

U. S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-293/90-02

Docket No. 50-293

License No. DPR-35

Licensee: Boston Edison Company
800 Boylston Street
Boston, Massachusetts 02199

Facility Name: Pilgrim Nuclear Generating Station

Inspection At: Plymouth, Massachusetts

Inspection Conducted: January 8-12, 1990

Inspectors: Joseph A. Golla 2/7/90
Joseph A. Golla, Reactor Engineer date

Approved by: Harold L. Gugg 2/7/90
for Dr. P. K. Eapen, Chief date
Special Test Programs Section

Inspection Summary: Inspection on January 8-12, 1990 (Inspection Report No. 50-293/90-02)

Areas Inspected: Routine announced inspection of pump and valve Inservice Test (IST) Program implementation and review of the IST Program with respect to NRC Generic Letter 89-04 dealing with exemptions to ASME Code Section XI requirements for IST. Also, the licensee's corrective action program for evaluating and correcting leakage problems with local leakage barriers was reviewed. Additionally, the licensee's performance in the area of Engineering and Technical Support to the plant was evaluated.

Results: No violations or deviations were identified. The licensee's implementation of inservice testing was found to be in compliance with requirements. The licensee has addressed Generic Letter 89-04 but has several exemption requests outstanding which the Generic Letter does not address. Corrective action for local leakage barriers was found adequate. The licensee's Engineering and Technical Support of the facility was also found adequate.

Details

1.0 Persons Contacted

1.1 Boston Edison Company

- *R. Anderson, Plant Manager
- J. Bellefeuille, Onsite Safety & Performance Division Manager
- D. Ellis, Senior Compliance Engineer
- *R. Fairbank (Telecon), NED Manager (Acting)
- *W. Grieves, Senior QA Engineer (QAD)
- *K. Highfill, V.P. Nuclear Operations
- *J. Kelly, Compliance Engineer
- P. Manderino, Senior Test Engineer
- F. Mogolesko, Performance Engineer
- *V. Oheim (Telecon), Design Section Manager (Acting)
- J. Sabina, Senior Test Engineer
- *J. Seery, Technical Section Manager
- *R. Swanson, Regulatory Affairs Manager (Acting)

1.2 U.S. Nuclear Regulatory Commission

- *C. Carpenter, Resident Inspector

*Denotes those present at the exit meeting held January 12, 1990.

2.0 Inspection Purpose and Scope

This inspection was conducted to review and assess the licensee's implementation of their pump and valve Inservice Test Program and other activities associated with IST implementation. It was also conducted to verify adherence to ASME Section XI Code requirements and the licensee's commitments regarding Generic Letter 89-04 dealing with exemptions to the Code. Also, the licensee's corrective action program for evaluating and repairing local leakage barriers exhibiting leakage identified by 10 CFR 50, Appendix J local leak rate testing was reviewed. Additionally, engineering and technical support to the plant was evaluated by reviewing the engineering support for a design change, a modification, and engineering analysis of a vibration problem with the HPCI pump.

3.0 IST Program Implementation (73756)

The inspector reviewed the licensee's latest IST pump and valve program submittal and associated exemption requests. The licensee is committed to the 1980 version of the ASME Code Section XI through Winter 1980 Addenda. The Pilgrim Nuclear Power Station is in its second 120-month inservice inspection interval which extends to December 7, 1992. The "IST Pump and Valve Testing Program," procedure no. 8-I-1.1, Rev. 0

has recently been updated and approved by licensee management on December 19, 1989 for use and to be submitted to the NRC for review. The new program submittal reflects changes to support commitments made in their response to NRC Generic Letter 89-04. Also in support of their response to the Generic Letter and changes to the IST Program, the licensee is in the process of revising IST implementing procedures. To date, the licensee has reviewed each safety related system to ensure that the appropriate pumps and valves are included in the program. The licensee has recently revised its administrative document "Administration of Inservice Pump and Valve Testing," procedure no. 8.I.1, Rev. 5, November 13, 1989 which controls program implementation, to support the new program. They will prepare a new station instruction to provide the method for determining realistic valve stroke time criteria and will revise the stroke time acceptance, alert and action criteria for each power operated valve in the program. The following priorities and milestones have been established by the licensee, and accepted by the NRC for the remaining IST effort.

Schedule:

- Submit IST program and the statement of conformance 12/15/89 (completed)
- Complete quarterly pump and valve procedures (23 procedures) 06/30/90
- Complete cold shutdown pump and valve procedures (11 procedures) 06/30/90
- Complete valve leakage procedures (6 procedures) 11/30/90
- Complete refueling outage procedures (8 procedures) 11/30/90
- IST program full implementation Est. Refueling Outage (Early 91)
- Completion of plant modifications Long Term Plan

In addition to the above, the licensee has 11 new relief requests which require review by the NRC. Most of these were created because of the increased scope of components being tested under the updated IST Program. These 11 relief requests address issues not specified within the scope of Generic Letter 89-04. Another 5 new relief requests were submitted by the licensee which address specific issues identified in the Generic Letter.

Those existing relief requests which have been revised were resubmitted to the NRC.

The inspector determined that upon completion of the above schedule by the licensee and final review by the NRC of requested exemptions, the licensee's IST program will be fully implemented.

4.0 Corrective Action Program For Valves

The inspector reviewed information documenting the licensee's efforts in evaluating and implementing corrective action for valves in the 10 CFR 50, Appendix J Local Leak Rate Test program with demonstrated leakage problems. It was found that the licensee does trend and evaluate these valves for repair or replacement and that there is evidence that the corrective action program for this has been effective. The licensee's corrective action program was formally initiated and caused the repair or replacement of valves at Pilgrim during the last three outages. As a result, 17 valves have been replaced as part of the "Valve Betterment Program" in the following systems: Containment Atmospheric Control, High Pressure Coolant Injection, Main Steam, Reactor Water Cleanup, Instrumentation Air, Residual Heat Removal, Reactor Sample, and Containment Sump Systems. In addition, 8 MSIV's and 4 feedwater check valves have been modified to improve leak tightness and integrity. Corrective actions initiated as a result of the Valve Betterment Program also includes improvements in affected vendor manuals and other vendor documents. During Refueling Outage 7, a Local Leak Rate Test (LLRT) Failure Analysis Team composed of engineers from both Nuclear Engineering and Plant Departments was formed to investigate each LLRT failure, determine root cause, and recommend corrective action. The licensee is currently implementing an LLRT Trending Program on a computerized database. This program is intended to enhance the licensee's abilities for data correlation such as valve leakage histories and manufacturers. It is also intended to make penetration configuration and component data more readily available to the LLRT Engineer.

Based on the above review, the inspector concluded that the licensee has an effective corrective action program in place for trending, evaluating, and making repairs or replacing problem valves. No unacceptable conditions were identified.

5.0 Design Changes and Modifications (37700)

The objective of this inspection was to ascertain that design changes and modifications to the plant are receiving adequate engineering and technical support and to verify conformance with the requirements of the Technical Specifications (TS), 10 CFR, the Safety Analysis Report, and the licensee's Quality Assurance Program.

This objective was accomplished by performing a detailed review of a selected modification, and two Engineering Service Request's (ESR's) for engineering assistance to the plant.

5.1 Engineering Support to Resolve Issues Identified in Licensee Event Reports (37828)

The inspector reviewed the Engineering and Technical Support which resulted in corrective action for two events reported in accordance with 10 CFR 50.73, "Licensee Event Report System," and Engineering and Technical Support for the HPCI Main Pump which was displaying higher than normal vibration readings as identified by inservice testing. Engineering and Technical Support for the following LER's was reviewed: LER 88-017-01, "Crack in the Yoke Portion of a Residual Heat Removal System Valve," and LER 89-013-00, "High Pressure Coolant Injection System Inoperable due to Inoperable Motor Operated Valve."

LER 88-017-01 involved a crack which was discovered in the yoke portion of RHR system Loop B valve MO-1001-28B. Corrective action for this situation resulted in removal of the valve yoke and metallurgical examination, disassembly and inspection of valve internals, stem, and motor operator, repair and partial replacement of the valve yoke, review of the operating history of the valve and similar Loop A valve, examination of the similar Loop valve yoke, and test of the motor operator spring pack and MWATS test upon valve reassembly.

This LER resulted in extensive failure analysis by the licensee who employed the assistance of an expert in the metallurgical field. As a result of the failure analysis, a design change to the valves yoke, and similar Loop A valve yoke was instituted. The inspector reviewed Plant Design Change (PDC) package no. 88-23 which controlled the modification to the yoke and discussed the engineering and technical support which went into it with cognizant licensee personnel. This engineering effort was thorough and of good quality.

LER 89-013-00 involved the inoperability of the HPCI system due to an inoperable HPCI system motor operated valve (MO-2301-3) discovered during a HPCI system operability test. The valve, normally closed, is located in the steam supply piping to the HPCI system turbine. On March 24, 1989 at 1814 hours a scheduled (quarterly) HPCI system pump operability test began and was conducted from the control room. Upon moving the control switch for valve no. MO-2301-3 to the open position for a start of the HPCI system turbine, a panel alarm for MCC-D9 Loss of Control 125 or 250VDC occurred and the valve would not open. Because the valve would not open, the HPCI system was declared inoperable. The cause for the failure of the valve to open was two loose screws used to adjust the valve's torque switch setting. The loose screws affected the torque setting and consequently caused damage to some of the valve operator internals and failure of the valve operator motor

windings. Corrective actions taken by the licensee are as follows: The valve operator was repaired and the motor was replaced. The torque switch was set and the screws were torqued to 18 inch-pounds. MOVATS valve testing was performed with acceptable results. Additional corrective actions planned include inspection of other safety-related motor operated valves, installing torque switch limiter plates, and revision of applicable valve maintenance procedures.

5.2 Engineering Service Requests

The inspector reviewed BECO Engineering response to Engineering Service Request (ESR No. 89-243) submitted to the Nuclear Engineering Department (NED) requesting guidance in evaluating the MO-2301-3 valves condition and scope of work required. The inspector found the engineering support which recommended the corrective actions taken above also to be thorough and of good quality.

Additionally, engineering support for a HPCI pump bearing vibration problem was evaluated by the inspector. In this case, an Engineering Service Request was written because HPCI pump bearing velocity and displacement vibration readings obtained during IST quarterly HPCI testing indicated the pump was running rough. Displacement readings were in the test acceptance range but were higher than normal. The Nuclear Engineering Department concluded that the pumps performance was acceptable. However, NED recommended that the IST test engineer should continue to trend test data. This conclusion was arrived at in a logical manner utilizing historic test data which indicated similar characteristics in the past, and considering the mechanical arrangement, Turbine/Pump/Reduction Gear/Booster Pump, of the components. The response to the Engineering Service Request showed that there was good cooperation and communication among Nuclear Engineering, Systems Engineering and IST Test Engineering in evaluating the acceptability of the pumps performance and in determining continued operability with the contingency for IST Engineering to trend the pumps performance. The inspector found the engineering support in this case also to be of good quality.

No unacceptable conditions were identified.

6.0 Exit Meeting

Licensee management was informed of the purpose and scope of the inspection at the entrance interview. The findings of the inspection were periodically discussed and were summarized at the exit meeting on January 12, 1989. Attendees at the exit meeting are listed in Section 1.0 of this report. At no time during the inspection was written material provided to the licensee by the inspector. The licensee did not indicate that the inspection involved any proprietary information.