

U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-293/87-41

Docket No. 50-293

License No. DPR-35

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

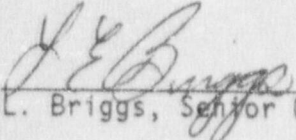
Facility Name: Pilgrim Nuclear Power Station

Inspection At: Plymouth, Massachusetts

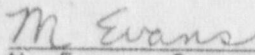
Inspection Conducted: September 14-18, 1987

Inspectors: 
P. Bissett, Senior Operations Engineer, DRS

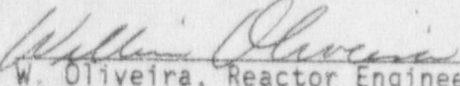
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L. Briggs, Senior Operations Engineer, DRS

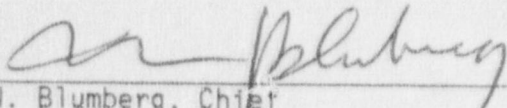
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M. Evans, Operations Engineer, DRS

10/15/87
date


W. Oliveira, Reactor Engineer, DRS

10/15/87
date

Approved by: 
N. Blumberg, Chief
Operational Programs Section, OB, DRS

10/19/87
date

Inspection Summary: Routine, Unannounced Inspection on September 14-18, 1987
(Report No. 50-293/87-41)

Areas Inspected: Routine, unannounced inspection of licensee actions on previous inspection findings, the surveillance testing and calibration program, measuring and test equipment, preoperational testing and Quality Assurance/Quality Control interfaces. The inspection was performed on site by four region-based inspectors.

Results: No violations or deviations were identified.

DETAILS

1.0 Persons Contacted

Persons contacted are identified in attachment A to this report.

2.0 Licensee Action On Previous Inspection Findings

- 2.1 (Closed) Violation (293/87-04-02) Failure to evaluate and document the validity of previous tests for which measuring and test equipment (M&TE) was used and subsequently found to be out-of-calibration (OOC).

The inspector reviewed and discussed with both the Instrumentation and Control (I&C) Engineer and the Station Services Group Leader, those actions that were taken to correct the identified problem. The inspector verified, by a records review, that all previously identified OOC instances had been evaluated and documented. It was also noted that specific training sessions had been conducted in regard to OOC evaluations, and that these evaluations are now being completed within one week from the time the OOC condition is identified. Also, the stations M&TE procedure was revised to specify the responsibility for the conduct of these evaluations. The Station Services Group has developed a Non Conformance Notice Log which readily identifies and tracks OOC instruments and their associated evaluations. Based upon the above review, this item is closed.

- 2.2 (Closed) Violation (293/87-04-03). Refueling Bridge Preoperational Test (TP No. 86-127) was performed without making appropriate technical changes to correct procedural errors concerning refueling bridge position numbers and without obtaining the required approvals prior to implementation.

The inspector reviewed procedure change notice (PCN) No. TP87-013 and verified that the refueling bridge preoperational test procedure had been properly revised on January 15, 1987 and that the applicable procedure steps were performed again on January 19, 1987. In addition, the inspector noted that procedure TP No. 86-127 was revised in its entirety and reissued on January 28, 1987. Based upon the above review, this item is closed.

- 2.3 (Closed) Followup Item (293/85-03-06) Licensee to review applicable I&C surveillance tests and determine their technical basis. Discussions with the NRC resident inspector indicated that this item is effectively being reviewed under open item 293/85-03-04. For this reason, item 293/85-03-06 is administratively closed and will be reviewed under 293/85-03-04.

- 2.4 (Open) Unresolved Item (293/86-21-03) Licensee to review completeness and adequacy of Technical Specification Surveillance Procedures for logic system functional tests (LSFT).

The inspector reviewed licensee actions to date regarding evaluation of the adequacy of LSFT (see discussion, paragraph 4.2). No unacceptable conditions were identified. This item will remain open pending further review of revised LSFT surveillance procedures.

- 2.5 (Open) Unresolved Item (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 views that simulated integrated system initiation, with the exception of injection, as necessary to meet the intent of SAA testing. The licensee's methodology utilizes a series of overlapping logic system functional tests to meet the TS requirement for SAA testing. The item will remain open pending further review and discussion by the licensee and the NRC.

- 2.6 (Closed) Violation (293/87-04-04) Licensee failed to establish an administrative procedure that controlled the site's overall test program. This violation applied to programs for specific in place periodic testing such as Technical Specification Surveillance tests, post maintenance tests, and post modification tests. Implementation of testing was not addressed in the inspection.

On May 1, 1987, licensee representatives met with NRC management to obtain clarification of those elements associated with this violation. BECO management felt that they had not effectively presented to the inspector, during inspection 293/87-04, those administrative programs and associated procedures already in place that addressed 10 CFR 50, Appendix B, Criterion XI "Test Control" requirements.

Subsequent to this meeting, by letter, dated June 8, 1987, the licensee took exception to this violation. The attachment to the June 8, 1987 letter addressed those concerns identified by the inspector and presented corresponding programs and procedures that they believed met the requirements of 10 CFR 50, Appendix B, Criterion XI, the BECO Quality Assurance Manual and ANSI 18.7-1976.

During this inspection, the inspector discussed with various licensee representatives and reviewed specific administrative procedures that were specified in their response as adequately addressing the inspector's concerns, which included:

- Overall mechanisms for control of specific test programs
- List personnel qualifications
- Test prerequisites
- Review of test results
- Test instruments
- Test acceptance criteria
- Test procedure format

The inspector determined, following this review, that control of testing is adequately defined and that appropriate procedures are currently in place that provide control of specific test programs. Based upon the above review, violation 293/87-04-04 is withdrawn.

Approximately ten procedures were presented to the inspector, each addressing some of the areas specified in the violation. Following review of these procedures, the inspector determined, that although somewhat disjointed, the procedures when taken collectively, meet regulatory requirements. Each item in the violation is addressed in the procedures. Based upon the above review violation B in Inspection Report 50-293/87-04 (NRC open items 293/87-04-04) is withdrawn.

3.0 Surveillance Testing Program

3.1 Scope and Criteria

The licensee's surveillance test program was reviewed for conformance to the following requirements:

- 10 CFR 50, Appendix B
- Pilgrim Nuclear Power Station (PNPS) Technical Specifications (T.S.), Section 4, Surveillance Tests
- Regulatory Guide 1.33, Quality Assurance Program (Operation)
- ANSI N18.7-1976, Administrative Control and Quality Assurance for the Operational Phase of Nuclear Power Plants
- PNPS, Final Safety Analysis Report (FSAR)

The licensee's master surveillance schedule is entitled "Master Surveillance Tracking Program" (MSTP). Administrative controls were evaluated to assure that the MSTP was consistent with the preceding requirements. The key procedure for defining and administering the MSTP is Procedure No. 1.8, Master Surveillance Tracking Program, Revision 5. The procedure is being revised to reflect the new MSTP that has been developed. The new MSTP is currently operating in parallel with the existing MSTP and will be fully implemented in late November 1987. In addition to assessing the documented MSTP effort, the inspector also observed three surveillance activities being conducted by electricians and instrument and control (I&C) technicians.

3.2 Review/Implementation

The NRC inspectors discussed with the Technical Section Manager the transfer of the MSTP responsibility from the Project Control Group to the Technical Section. Also discussed was the role the new MSTP will play in the licensee's commitment to have a centralized, clearly defined and forward looking surveillance program. Discussions were also held with the Deputy to the Vice President-Nuclear Engineering who is overseeing the MSTP effort. The items covered included:

- The qualifications of the individuals responsible for the new MSTP
- The responsibilities of the support groups
- The status of the new MSTP

The introduction of the new MSTP was one of several corrective actions taken by the licensee to improve their surveillance program. The previous MSTP was: (1) difficult to use, update, and manage; (2) unaccountable for plant conditions, scheduling multiple component tests, and identifying real problems; and (3) not credible since its data base had not been verified. With guidelines from INPO TS-410 "Surveillance and Periodic Task Scheduling Program," and assistance from a computer program and services contractor, the licensee began to develop a new MSTP. In addition to correcting the problems in the existing MSTP, the new program will incorporate non TS "additional safety margin" surveillances, and be capable of integrating other related testing such as preventive maintenance (PM), post-maintenance testing (PMT), and inservice testing (IST).

The Surveillance Coordinator is a senior engineer whose previous experience includes the development of a program similar to the MSTP for a NSSS contractor. The Surveillance Coordinator has the overall responsibility for implementing and maintaining the new MSTP. He reports to the Technical Section Manager via his Systems Group Leader. The Surveillance Coordinator reviewed and discussed with the inspector, the pending changes to Procedure No. 1.8; the preparation of the new task cards; and demonstrated with the computer some of the features of the new MSTP, e.g., impact of extending surveillance frequency up to the 25% allowable time limit extension permitted by TS.

The Surveillance Coordinator is technically supported by the system engineers within the Technical Section. Under the direction of the Surveillance Coordinator, the Project Control Group will continue to provide services to process computer software since the forms in the existing MSTP are being retained under the new MSTP. The additional forms required by the new MSTP are the task card and the Failure to Comply Notice. Other Section Managers and Group Leaders will also continue to support the MSTP effort including reviewing and responding to task card inquiries and Failure to Comply Notices.

The status of the MSTP effort was reviewed by the inspector. As previously mentioned MSTP Procedure No. 1.8, Revision 5, currently in effect, is in the process of being revised. Management and supervision expect the new MSTP to greatly enhance the surveillance program. Milestones achieved thus far, include: data base validation by the contractor; major update of the logic function testing in progress; initial review of task cards by Operations; and identifying what is needed to accomplish a test, including manpower requirements.

The inspector also observed the following surveillances:

- A once per cycle/refueling surveillance conducted in accordance with Procedure No. 3.M.3-1, Revision 15, "A5/A6 Buses 4KV Protective Relay Calibration/Functional Test and Annunciator Verification." A caution statement in the procedure required the Bus 5A breaker to be in the "opened off" position when racking down the startup transfer breaker to avoid starting the emergency diesel generator (EDG) 'A' on an undervoltage signal. The EDG however started with the Bus 5A breaker in the "opened off" position. The cause of the problem was that the cell breaker position switch changed its position when the startup transfer breaker was racked down. The procedure was corrected and approved, and the surveillance continued.
- A semiannual surveillance conducted in accordance with Procedure No. 8.M.2-1.5.8.4, Revision 15, "Logic System Functional Test of System 'B' Standby Gas Treatment Initiation, Reactor Building Isolation, and Outboard Drywell Isolation Valves." In preparation for the surveillance, the Instrument and Control (I&C) technicians noted a green and white test tag on Panel 7 (C904). They did not proceed until the "owner" of the tag provided them with a signed approval to operate the tagged component. The inspector followed up on this action by reviewing Procedure No. 1.4.5, Revision 21, "PNPS Tagging Procedure." The I&C technicians were in compliance with the procedure. In another case, paragraph 11.a. (3) listed an amber light at Panel C-7 for fan VEX210B. There is no amber light on the panel for fan VEX210B. This paragraph was corrected during this inspection in revision 16 of Procedure No. 8.M.2-1.5.8.4.
- A quarterly surveillance conducted in accordance with Procedure No. 8.M.1.32.2, Revision 1, "Analog Trip System - Trip Unit Calibration - Cabinet C2228-A2." In paragraph 5.h, the I&C technician removed fuse F2 and verified that the relay was de-energized. In paragraph 5.j, the I&C technician reinserted the F2 fuse and the fuse failed. A maintenance request (MR 87-495) was prepared and processed. Since the fuse was an EQ item, a Quality Control (QC) inspector followed the request for a new fuse and the subsequent installation of the fuse.

No violations or deviations were observed.

3.3 Findings

The problems encountered in each of the surveillances discussed in paragraph 3.2 were resolved and corrected in a conservative manner, and documented in accordance with the procedural requirements. The personnel involved in the surveillances were knowledgeable of the technical and procedural requirements.

The inspector reviewed and discussed the draft of the new MSTP procedure with several licensee personnel. The licensee acknowledged and agreed to review the following concerns:

- The first line in paragraph 5.4.11 states that the Surveillance Coordinator should "Coordinate periodic surveillance audits." Quality Assurance, not the Surveillance Coordinator is responsible for surveillance audits. The Surveillance Coordinator may however, be responsible for conducting periodic reviews.
- Changes to surveillances are to be reviewed by the systems engineers. Paragraph IV.H.3 in the existing procedure allowed changes, such as incorrect intervals (frequencies), to be made without reviewing the impact on the related systems.

No violation or deviations were observed.

3.4 Conclusions

Management has provided the resources, time, and qualified personnel to develop a new centralized, properly defined and computerized MSTP. After its implementation in late November 1987, continued management attention is warranted to ensure desired improvements are realized. Equally important is the incorporation of the Preventive Maintenance (PM), Post Maintenance Testing (PMT), and the Inservice Testing (IST) programs into the MSTP.

4.0 Surveillance Procedures

4.1 Scope

During NRC inspection 50-293/86-21, the inspector identified a concern involving the completeness and adequacy of Technical Specifications (TS) surveillance procedures for HPCI logic system functional testing (see paragraph 2.4, unresolved item 86-21-03). The licensee responded to this concern in BECO Letter #86-185 (December 5, 1986) and agreed that their surveillance procedures did not fully test system logic features. The licensee stated that they would review other ECCS logic system functional test procedures for similar areas of concern prior to plant mode change requiring these systems to be operable. During the current inspection, the inspector reviewed the licensee's corrective actions regarding logic system functional tests (LSFT).

4.2 Review

The inspector discussed the status of the licensee's review of LSFT with a licensee representative. The representative stated that a majority of the review effort has been conducted by a contractor and is nearing completion. The review included identification and evaluation of all LSFT procedures required to meet TS requirements. The evaluation process included highlighting of appropriate electrical elementary/scheme drawings to verify that logic flow paths between sensing device(s) and activated device(s) are tested in the surveillance procedures currently in use. The purpose of this review was to establish whether or not the current test procedures adequately test the equipment and that the test interval is less than or equal to the test interval required by TS. Changes are being made to applicable surveillance procedures to incorporate deficiencies and discrepancies identified by the above review (along with those identified during previous licensee, NRC and INPO reviews and system modifications). Procedure walkdowns are being conducted to ensure the resolutions are technically feasible and that proposed changes are physically amenable for performance prior to final incorporation of the changes to the procedures.

The licensee representative stated that to date all LSFT procedures required have been identified and evaluated. Resolution of identified deficiencies and discrepancies is presently ongoing, with priority being given to procedures required for fuel reload.

The inspector reviewed two surveillance test procedures required for fuel reload:

- 8.M.2-1.5.8.3, "Logic System Functional Test of System 'A' Standby Gas Treatment (SBGT) Initiation, Reactor Building Isolation, and Inboard Drywell Isolation Valves (Atmospheric Control Valves)"
- 8.M.2-2.10.8.3, "Diesel Generator (DG) 'A' Initiation By Core Spray Logic"

The LSFT for the SBGT system was reviewed to verify that the testing conducted agreed with system logic per "SBGT System Modification" PDC-86-70. The inspector found no discrepancies in the logic testing during this review.

The DG "A" surveillance procedure was reviewed to verify that deficiencies identified during the LSFT review of DG surveillance testing had been properly incorporated into the current surveillance test procedure. However, the inspector noted that the procedure did not include testing to show that the DG Shutdown Relay could only be energized by the Overspeed Relay with an Emergency Start signal present. The inspector discussed this concern with a licensee representative. The representative acknowledged the inspector's concern and committed to include the testing in surveillance procedure 8.M.2-2.10.8.3. The inspector had no further questions.

4.3 Findings

No violations or deviations were identified.

5.0 Measurement and Test Equipment

5.1 Scope and Criteria

Refer to paragraph 3.1.

5.2 Program Review/Implementation

The inspector held discussions with individuals designated to administer and control the site's measuring and test equipment (M&TE) program. Control of this program is designated in Procedure 1.3.36 "Measurement and Test Equipment," Revision 3. A review of this procedure governing the control of M&TE was conducted to verify that the program was being implemented as intended. Also reviewed were those changes being made to upgrade the M&TE program. These planned improvements are part of the licensee's recently developed Material Condition Improvement Action Plan (MCIAP). Specifically, Section M of the MCIAP addresses the need for the control, calibration and maintenance of M&TE, including such aspects as staffing, training and qualification, organizational responsibilities, inventory centralization, computerization, etc.

To date the licensee has accomplished the following:

- Four additional contract personnel have been hired to specifically control the issuance and storage of M&TE.
- All M&TE on site has been inventoried and uniquely identified.
- All pertinent information for 1492 M&TE items has been entered into an automated data base system.

During this inspection, personnel were evaluating the space requirements needed for the eventual centralization of all site M&TE.

5.3 Findings

No violations or deviations were identified. The inspector noted that desired actions have been initiated to improve the control of the M&TE area, however, this control is essentially conducted manually. A "continuing action item" of the Material Condition Improvement Action Plan (MCIAP) calls for the installation of computer software and hardware that will replace those controls that are manually performed at present. A lack of manpower to effectively utilize the manual controls previously in place eventually resulted in a number of identified problems in the M&TE program. The inspector noted that continued management attention is needed in the M&TE area to preclude the reoccurrence of the same problems. This would include fulfillment of "continuing action items" as detailed in the MCIAP. The inspector had no further questions.

6.0 Post Modification Preoperational Test (PMPT) Procedure Results Review

6.1 Scope

The "as-run" copies of the test procedures were reviewed to evaluate acceptance criteria, recorded conduct of the test, QA/QC inspection records, restoration of system to normal after test completion, independent verification of critical steps or parameters and identification of personnel conducting the test. In addition, any Plant Design Change (PDC) that had not been previously reviewed that was associated with a PMPT was also reviewed to determine specific testing requirements. The completed PMPT procedures listed below were reviewed during this inspection to verify that adequate testing had been conducted to satisfy regulatory guidance, licensee commitments and PDC requirements.

- PDC 85-14, Reactor Building Secondary Containment Isolation Damper Replacement
- Test Procedure (TP) 87-26, Pre-Operational Test of Secondary Containment Dampers, Revision 1
- TP87-100, Leak Rate Test for Secondary Containment Dampers Installed Per PDC 85-14
- TP87-128, Pre-Operational Test of Standby Gas Treatment System Modification Per PDC 86-70, Revision 1, 2 and 3

6.2 Review/Implementation

6.2.1 PDC 85-14, TP87-26 and TP87-100

This modification replaced all secondary containment dampers (18) with new high quality dampers. Each damper was replaced as a unit, i.e. damper, actuators and position indication limit switches. No logic changes were involved. Subsequent testing (TP87-26) involved stroke timing and position indication functional tests. All valve stroke times were within acceptance limits with the longest closing time being 2.92 seconds. Leak testing was conducted under TP87-100 with fully acceptable results.

6.2.2 TP87-128

This procedure was discussed in NRC Inspection Report 50-293/87-33. During this inspection the completed procedure results were reviewed and found acceptable.

The above tests were discussed with the licensee at various times throughout the inspection to resolve questions concerning test conduct and test results. All questions were satisfactorily resolved by the licensee.

6.3 Findings

No violations or deviations were identified during the above review.

7.0 Quality Assurance/Quality Control Interface

A Quality Assurance (QA) group is represented on site, along with Quality Control (QC) personnel. These groups are thus able to effectively monitor ongoing station activities. Discussions were held with the site QA and QC Group Leaders and the corporate (off-site) QA Group Leader to evaluate their involvement with those programs reviewed during this inspection. It was noted that the site QA group performs periodic surveillances and the corporate QA group performs audits of various site activities, including Technical Specification Surveillances.

The inspectors reviewed 14 QA Surveillance Reports and three QA audits that addressed the licensee's surveillance program. The review of QA completed surveillance reports covered various areas of plant activities conducted during the past 18 months (areas covered are listed in Attachment B). The Surveillance Report packages reviewed included surveillance checklists, QA recommendations, and deficiency reports.

The QA audits reviewed were comprehensive and the findings were resolved in a timely manner. During this inspection, an annual Technical Specification (TS) audit was in progress which will cover about 25% of all the TS requirements. The audit team included a technical expert on the Master Surveillance Test Program (MSTP). This individual stated that the new MSTP is a significant improvement over the existing MSTP.

The QC inspector who followed up on replacement of the F2 fuse during the Analog Trip System surveillance (discussed in paragraph 3.2) was knowledgeable of all technical and procedural requirements associated with this surveillance.

No violations or deviations were identified during the above review.

8.0 Plant Tours

The inspectors toured various areas of the facility to observe work in progress, housekeeping, cleanliness controls and status of outage activities. No unacceptable conditions were noted.

9.0 Exit Meeting

Licensee management was informed of the scope and purpose of the inspection at an entrance meeting conducted on September 14, 1987. The findings of the inspection were periodically discussed with licensee representatives during the course of the inspection. An exit meeting was conducted on September 18, 1987 (see Attachment A for list of attendees) to summarize the scope and findings of the inspection.

At no time during the inspection was written material provided to the licensee by the inspectors. Also, the licensee did not indicate that any proprietary information was contained within the scope of this inspection.

ATTACHMENT A

Persons Contacted

Boston Edison Company

- *M. Akhtar, Group Leader, Modifications Management
- *L. Beckwith, Compliance Engineer, Nuclear Engineering Department
- T. Beneduci, Senior Modification Engineer
- *S. Bibb, Audit Group Leader, QA
- *M. Brosee, Outage Manager
- *W. Clancy, Systems Group Leader
- *F. Famulari, Group Leader, Operations Quality Control
- F. Giardello, Operations Review Coordinator
- D. Guzzetti, Test Director
- S. Hudson, Operations Section Manager
- G. Lafond, Instrumentation and Controls Engineer
- *C. Mathis, Deputy to Vice President
- M. McGure, Electrical Group Leader
- *A. Morisi, Section Manager, Test and Turnover
- *R. O'Neill, Systems Engineer
- M. Perito, Systems Engineer
- *J. Quinn, Quality Assurance Engineer
- *K. Roberts, Nuclear Operations Manager
- R. Sherry, Chief Maintenance Engineer
- *J. Seery, Manager, Technical Section
- D. Sukanek, Station Services Group Leader
- *N. Simpson, System Engineer
- *J. Vail, Senior Systems and Safety Analysis Engineer
- *R. Williams, Senior Systems and Safety Analysis Engineer

U.S. Nuclear Regulatory Commission

- *T. Kim, Resident Inspector
- J. Lyash, Resident Inspector

The inspectors also held discussions with other licensee personnel during the course of the inspection.

*Denotes those present at the exit meeting on September 18, 1987.

ATTACHMENT B

Quality Assurance Surveillance Reports

Surveillance No.	87-1.2-1, Standby Gas Treatment
	87-1.2-2, Suppression Pool Water Level Calibration
	87-1.2-3, Pre-Operational Test of the Alternate Shutdown System.
	87-1.2-4, Emergency D/G Dry Chemical Fire Protection System
	87-1.2-5, RWCU High Flow Functional and Calibration.
	87-1.2-6, Control Room Environmental Functional Test
	87-1.2-7, Manual Start and Loading of D/Gs
	86-1.2-1, 'D' SW Pump IST
	86-1.2-2, Turbine Control Fast Closure
	86-1.2-3, Control Rod Block System Logic Test
	86-1.2-4, Reactor Water Sampling
	86-1.2-6, Reactor Water Level Safeguard Systems
	86-1.2-7, ATWS Functional Test