor water level after functional testing to minimize the potential for an inadvertent plant transient. The licensee states that this testing is not needed because

reactor water level channel checks verify proper instrument valve lineup and sensor response. The use of instrument check is consistent with Standard Technical Specifications, acceptable IEEE-279 on-line sensor check methods, and PNPS design. Note 7 of Table 4.1.2 of the TS requires a daily instrument check to verify transmitter output and calibration of the associated analog trip units will be performed concurrent with the functional testing every 3 months.

The staff concludes that the proposed changes to the TSs, submitted by the licensee on February 7, 1992, for the RPS surveillance test intervals, and allowable out-of-service times for surveillance, and repair, are acceptable based upon GE's Topical Reports NEDC-30844, NEDC-30851P and plant specific report MDE-31-0286. We also find acceptable the removal of the requirement for water level perturbation which is a means for checking, with a high degree of confidence, the operational availability of each system input sensor during reactor operation because IEEE Standard 279, Requirement 4.9 allows also that this availability determination can be accomplished by cross checking between channels that bear a known relationship to each other and have read-outs available. The administrative changes were not technical, but corrective and clarifying in nature and did not affect the technical bases of the amendment.

#### 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. 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 (57 FR 7807). 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.

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## 7.0 REFERENCES

1. Letter from R. A Anderson, SVP, BECo to NRC "Proposed Technical Specification Change to Reactor Protection System Surveillance Test Intervals and Allowable Out-of Service Times" dated February 7, 1992.
2. Letter from D.E. Eisenhut, NRC, to all Licensees of Operating Reactors... "Requested Action Based on Generic Implications of Salem ATWS Events, (Generic Letter 83-28)" dated July 8, 1983.
3. NUREG-1024. "Technical Specification - Enhancing the Safety Impact", dated November 1983.
4. Letter from A.C. Thadani, NRC, to T.A. Pickens, BWR Owners Group "General Electric Company Topical Reports NEDC-30844, 'BWR Owners Group Response to NRC Generic Letter 83-28', and NEDC-30851P, 'Technical Specification Improvement Analysis for BWR Reactor Protection Systems'" dated July 15, 1987.
5. Letter, C.E. Rossi, NRC to R.F. Janecek (BWROG), "Staff Guidance for Licensee Determination that the Drift Characteristics for Instrumentation Used in RPS Channels are Bounded by NEDC-30851 Assumptions When the Functional Test Interval is Extended from Monthly to Quarterly" dated April 27, 1988.
6. Letter from R.G. Bird, SVP, BECO, to NRC, "Supporting Information for Proposed Technical Specification Changes for Tables 3.1.1 and 3.2.A" dated February 22, 1988.