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U. S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-293/82-24

Docket No. 50-293

License No. DPR-35 Priority -- Category C

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

Facility Name: Pilgrim Nuclear Power Station

Inspection At: Plymouth, Massachusetts

Inspection Conducted: September 7, 1982 - October 18, 1982

Inspectors: Joni R Johnson 10/28/82
J. Johnson, Senior Resident Inspector date

Harold Eichenholz 10/28/82
H. Eichenholz, Resident Inspector date

L. Briggs 11/4/82
L. Briggs, Reactor Inspector (Oct. 6-8, 1982) date

Approved by: T. C. Elsasser 11/9/82
T. Elsasser, Chief, Reactor Projects date
Section No. 1B, Projects Branch No. 1

Inspection Summary:

Inspection on September 7, 1982 - October 18, 1982 (Report No. 50-293/82-24)

Areas Inspected: Routine unannounced safety inspection of plant operations, including followup of previous findings, an operational safety verification, followup of events, trips, and LER's, a review of surveillance and maintenance activities and a review of actions in response to the Performance Improvement Program. The inspection involved 275 inspector-hours by two resident and one region-based inspectors.

Results: One deviation was identified in one area (Failure to revise procedures for radioactive discharges as committed to the NRC, Paragraph 2).

DETAILS

1. Persons Contacted

J. Aboltin, Sr. Reactor Engineer
G. Anderson, Watch Engineer
A. Caputo, Fire Prevention and Protection Engineer
B. Eldredge, Sr. HP Supervisor
G. Fiedler, Watch Engineer
R. Kennedy, Sr. Q.A. Engineer
R. Kuhn, Sr. ALARA Engineer
P. Mastrangelo, Chief Operating Engineer
C. Mathis, Station Manager
J. McCann, Watch Engineer
J. McEachern, Security Supervisor
P. O'Brien, Construction Management Group Leader
L. Olivier, Watch Engineer
W. Olsen, Senior Nuclear Training Specialist
L. Oxsen, Director of Nuclear Operations Review
K. Roberts, Chief Maintenance Engineer
J. Seery, On-Site Safety and Performance Group Leader
P. Smith, Chief Technical Engineer
K. Taylor, Watch Engineer
R. Trudeau, Chief Radiological Engineer
G. Whitney, Plant Engineer
S. Wollman, Shift Technical Advisor
E. Ziemianski, Management Services Group Leader

The inspector also interviewed other members of the health physics, operations, maintenance, security, and technical staffs.

2. Followup on Previous Inspection Findings

(Closed) Violation (50-293/80-09-01). Fuel moved without secondary containment integrity; and

(Closed) Infraction (50-293/80-09-03). Watch Engineer not notified of fuel movement. The licensee has completed the last remaining action item for both of these violations as committed in their responses dated August 1, 1980 and November 19, 1980. Transmittal Notice No. T-7 was approved and issued on September 29, 1982 which revised training and retraining requirements for operators, LSRO's, and fuel handlers to ensure that the concerns raised by the March, 1980 incident would continue to be reemphasized. These two items are closed.

(Open) Violation (50-293/81-19-01). Failure to follow procedures - two examples. The licensee's response, dated January 15, 1982, specified corrective actions for these two parts A(1) and A(2). In regard to the failure to follow procedure No. 7.9.2 (Item A(1)), the licensee stated that to preclude securing the circulating water pumps during a radioactive discharge and altering the dilution flow, a sign had been made to install on the ampere meters for the circulating water pumps. Also procedures No's. 7.9.2 and 2.1.17 would be reviewed and revised to contain similar language pertaining to discharges, that these revisions would address proper use of the sign, and would be implemented prior to startup.

The inspector's review identified that the licensee had not performed these actions. The following was identified as of September 23, 1982: 1) the caution sign described above was not available, 2) the currently approved revisions to procedure 7.9.2 (Rev. 15) and 2.1.17 (Rev. 10), did not address the use of the sign, nor contain similar language pertaining to discharges, and 3) the procedures had not been revised as stated prior to plant startup in March, 1982. This is considered a Deviation (50-293/82-24-01).

The licensee's response to part A(2) stated that should Temporary Procedure TP 80-76 be used next cycle, a revision will be prepared to allow the screen wash pumps to be in service and adjust the flow data accordingly. The inspector verified that the renumbered version of this procedure TP 82-25, Rev. 0, dated 3/21/82, was revised to allow the screen wash pumps to be in service and provided an adjustment for flow data. The inspector also noted that the latest version of procedure TP 82-53, Rev. 0, dated 8/27/82, has deleted this section. The licensee acknowledged the inspector's previous concerns and stated their awareness of the need to provide further revisions should it be desired to have the screen wash pumps in service during the test.

Section A(1) of this item remains open pending completion of the licensee's stated corrective actions.

(Open) Unresolved Item (50-293/82-01-02). Water in bay 15 of Torus Room. The inspector determined that the water seepage was not a reportable event and that the licensee had properly evaluated the problem and recommended corrective measures. During the initial excavation of the concrete in preparation for repairs the licensee identified two voids in the concrete. The findings were documented in QC inspection reports 1-82-56-177 A&B. The licensee's engineering department (civil and structural group) evaluated these findings and concluded that these voids were inconsequential (CSG #82-347 dated October 8, 1982). This item remains open pending completion of pressure grouting repairs.

3. Operational Safety Verification

A. Scope and Acceptance Criteria

The inspector observed control room operations, reviewed selected logs and records, and held discussions with control room operators. The inspector reviewed the operability (including valve positions) of the 'B' Residual Heat Removal (RHR) and the 'B' Core Spray systems. Tours of the reactor building (including drywell) turbine building, intake structure, station yard,

switchgear rooms, cable spreading room, auxiliary bay, SAS, diesel generator rooms and the control room (daily) were conducted. The inspector's observations included a review of equipment conditions, control room annunciators, potential fire hazards, physical security, housekeeping, radiological controls, equipment control (tagging) and radioactive release rates from the station.

The inspector reviewed records of radioactive liquid and gaseous release rates from the station and sampling of the Standby Liquid Control System boron concentration. A sampling review (15 valves) was made of locked valves in the 'B' RHR and 'B' Core Spray systems.

These reviews were performed in order to verify conformance with the facility Technical Specifications and the licensee's procedures.

B. Findings

- (1) During this period the licensee performed dredging operations in the intake structure in order to improve cooling water systems performance. The inspector verified that this activity was properly evaluated and monitored and that specific instructions were delineated in procedure No. TP 82-63, Monitoring of Plant Systems During Dredging of the Intake Structure, Rev. 2, dated October 5, 1982. No inadequacies were identified.
- (2) On September 15, 1982, the licensee indicated a proposal to extend their committed date of September 17, 1982, for implementation of TMI Task Action Plan Item I.A.I.3 regarding having 2 SRO's on each shift. The licensee's Training Manual and procedure No. 1.1.1 specified that the position of Nuclear Operating Supervisor be filled with an SRO. The T.S. allow this position to be filled with an RO. Following discussions with the inspectors, the licensee approved and issued a Special Order to authorize this temporary change until a sufficient number of qualified SRO's was available to meet item I.A.I.3. No inadequacies were identified. Shift staffing will continue to be reviewed during routine inspections of the facility.
- (3) The inspector requested records of 20 inch containment vent and purge valve open times in order to determine the cumulative open time for 1981 and to verify that total time was less than 90 hours/year as committed to the NRC:NRR. The licensee stated that these records were unavailable at this time because they were being microfilmed and would be provided to the inspector as soon as they could be located. This area will be reviewed in a future inspection.

- (4) On September 9, 1982 the inspector held discussions with the Security Supervisor concerning the quality of package inspections upon entrance to the station. No violations were identified, however, the licensee acknowledged the inspector's concerns about preventing deterioration in the quality of searches and took action to remind the appropriate personnel of their responsibilities in this area.

No violations were identified during this review.

4. Followup on Events; Trips, and Licensee Event Reports (LER's)

A. Review of LER's

- (1) LER's submitted to the NRC:RI were reviewed to verify that the details were clearly reported and that the corrective actions were adequate. The inspector determined whether generic implications were involved and whether onsite followup was warranted. The following LER's were reviewed:

<u>LER No.</u>	<u>Subject</u>
82-03/99X-1	Organization Change
*82-31	Conductivity Out of Specification
82-34	HPCI Smoke Detector Inoperable
*82-36	'D' Main Steam Isolation Valve (MSIV) Closed

- (2) For the LER's selected for onsite review (denoted by asterisks), the inspector verified that appropriate corrective actions were taken or responsibilities assigned and that continued operation of the facility was conducted in accordance with the T.S.
- 82-31; Reactor Water Conductivity. The inspector's initial review of this event is documented in NRC Report No. 82-22. During this period the inspector performed additional review of the effects of conductivity on the observed core flow/recirculation flow mismatch and APRM settings. The inspector determined that the licensee's reactor engineering staff had properly evaluated the effect on APRM settings and taken appropriate action to adjust the APRM gain factors (AGAF) accordingly. This information was separately forwarded to NRC:Region I personnel for a review of possible generic implications. No violations were identified.
- 82-36; 'D' MSIV Closure. The licensee shutdown the reactor on September 8, 1982 to repair the failed MSIV. Investigation revealed that the inboard valve on the 'D' line (AO 203-1D) had a failed stem. The failed stem was replaced and the valve subsequently leak rate tested.

The licensee stated that the stem had broken at the point where the pilot stage is tapered to the diameter of the valve stem. A similar event is described in LER No. 78-19. On April 11, 1978, the 'D' inboard MSIV stem broke in the same location. Following that event the licensee had replaced several valve stems with a modified version that had a slight radius at the point of fracture.

The inspector verified that the valve had been returned to an operable status but considered this LER to remain open pending a review of the licensee's analysis of specific cause and long term corrective actions in light of this repeat failure.

B. Events/Plant Trips

- (1) On September 29, 1982 the licensee declared the HPCI system inoperable because of a failure of the torus suction valve (MOV 2301-35) to operate during a routine surveillance test. The inspector verified that alternative testing was performed and that the actions specified by the Technical Specifications were complied with. The motor had burned out and was rewound. Specific details will be reviewed following the licensee's submittal of an LER. No violations were identified.
- (2) On September 30, 1982 the licensee declared the RCIC system inoperable following the identification of the failure of the torus suction valve (MOV 1301-25) to operate during alternative testing for an inoperable HPCI system. The inspector verified that the NRC was notified and that a plant shutdown was initiated in accordance with TS. At 11:04 a.m. on September 30, 1982 the licensee had cleaned stuck contacts on the motor controller, demonstrated satisfactory valve operation and secured the plant shutdown. Additional review of this event will be performed following receipt of the licensee's LER. No violations were identified.
- (3) On October 2, 1982 the licensee declared the drywell-torus vacuum breakers inoperable, commenced a plant shutdown, and notified the NRC due to unsatisfactory operation during a routine test. Following investigation it was identified that the cause of the anomalous indication on the valves' position indication was not due to an inoperability of the vacuum breakers themselves but due to a 1/4 inch instrument air line manual block valve having vibrated closed. This valve is not required for operability of the vacuum breakers and is only used to control air for testing purposes. A subsequent test at 8:00 am on October 3, 1982 demonstrated satisfactory operation of the vacuum breakers and normal operations resumed. No violations were identified.

- (4) Between 3:00 am on October 4, 1982 and 11:45 am on October 5, 1982 the licensee entered the T.S. limiting condition for operation for reactor water conductivity (10 micromho's/cm) three times. Peak conductivity reached was about 44 micromho's/cm. The inspector verified that on each occasion, the licensee initiated a plant shutdown and informed the NRC. The licensee determined the cause to be a failure of the resin retention element on the 'A' condensate demineralizer which has subsequently been repaired.

The inspector also noted that the licensee had observed a similar core flow/recirculation flow mismatch as described in LER 82-31 and verified that the reactor engineering staff had appropriately adjusted APRM gain adjustment factors (AGAF) during the event.

No violations were identified. Further details will be reviewed following submission of an LER.

- (5) On October 12, 1982 and again on October 13, 1982 (while the plant was shutdown for a planned outage) the station experienced a loss of the two 345 kv offsite power lines. The cause was due to arcing in the switchyard due to salt spray from a recent storm. During these events the emergency diesel generators operated normally and the station had the capability of using the 24 kv offsite power line. The loss on October 13, 1982 was attributed to an incomplete wash-down of the switchyard following the October 12, 1982 event. The inspector verified that the reactor remained in cold shutdown during these events, that requirements of the Technical Specifications were met, that the NRC was properly informed, and that proper actions were taken to restore power. The inspector also noted that the licensee had taken appropriate precautions to restore primary containment integrity if the need arose, and that plant operators closely monitored equipment during the controlled restoration process. Normal ECCS equipment was available throughout these events. No violations were identified.

5. Surveillance Activities

The inspector reviewed the licensee's actions associated with surveillance testing in order to verify that the testing was performed in accordance with approved station procedures and the facility Technical Specifications.

Portions of the following tests were reviewed/observed:

- routine turbine control valve fast closure RPS logic testing on September 7, 1982
- periodic monitoring of salt water cooling systems during dredging operations
- periodic calibration of the refueling ventilation exhaust duct area radiation monitors (ARM) (procedure No. 6.5-170) on October 4, 1982
- RCIC valve operability test, and
- alternative testing for an inoperable HPCI system on September 29 and 30, 1982.

No violations were identified, however, following discussions with the inspector, the licensee made a change to the ARM calibration procedure No. 6.5-170 to more clearly refer to the T.S. limit of less than 100 mr/hr.

6. Maintenance Activities

The inspector reviewed the licensee's actions associated with maintenance activities in order to verify that they were conducted in accordance with station procedures and the facility Technical Specifications. The inspector verified for selected items that the activity was properly authorized and that the appropriate radiological controls, equipment control tagging, and fire protection were being implemented.

The items/documents reviewed included the following:

- Maintenance Request (M.R.) 82-1457; inoperable valve A.O. 5033A
- M.R. 82-1495; inoperable HPCI suction valve MO 2301-35
- M.R. 82-1496; inoperable RCIC suction valve MO 1301-25
- M.R. 82-1498; damaged secondary containment damper N-92
- M.R. 82-1499; inoperable control rod accumulator 22-51
- M.R. 82-13-18, and MR 82-13-21; implement PDCR No. 81-48, RCIC automatic reset modification, and
- M.R. 82-01-44; repair MSIV 203-1D

No violations were identified.

7. Manual Containment Isolation Valves

On September 9, 1982, the inspector held discussions with the licensee concerning the qualification of, and ability to close, several manual containment isolation valves.

In response to NRC IEB 79-08, and the TMI Task Action Plan item 2.1.4, Containment Isolation, (now called item II.E.4.2 in NUREG 0737), the licensee took exception to the diverse, automatic isolation criteria for several systems and stated that station procedures would specify the requirements for manual isolation if a containment isolation signal was received.

The following systems/penetrations are included:

- Reactor Building Closed Cooling Water (RBCCW)
- Instrument Air (IA)/Nitrogen supply
- RHR-to-Spent Fuel Pool (SFP), and
- Torus makeup

The licensee described their position in letters to the NRC dated April 25, 1979 (IEB 79-08 response to Region I) and August 21, 1979 (IEB 79-08 response to NRR). The NRC:NRR acceptance of this position is documented in letters dated December 18, 1979 (concerning IEB 79-08) and April 3, 1980 (concerning Category 'A' Short Term Lessons Learned, item 2.1.4).

In lieu of the licensee's LER No. 81-21 submitted in June, 1981, regarding compliance with 10 CFR 50.44 and the assumptions that reactor building access could not be assured immediately following an accident, the inspector questioned the licensee for details concerning the validity of their position that the above four systems/penetrations could be manually isolated if needed. The inspector reviewed system piping and instrumentation drawings (P&ID's) and held discussions with the licensee representatives.

As a result of this initial review, the licensee concluded the following:

- The Instrument Air and Torus Makeup lines could be isolated from outside the reactor building but the qualifications (seismic, leak rate tested) were not known, and
- the RHR-to-SFP and RBCCW inlet lines could not be isolated from outside the reactor building.

On October 12, 1982 the licensee stated that the following actions would be taken:

- (1) a procedure change would be issued prohibiting the use of the RHR-to-SFP lines except in cold shutdown, and
- (2) an Engineering Support Request (ESR) would be issued to the Nuclear Engineering Department requesting a review of the isolation criteria and the qualification of valves which would be used to perform this manual isolation.

Pending a review of the licensee's justification for the capability to perform a manual isolation with qualified valves this item is unresolved (50-293/82-24-02).

8. Response to Order for Modification of Licensee/Performance Improvement Program

Boston Edison Company has responded to the NRC's January 18, 1982 Order by submitting a revised Performance Improvement Program (PIP), Revision 1, on July 29, 1982 (BECo. letter No. 82-203). The NRC:Region I's tentative acceptance of this program is described in a letter from the NRC to BECo dated September 27, 1982.

The inspector met with the licensee on September 30, 1982 to review the status of selected milestones planned for completion in September, 1982. These items are described below (item numbers refer to those milestones described in the PIP, Rev. 1.

- II.3.A.3 Licensing Functions; The licensee reviewed the licensing function within the nuclear organization and provided recommendations, staffing, and organization charts to consolidate this function.
- II.3.A.4 Project Management; The licensee has defined the project management function and specified the details in Nuclear Engineering Department (NED) procedure No. 1.01 "Organization". This procedure describes duties, responsibilities, and interfaces. The personnel department has also approved the project manager's position description.
- II.4.1 Establish Site Engineering Representatives; The licensee has established a site engineering office with duties and responsibilities prescribed by NED Management directives. The description of this function is included in a proposed change to NED Procedure 1.01.
- III.1.D.3.2 Correspondence Review; The licensee has completed the correspondence review with respect to NRC regulation changes. Several issues (Appendix I, 50.44, Appendix R, and Appendix J) are the subject of ongoing discussions with NRR. Also, with regard to Appendix G, and H (fracture toughness and RV surveillance) the licensee plans to perform additional and more indepth review.
- III.1.D.3.3 Develop Corrective Actions; Based upon the licensee's review of III.1.D.3.2 above, no actions were necessary.
- III.3.A.2 Equipment List; The licensee has prepared a plan for revising and maintaining equipment lists (mechanical, electrical, and instruments) and the Q-list. This plan is documented in memo NED 82-623 dated September 20, 1982.
- III.3.B Final Schedule for Design Change Control; The licensee discussed the schedule for this item during a meeting with the NRC on October 5, 1982 and will be included in the next revision to the PIP.
- III.3.B.2 Draft Procedure for Closeout of Backlog; The licensee has prepared a draft procedure for describing the process of closing out the backlog of plant design changes (NED No. 3.12) on a trial basis.
- III.3.F.3 Pilot Preventive Maintenance Program; The licensee has begun producing schedules and reports in accordance with a draft procedure. Further inspector review will be performed during a future inspection to determine the extent of procedure preparation and implementation.

- III.4.2 Self Audit Program; The licensee has approved an Audit Plan (No. 82-9 dated September 21, 1982) to perform a QA audit of the PIP for compliance with the Order. The audit is planned for completion from November 29 - December 10, 1982 and will include milestones committed to be completed up to the date of the audit.

The inspector determined that the licensee had met the September, 1982 milestones committed to in the PIP, Rev. 1 dated July 29, 1982. The extent of implementation for one item, III.3.F.3, will be further reviewed during a future inspection.

9. Scram Discharge System Seismic Qualification

The inspector attended a meeting with the licensee on October 14, 1982 at the corporate offices in Braintree, Mass. to discuss LER No. 82-05, and the status of system re-analysis in accordance with NRC's NUREG 0803. The meeting was held as part of an NRC:Region I specialist inspection No. 82-28. Details and findings will be documented in a separate NRC inspection report.

10. Unresolved Items

Areas for which more information is required to determine acceptability are considered unresolved. An unresolved item is discussed in Paragraph No. 7.

11. Exit Interview

At periodic intervals during the course of the inspection, meetings were held with senior facility management to discuss the inspection scope and findings.