

U.S. NUCLEAR REGULATORY COMMISSION  
REGION I

Report No. 50-293/88-14

Docket No. 50-293

License No. DPR-35

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

Facility Name: Pilgrim Nuclear Power Station

Inspection At: Plymouth, Massachusetts

Inspection Conducted: April 18-22, 1988

Inspectors: Michelle H Evans 5/16/88  
M. Evans, Operations Engineer, DRS date

Approved by: Daniel J. Lange 5-16-88  
D. Lange, Chief, BWR Section, OB, DRS date

Inspection Summary: Routine, Announced Inspection on April 18-22, 1988  
(Report No. 50-293/88-14)

Areas Inspected. Routine announced inspection of licensee action on previous inspection findings and Power Ascension Test Program.

Results: No violations were identified. The Power Ascension Test Program was found to be acceptable pending completion of the items listed in Paragraph 3.5.

NOTE: For acronyms not defined, refer to NUREG-0544, "Handbook of Acronyms and Initialism."

## DETAILS

### 1.0 Persons Contacted

#### Boston Edison Company

- \*J. Alexander, Operations Manager
- \*R. Anderson, Plant Manager
- H. Balfour, Operations Training Group Leader
- J. Calfa, Systems Engineer
- \*B. Lunn, Acting Compliance Division Manager
- \*J. Mattia, Quality Assurance Division Manager
- \*K. Nicholas, Technical Section Manager - Assistant
- M. Santiago, Training Supervisor
- \*J. Seery, Technical Section Manager
- \*C. Stephenson, Senior Compliance Engineer
- \*T. Trepanier, Senior Operations Engineer

#### Other NRC Personnel

- J. Lyash, Resident Inspector
- C. Warren, Senior Resident Inspector

\*Denotes those present at the exit meeting on April 22, 1988.

The inspector also contacted other members of the licensee's operations, technical and training staff.

### 2.0 Licensee Action Concerning Previous Inspection Findings

(Closed) Inspector Follow Item (50-293/85-17-05) Followup of licensee evaluation of causes for unexpected flow and power increases.

The inspector reviewed General Electric Report, MDE 47-0385, Revision 1, "Safety Evaluation of a Recirculation System Flow Anomaly at Pilgrim Station" dated November 1985 and PNPS Safety Evaluation No. 1928, ORC approved April 2, 1986. The inspector noted that the cause for the observed changes in recirculation flow had been identified as the alternate formation and disappearance of a vortex at the header cross in the recirculation pump discharge piping. Additionally a maximum momentary increase of 2% in reactor power was considered and shown not to affect the design basis of the plant. The inspector verified that the licensee implemented two changes to account for a possible 2% variation in flow. The K curves in the process computer were updated to account for higher flow runout capability and the allowable recirculation pump speed differences were reduced in OPER 09, "PNPS Operations Daily Surveillance Log" and in Procedure No. 8.6.5.1 "Jet Pump Operability Check." This item is closed.

(Closed) Inspector Follow Item (50-293/86-06-08) Review implementation of GE Service Information Letter (SIL) No. 186, "Modification for Standby Liquid Control System's (SBLC) Continuity Monitoring", July 30, 1976. This SIL identified a problem with SBLC system circuitry where the potential loss of a firing current limit resistor could occur following firing of the squib valves, with the occurrence not being detected by the system's continuity monitoring circuit.

The inspector reviewed the following documents:

- GE Elementary Diagram, MIF 4-9, "Standby Liquid Control", Revision E9, approved January 21, 1988.
- PNPS Procedure 8.4.6, "Manual Initiation Test of the SBLC System", Revision 16, approved August 29, 1987.
- Engineering Service Request (ESR) 87-049, "SBLC Continuity Modifications", dated January 13, 1987.

The inspector verified that the licensee is presently developing a Plant Design Change (PDC) to modify the SBLC system continuity monitoring circuitry, as recommended in GE SIL No. 186, during Refueling Outage #8. ESR 87-049 tracks the PDC preparation. In addition the inspector verified that for the interim, Procedure 8.4.6 was revised as of June 19, 1986 to verify operability of the existing resistors after firing of the squib valves. This item is closed.

(Closed) Unresolved Item (50-293/86-21-04) Licensee to evaluate testing methodology utilized to meet the intent of simulated automatic actuation (SAA) testing required by Technical Specifications (TS).

The inspector discussed planned testing activities with a licensee representative. The inspector reviewed Procedure No. 8.5.4.1, Section VII.C, "HPCI Pump Operability Flow Rate and Valve Test at 1000 PSIG, Once per Cycle Test", Revision 30, approved January 30, 1988 and Procedure No. 8.5.5.1 Section VII.C, "RCIC Pump Operability Flow Rate and Valve Test at 1000 PSIG, Once per Cycle Test", Revision 23, approved January 30, 1988. The inspector noted that for both the HPCI and RCIC testing, cold quick starts will be performed to satisfy the SAA TS requirements. The inspector verified that the tests are scheduled to be conducted during the Power Ascension Program following Refuel Outage #7 per Temporary Procedure 87-114, "Restart Test after RFO #7". In addition, the inspector verified that procedures 8.5.4.1 and 8.5.5.1 are currently being tracked on the licensee's Master Surveillance Tracking Program (MSTP) to ensure completion of the testing every 18 months. This item is closed.

(Open) Unresolved Item (50-293/87-22-02) Licensee to complete procedures and operator training for the Safe Shutdown from Outside Control Room Test.

The inspector discussed this open item with a licensee representative. At this time, the operating procedure and Power Ascension Test procedure for "Shutdown from Outside the Control Room" and the operating procedures for "Shutdown with a Fire in Reactor Building East and West" were being revised. Final approval of the procedures was expected within the next few weeks. The inspector walked through selected portions of procedure 2.4.143 "Shutdown from Outside Control Room" with the licensee representative who explained the changes currently being made.

The inspector reviewed Procedure No. 2.1.26, "Monthly Inventory of Alternate Shutdown and EOP Support Tools", Revision 1, approved April 4, 1988. The inspector noted that this procedure established control for periodically inventorying the toolboxes which contain the communication equipment, tools and keys required for shutdown from outside the control room.

In addition, the inspector discussed the planned training for shutdown from outside the control room with a licensee training representative who stated that each operations crew will be trained in the procedures following approval.

This item will remain open pending review of the approved procedures for Safe Shutdown from Outside Control Room and completion of operator training.

### 3.0 Power Ascension Test Program

#### 3.1 References

- BECO Letter No. 87-163, Power Ascension Submittal to NRC, October 15, 1987.
- BECO Letter No. 88-033, Response to NRC Questions and Concerns on the Pilgrim Power Ascension Program Plan, February 29, 1988.
- ANSI N.18.7-1976, "Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants".
- Regulatory Guide 1.68, Revision 2, August 1978, "Initial Test Programs for Water-Cooled Nuclear Power Plants".
- Regulatory Guide 1.68.2, Revision 1, July 1978, "Initial Startup Test Program to Demonstrate Remote Shutdown Capability for Water-Cooled Nuclear Power Plants".
- Pilgrim Nuclear Power Station Technical Specifications.
- Pilgrim Nuclear Power Station, Final Safety Analysis Report.

### 3.2 Overall Power Ascension Test Program

The inspector reviewed Temporary Procedure No. TP87-114, "Restart Test After RFO #7", Revision 1, Draft. This procedure describes and sequences the major activities which follow refuel outage #7 and establishes the administrative controls regarding the startup test organization and conduct of testing. The inspector reviewed the administrative controls identified in TP 87-114 to determine that adequate controls exist to assure that test procedures are current prior to use; test personnel are knowledgeable; controls for test procedure changes exist; interruptions in tests are controlled; tests are properly coordinated; unusual events and test deficiencies are documented; and test results are reviewed.

In addition, a management meeting was held at NRC, Region I on April 8, 1988 to discuss specific NRC concerns regarding the licensee's overall Power Ascension Program. Details of the meeting and items requiring followup are documented in NRC Region I Management Report, dated May 17, 1988.

### 3.3 Power Ascension Test Program Procedure Review

TP 87-114 identifies the tests and applicable procedures to be conducted during the Power Ascension Test Program. The inspector reviewed the latest revisions of the procedures listed in Attachment A to verify that the testing as described in TP 87-114 is accomplished in the procedures referenced.

In addition the procedures were reviewed to determine the degree of compliance with the following attributes:

- Appropriate management review and approval has been accomplished.
- Appropriate committee review has been accomplished.
- Procedure is in proper format.
- Test objectives clearly stated.
- Appropriate references are listed.
- Appropriate prerequisites and precautions are included.
- Initial test conditions are specified.

- Acceptance criteria are clearly stated.
- Provisions have been made to identify personnel performing the test.
- Procedure is technically adequate and workable.

All test procedures have been approved with the exception of TP 87-147, "Shutdown From Outside Control Room." The inspector discussed the status of this procedure with a licensee representative who stated that the procedure was in the final stages of development. The inspector questioned the representative regarding the content of the test procedure and the licensee's plans for conducting the test during the Power Ascension Program. The representative stated that TP87-147 would be divided into two distinct parts, a hot standby demonstration, and a cold shutdown demonstration (as stated in section VII.A.24 of TP87-114) and would meet the intent of NRC Regulatory Guide 1.68.2. In addition, the representative stated that the hot standby demonstration would be performed at approximately 25% power (as scheduled in TP87-114) and that the cold shutdown demonstration would be performed during a controlled shutdown prior to completion of the Power Ascension Test Program, but would not be explicitly scheduled. The licensee representative agreed that Table 2 of TP87-114 would require revision to state these scheduling requirements. (see discussion in section 3.5)

#### 3.4 Status of Licensee's Power Ascension Program Startup Test Review

The inspector reviewed the licensee's DRAFT Initial Report regarding their Power Ascension Program Startup Test Review. An outline of this review was presented to the NRC during the management meeting conducted on April 8, 1988. This presentation was in response to an NRC question regarding demonstration that plant modifications have not changed the dynamic response of the plant or invalidated the previous power level tests.

A licensee representative discussed the basis of the review process with the inspector. He stated that, to date, the review has confirmed the adequacy of the start-up test plan. However, the need for further reviews was identified and is ongoing. A final report is scheduled to be issued by May 20, 1988.

#### 3.5 Discussion

The inspector discussed the overall Power Ascension Test Program (PATP) and the Procedures listed in Appendix A with the Startup and Assistant Startup Test Managers.



Based on questions from the inspector, the licensee representatives agreed to include the following in the appropriate procedures:

- TP 87-114, Table 2 should include two separate sign off steps for conduct of each part of the Shutdown from Outside the Control Room Test.
- 8.5.4.1, Section VII.C should be clarified to assure that the acceptance criteria regarding pump discharge pressure is met.
- 8.5.4.1 and 8.5.5.1, precautions should be added to these procedures identifying that during conduct of the cold quick start tests, HPC1 (in 8.5.4.1) and RCIC (in 8.5.5.1) are inoperable.

In addition, during the exit interview on April 22, 1988 the inspector stated additional PATP items requiring follow up as a result of this inspection and/or the Management Meeting held in Region I on April 8, 1988. These additional items are:

- Provide copies of test procedures TP 87-114 and TP 87-147 to NRC:RI upon approval. TP 87-114 should include items discussed during the management meeting of April 8, 1988.
- Resubmit a response to NRC's questions regarding "ringing problems" associated with Rosemount transmitters and instrumenting the level transmitters to adequately detect the ringing problems.
- Additional review by the NRC staff of the Licensee's Power Ascension Program Startup Test Review (See paragraph 3.4) upon completion.

#### 4.0 Quality Assurance Interface with Power Ascension Program

The inspector reviewed Quality Assurance Surveillance Report No. 88-1. 1-42, approved April 14, 1988. The surveillance was conducted to verify implementation of PNPS Procedure 2.1.26, "Monthly Inventory of Alternate Shutdown and EOP Support Tools, Revision 1. (see paragraph 2.0, Unresolved Item 50-293/87-22-02). Toolbox equipment and communication equipment needed to conduct a safe shutdown from outside the control room were verified to be in the proper location. No discrepancies regarding safe shutdown from outside the control room were identified.

#### 5.0 Unresolved Items

Unresolved items are matters about which more information is required in order to determine whether they are acceptable, an item of noncompliance or a deviation. The unresolved items reviewed during this inspection are discussed in paragraph 2.0. \*

## 6.0 Exit Interview

A management meeting was held at the conclusion of the inspection on April 22, 1988 to discuss the inspection scope, findings and observations as detailed in this report (see paragraph 1 for attendees). No written information was provided to the licensee at any time during this inspection. The licensee did not indicate that any proprietary information was contained within the scope of this inspection.



ATTACHMENT A

<u>Procedure No.</u>	<u>Title</u>
2.1.1	Startup from Shutdown
2.1.5	Controlled Shutdown from Power
2.2.49	Primary Containment Cooling System
2.2.87	Control Rod Drive System
2.2.92	Main Steam Line Isolation and Turbine Bypass Valves
3.M.2-5.2.1	IRM Voltage Preamplifier Range Correlation Adjustment
3.M.4-9	Inspection of Interior Surface of the Drywell and Suppression Chamber
8.1.1.20	Reactor Water Level Perturbation
8.2.1	Turbine Generator Testing
8.2.4	Reactor Pressure Regulatory Test
8.5.4.3	HPCI Flow Rate Test at 150 PSIG
8.5.4.6	HPCI Pump and Valve Operability from Alternate Shutdown Station
8.5.5.3	RCIC Flow Rate Test at $\leq$ 150 PSIG
8.5.5.6	RCIC Pump and Valve Operability from Alternate Shutdown Station
8.5.6.2	A.D.S. Subsystem Manual Opening of Relief Valves
8.7.4.4	MSIV Trip
8.A.9-1	Turbine Test - Weekly
8.A.9-2	Turbine Test - Monthly
8.M.1-1	IRM Functional/Calibration Check
8.M.1-3	APRM Functional
8.M.1-3.1	APRM Setdown Functional
8.M.1-3.2	APRM Setdown Calibration
8.M.1-4.1	APRM Scram Clamp Maneuvers
8.M.2-3.3	Source Range Monitor
9.1	APRM Calibration
9.13	Control Rod Sequence and Movement Control
9.16	Shutdown Margin Check
9.16.1	Insequence Critical for Shutdown Margin Demonstration
9.17	Core Flow Evaluation and Jet Pump Calibration
9.19	Minimum Critical Power Ratio Evaluation
9.20	TIP Axial Alignment
9.26	LPRM Response Test
9.28	Process Computer New Cycle Update
9.3	Core Thermal Power Evaluation
9.5	LPRM Calibration
9.9	Control Rod Scram Time Evaluation
TP86-81	Start-up Test for PCIS System Monitoring

TP87-70	EPIC System Pre-Operational Test
TP87-150	Steam Jet Air Ejector Blind Suction Test
TP87-254	Functioning Test of GETARS Monitoring System at Power
TP87-255	Calibration and Functioning Test of GETARS Monitoring System
8.5.4.1	HPCI Cold Quick Start
8.5.5.1	RCIC Cold Quick Start
TP87-114	Restart Test After RFO 7, Revision 1, DRAFT
TP87-147	Shut Down Outside Control Room, DRAFT
TP87-152	Feedwater Level Control
TP87-219	MSIV Opening Test
TP87-263	Reactor Water Level Checks
TP88-03	Condenser Helium Leak Detection Test