U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

Region 1

Report No. 50-293/81-01

Docket No. 50-293

License No. DPR-35 Priority -- Category C

Licensee: Boston Edison Company M/C Nuclear

800 Boylston Street

Boston, Massachusetts 02199

Facility Name: Pilgrim Nuclear Power Station, Unit 1

Inspection at: Plymouth, Massachusetts

Inspection conducted: January 5-9, 1981

Inspectors: Edward J. Greenman /for — 2-13-81
J. McCann, Reactor Inspector — date signed

Edward J. Greenman /for — 2-13-81
J. W. Chung, Reactor Inspector — date signed

_____ — _____
date signed

Approved by: Edward J. Greenman — 2-13-81
E. G. Greenman, Chief, Nuclear Support Section #2, RO&NS Branch — date signed

Inspection Summary:
Inspection on January 5-9, 1981 (Report No. 50-293/80-01)
Areas Inspected: Routine, unannounced inspection of followup on previously identified items; administrative controls for plant procedures; administrative controls for safety-related maintenance; review of maintenance program and activities; review of housekeeping program; control room observations and facility tours. The inspection involved 60 inspector-hours onsite by two region-based inspectors.
Results: Noncompliances: Three in three areas and none in four areas (Failure to perform fire protection surveillance on Standby Gas Treatment System - detail 2.b; Failure to perform bi-annual procedure reviews - detail 4.d(1); and failure to follow written procedures - detail 7.c).

DETAILS

1. Persons Contacted

Principal Licensee Employees

*W. Armstrong, Deputy Nuclear Operations Manager
T. Caputo, Fire Protection Engineer
R. Kuhn, Senior ALARA Engineer
R. Machon, Nuclear Operations Manager
*C. Mathis, Deputy Nuclear Operations Manager
*M. T. McLaughlin, Senior Plant Engineer
*K. Roberts, Chief Maintenance Engineer
D. Pribble, Procedure Coordinator
*P. D. Smith, Chief Technical Engineer
*V. Stugliola, Senior QC Engineer
*E. Ziemianoki, Management Services Group Leader

USNRC

*Jon Johnson, Senior Resident Inspector
*E. G. Greenman, Chief, Nuclear Support Section 2, RO&NS Branch

The inspectors also interviewed other licensee employees during the inspection, including reactor operators, technical support, QC and administrative staff members, maintenance and radiological controls personnel.

*denotes those present at the exit interview.

2. a. Licensee Action on Previous Inspection Findings

(Closed) Unresolved Item (50-293/77-13-04): Chemistry procedures do not address reagent shelf life. The inspector reviewed Draft Procedure 7.10.4 "Shelf Life of Chemicals", Revision 0, and verified by telephone confirmation with the resident inspector that this procedure had been properly reviewed and implemented on January 14, 1981.

(Closed) Infraction (50-293/77-22-05): Failure to retrieve Quality Assurance documentation. This item had been previously reviewed during Inspection 50-293/79-04. The item was left open because AP 1.5.3 had not been updated to include the Maintenance Staff Engineer's responsibility to note on the completed checkoff sheet the applicable maintenance request form (MRF) number. The inspector reviewed Revision 13 to AP 1.5.3 which requires the maintenance log number to be recorded on the checkoff sheet.

(Closed) Deficiency (50-293/79-21-01): Failure to adequately implement fire protection operating procedures. The inspector reviewed the

following procedures to verify that the limiting conditions specified in the Technical Specifications were addressed:

-- Procedure No. 2.2.26, Revision 3 dated May 9, 1980.
-- Procedure No. 2.2.28, Revision 4 dated May 9, 1980.
-- Procedure No. 2.2.29, Revision 5 dated May 17, 1980.

The inspector also reviewed Procedure Change Notice to Procedure 2.2.27 dated January 8, 1981 which included the operation of CO_2 systems in the 23' and 37' switchgear rooms. The inspector verified by telephone confirmation with the resident inspector that this procedure change was properly reviewed and implemented on January 14, 1981.

(Closed) Infraction (50-293/79-11-02): Failure to satisfy surveillance frequency requirements. The inspector reviewed procedure 8.M.2-6.2, Revision 3 dated July 25, 1979 which included calibration requirements for the specified drywell and torus pressure indicators.

(Closed) Unresolved Item (50-293/79-21-02): Temporary change (79-2) to Procedure 2.2.85 had not been reviewed by the ORC. The inspector verified by review of the minutes of the ORC meeting (79-07), conducted February 7, 1979, that this procedure change had been approved.

(Closed) Unresolved Item (50-293/79-21-03): HPCI Isolated, Suppression Chamber Low Water Level, and Torus Room Trough Hi/Low Level Alarms permanently annunciated. The inspector verified that the alarms were cleared during a control room tour and determined by discussions with control room operators that the actions taken to clear the alarms were reasonable and did not violate the Technical Specifications.

(Closed) Unresolved Item (50-293/79-21-04): Surveillance procedures not written to meet the requirements of Technical Specification 4.12.C. This is an item of noncompliance as described in paragraph 2.b below. Unresolved item 50-293/79-21-04 is administratively closed.

b. Findings

The inspector determined that the fire protection surveillances required by TS 4.12.C for the Standby Gas Treatment System have still not been incorporated into station surveillance procedures, and that the annual and cycle surveillances are overdue for performance. Licensee representatives stated to the inspector that the standby gas treatment system cannot be tested as described in the technical specifications without causing serious water damage to the charcoal filters, and that a proposed amendment to the technical specifications would be prepared to delete or alter the surveillance requirements for the standby gas system fire protection sprays. The licensee representatives also

stated that a design change was being prepared to make the standby gas treatment system fire protection sprays testable. The inspector informed the licensee that this failure to perform the required surveillance requirements necessitated compliance with the applicable action statement for an inoperable system in the absence of documentation regarding any prior testing to demonstrate operability. The action required by part 3/12.C of the Technical Specifications is: "a. With a spray and/or sprinkler system inoperable, establish a continuous fire patrol with backup fire suppression equipment for the unprotected area(s) within one hour. B. Restore the system to OPERABLE status within 14 days or prepare to submit a report to the Commission within the next 30 days outlining the actions taken, the cause of inoperability and the plans for restoring the system to OPERABLE status."

Because of ALARA considerations the licensee planned during the short term to have a plant operator inspect the area once every two hours in order to meet the intent of a continuous fire patrol. The inspector also noted that high temperature conditions in this area would be annunciated in the control room providing further fire protection assurance. The inspector verified that the fire protection tours were being performed by review of a "signoff" log maintained in the control room for this purpose. The licensee representative stated that the reports required by part b. of TS 3.12.C would be submitted.

The inspector reviewed system drawings and descriptions to determine if the required surveillance tests could be performed without wetting the charcoal filters. This review indicated the licensee's concerns were valid. However, Amendment 35 to the Technical Specifications, which included these surveillance requirements was issued December 31, 1978, and that this problem was subsequently identified by an NRC inspector and documented in Inspection Report Number 50-293/79-21 and resolution had been provided. This failure to perform the required surveillances is an item of noncompliance (50-293/81-01-01).

3. Administrative Controls for Facility Procedures

a. Administrative controls were reviewed to determine the licensee's system for implementing requirements associated with the control of facility procedures as specified in Technical Specification, Section 6; Regulatory Guide 1.33, Quality Assurance Program Requirement; and, ANSI N18.7, Administrative Controls for Nuclear Power Plants. Areas of emphasis were in the established controls for format, content, review (including periodic review), and approval of facility procedures.

The following documents were reviewed:

-- AP 1.3.4, Procedures, Revision 21, December 24, 1980.

-- AP 1.3.2, Special Orders, Revision 8, December 27, 1978.

-- AP 1.1.1, Station Organization Responsibilities, Revision 6, March 20, 1980.

-- SRO Log Book (used for tracking temporary procedure changes).

No unacceptable conditions were identified.

4. Review of Facility Procedures

a. The inspector reviewed facility procedures and temporary changes, on a sampling basis, to verify the following:

-- Procedures, plus any changes, were reviewed and approved in accordance with the requirements of the Technical Specifications and the licensee's administrative controls.

-- The overall procedure format and content were in conformance with the requirements of the Technical Specifications and ANSI N18.7, "Administrtive Controls for Nuclear Power Plants."

-- Checklists, where applicable, were compatible with step-wise instructions in the procedures.

-- Appropriate Technical Specification limitations had been included in the procedures.

-- Temporary changes were made in conformance with Technical Specification requirements and the licensee's administrative controls.

b. The following procedures were reviewed:

(1) Operating Procedures

-- Start up from cold shutdown, procedure 2.1.1, Revision 3 of November 26, 1980.

-- Turbine Building Closed Cooling Water System, procedure 2.2.31, Revision 7 of May 12, 1980.

*-- Intermediate Range Monitoring System, procedure 2.2.65, Revision 4 of December 21, 1977.

*-- Reactor Vessel Water Level Control System, procedure 2.2.82, Revision 5 of December 20, 1977.

*-- Standby Liquid Control System, procedure 2.2.24, Revision 7 of September 24, 1980.

*Technical content reviewed, see paragraph 4.c.

(2) Emergency/Special Procedures

*-- Stuck or Inoperable Control Rod Drive Procedure 2.4.1, Revision 3 of March 20, 1978.

(3) Annunciator Response Procedures

*-- Refueling Floor Area Hi Radiation, procedure 2.3.2.3 - C-10, Revision 5.

-- RCIC Pump Suction Low Pressure, procedure 2.3.2.4 - B-3, Revision 2.

*-- HPCI Pump Discharge Header Low Pressure, procedure 2.3.2.6 - B-8, Revision 3.

-- Fire Protection System Trouble, procedure 2.3.2.6 - B-9, Revision 3.

-- Rod Overtravel, procedure 2.3.2.7 - A-2, Revision 6.

-- Feedwater Valve Control Signal Failure, procedure 2.3.2.7 - B-11, Revision 6.

*-- Standby Liquid Control Tank Hi/Lo Level, procedure 2.3.2.8 - A-19, Revision 4.

-- Spent Fuel Pool Low Level, procedure 2.3.2.10 - A-22, Revision 3.

(4) Maintenance Procedures

Various maintenance and housekeeping procedures were also reviewed as described later in Sections 6.b and 8.g.

c. Technical Content of Facility Procedures

Facility procedures were reviewed on a sampling basis, using FSAR system descriptions, piping and instrument diagrams, and Technical Specifications, where necessary, to verify that procedures were sufficiently detailed to control the operation or evolution described within Technical Specification requirements. The procedures reviewed with respect to this are marked with an asterisk (*).

d. Findings

(1) According to administrative procedure AP 1.3.4, paragraph II.D.3(b), all Category One and Two procedures were required to be revised or reviewed, no less frequently than every two years.

Contrary to the above, the following procedures had not been reviewed during the last two year period:

-- 3.M.1-10.2, Linear Measurement Equipment Calibration, Revision 0, September 29, 1977.

-- 3.M.4-19, Maintenance Record System, Revision 1, August 17, 1978.

-- 8.M.3-4, Reactor Building Vacuum Breaker Differential Pressure Sensor Calibration/Test, Revision 4, October 11, 1978.

-- OP 2.4.1, Stuck or Inoperable Control Rod Drive, Revision 3, March 20, 1978.

-- QA 2.01, Indoctrination and Training Programs, Revision 3, November 24, 1977.

Failure to review procedures every two years as required constitutes an item of noncompliance (50-293/81-01-02).

(2) The inspectors identified the following items, which require further clarification or correction. A licensee representative acknowledged the inspector's findings and stated that the procedures would be revised by July 1, 1981. These areas will be reviewed during a subsequent NRC inspection.

(a) Paragraph II.B.2 of Station Procedure AP 1.3.18, "Relief Personnel", specifies that the shift turnover sheet should be reviewed and signed by the oncoming shift. However, the inspector determined that the specification in the procedure was ambiguous with respect to when the sheet should be reviewed and signed. A licensee representative acknowledged this concern and agreed to revise the paragraph to require that the shift turnover sheet be signed by the oncoming shift before assuming the watch.

(b) The Reactor Level Calibration Procedure 8.M.1-19A specified an acceptable water level range on the data sheet, which was inconsistent with the values given in the procedure. The setpoints for zero, Lo-Lo, and high water levels were

specified as ≤49.46", ≤40.46", and ≤26.16" respectively on the data sheet, instead of 47.71" ~50.95", 89.11" ~91.91", and 24.86" ~27.46" as stated in the written procedure. The licensee acknowledged the inspector's finding and stated that the setpoints in the procedure were correct and that the data sheet values would be changed. The recorded values on the data sheet were within the actual required range.

(c) A licensee representative stated that paragraph III.F in procedure AP 1.3.4 would be revised to clarify administrative controls for retiring temporary procedures or incorporating them into permanent procedures.

5. Administrative Controls for Safety-Related Maintenance

Administrative controls were reviewed to verify that the licensee's program for implementing requirements associated with the conduct of safety-related maintenance was as specified in Technical Specifications, Section 6, Regulatory Guide 1.33, Quality Assurance Program Requirements; and ANSI N18.7-1972, Administrative Controls for Nuclear Plants.

The following documents were reviewed:

-- Administrative procedure 1.3.13, Plant Design Changes, Revision 13, February 28, 1980.

-- AP 1.5.3, Maintenance Requests, Revision 13, May 9, 1980.

-- AP 1.5.5, Cutting and Welding Permits, Revision 12, October 2, 1980.

-- AP 1.5.6, Instrumentation Setpoint Changes, Revision 9, December 27, 1978.

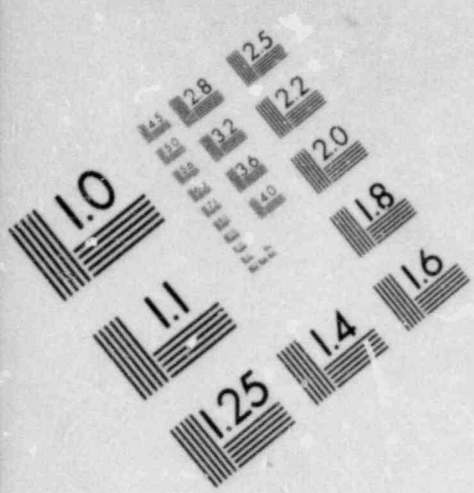
-- AP 1.4.5, PNPS Tagging Procedures, Revision 8, December 27, 1978.

-- 3.M.4-19, Maintenance Record System, Revision 1, August 17, 1978 (Reference Findings Detail 4 d(1)).

6. Maintenance Procedures

a. The inspector reviewed maintenance and preventive maintenance procedures, and temporary procedure changes, on a random basis to verify the following.

-- Provisions for fire protection/prevention, cleanliness, and housekeeping were included.



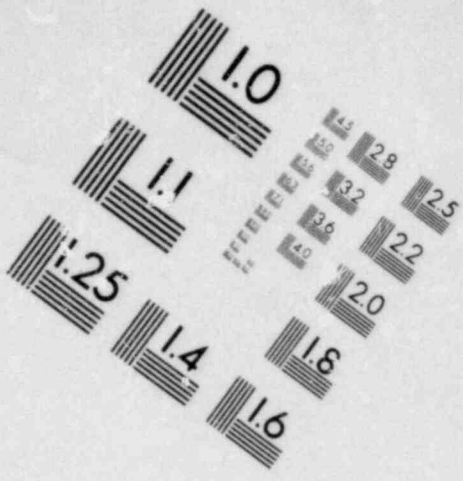
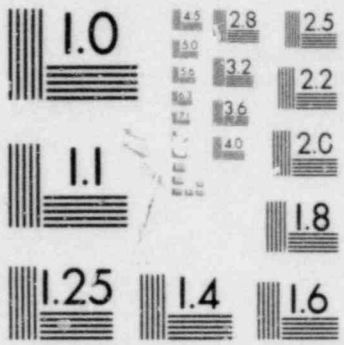
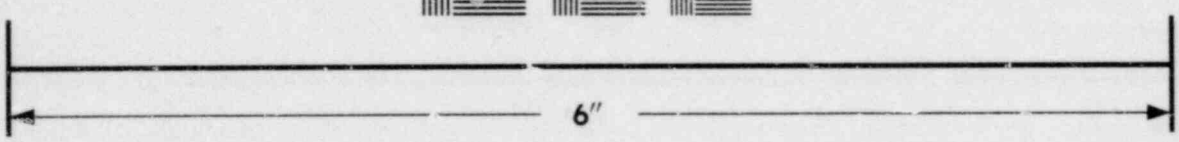
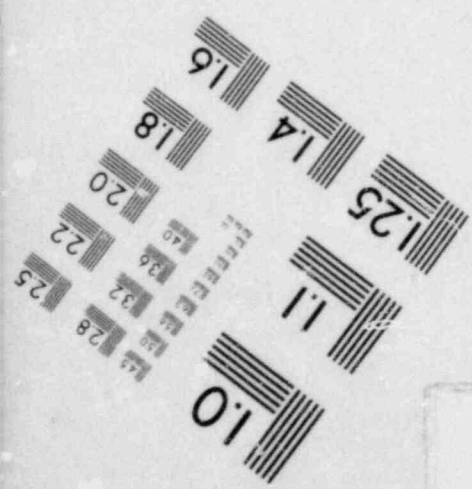
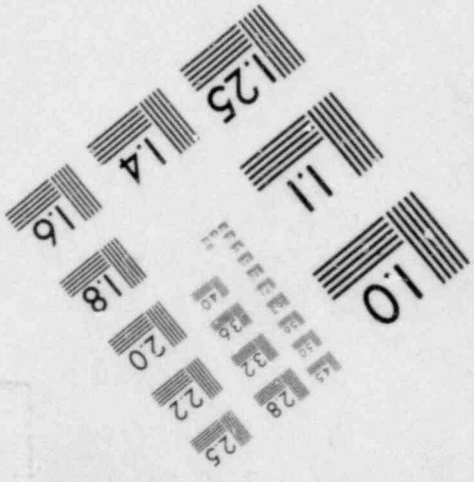


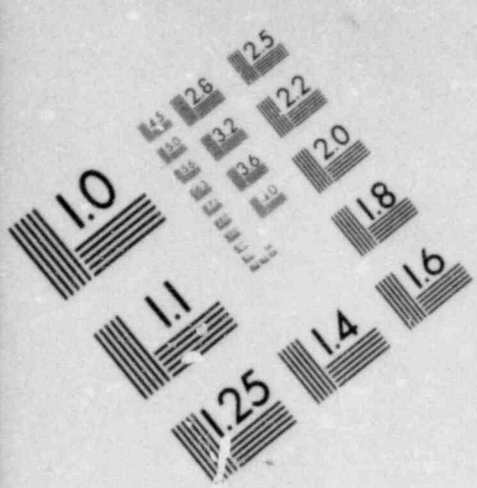
IMAGE EVALUATION TEST TARGET (MT-3)











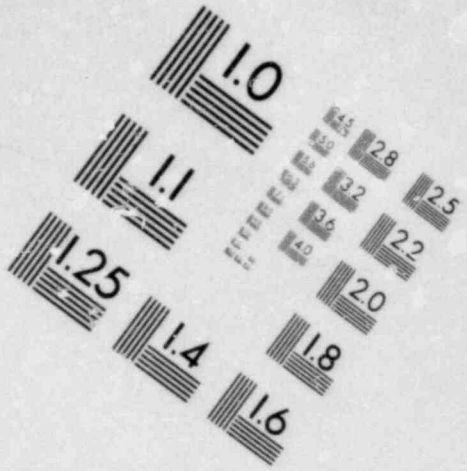
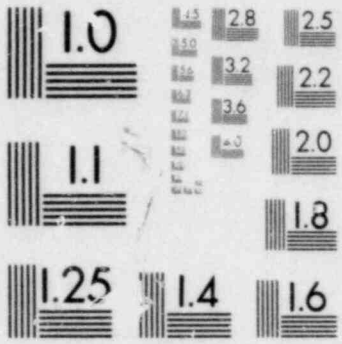
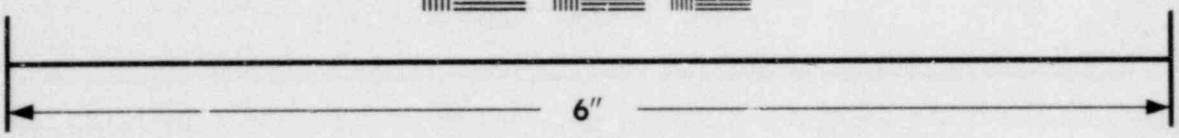
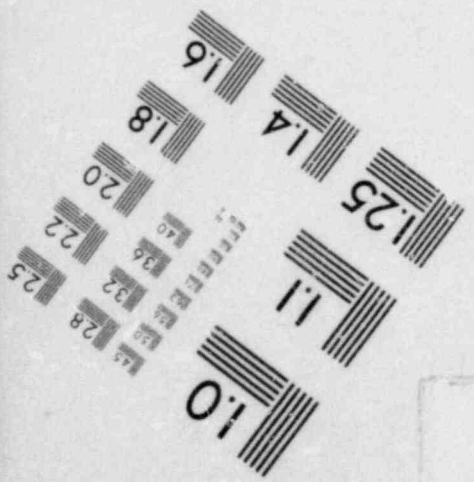
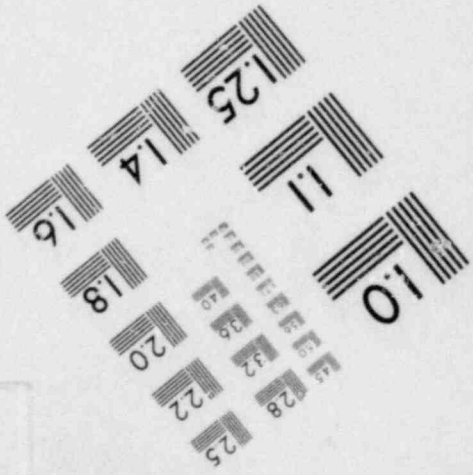


IMAGE EVALUATION TEST TARGET (MT-3)









-- Testing requirements, Inspection and Hold points were included.

-- The procedures included provisions for adherence to Technical Specification during the maintenance activities and for return to service.

-- Properly specified parts and materials were identified for use.

-- Procedures and changes were in conformance with the administrative requirements.

-- Consideration was given to the radiological hazards involved.

b. The following procedures were reviewed:

-- 3.M.1-1, Preventive Mainte ance, Revision 1, August 17, 1978.

-- 3.M.1-1.1, Instrument and Control, Revision 7, September 20, 1978.

-- 3.M.1-1.2, Electrical, Revision 2, September 5, 1978.

-- 3.M.1-1.3, Mechanical, Revision 2, December 1, 1978.

-- 3.M.2-1, Instrument Record System, Revision 2, December 29, 1977.

-- 3.M.1-10, Calibration and Control of Maintenance Tools and Equipment, Revision 6, May 2, 1980.

-- 3.M.1-10.1, Torque Wrench Calibration, Revision 2, June 16, 1980.

-- 3.M.1-10.2, Linear Measurement Equipment Calibration, Revision 0, September 29, 1977 (Reference Findings Detail 4.d(1)).

-- 3.M.1-11, Routine Maintenance, Revision 2, February 1, 1979.

-- 3.M.1-13, Tool and Portable Equipment Control, Revision 2, February 21, 1979.

No unacceptable conditions were identified.

7. Review of Safety-Related Maintenance Activities

a. The inspector reviewed safety-related maintenance activities and Preventive Maintenance conducted by the licensee on a sampling basis to verify that:

-- Technical Specification requirements were met while equipment was out of service, and that a Licensee Event Report had been submitted for maintenance associated with a reportable occurrence when required.

-- Required administrative approvals were obtained to perform the work.

-- An approved procedure was used as appropriate.

-- Records to substantiate the quality of work and parts used were available (this included documentation associated with procurement, inspections and test results).

b. Documentation of the following maintenance and preventive maintenance activities was reviewed:

-- Maintenance Request (MR) 801566, May 1, 1980. HPCI Exhaust Stop Check Valve Seat Repair, completed May 3, 1980.

-- MR 80-5370, March 3, 1980. RHR Valve MO 1001-28A Repack, completed April 24, 1980.

-- MR 80-5048, February 15, 1980. Modify Core Spray "A" and "B" Suction Lines per PDCR #79-35C, completed april 8, 1980.

-- MR 80-787, January 7, 1980. A Condensate Drain Line to the 2" Copper Vent Line installed, completed April 5, 1980.

-- MR 80-5685, April 22, 1980. Modification of two existing Category 1 pipe supports of RCIC, completed April 30, 1980.

-- MR 80-1599, April 25, 1980. MO 2301-J HPCI System Valve Packing Repacked, completed May 2, 1980.

-- MR 80-1587, March 11, 1980. HPCI Solenoid Valve SV-9313 Replaced, completed April 17, 1980.

-- MR 80-1572, HPCI Discharge MO 2301-9 125 V and 250 V D.C. under-voltage Relay Coil, completed January 18, 1980.

-- MR 80-606, January 15, 1980. RHR Injection Valve 1001-28B and 101-29B failed Local Leak Rate Test. Repair work completed February 2, 1980.

-- MR 80-210, October 30, 1979. RHR Head Spray Nozzle and Pipe Flanges, completed January 15, 1980.

-- MR 80-37, April 23, 1980. MSIV 2A, 2B, 2C, and 2D Leaking Packings Repacked, completed April 28, 1980.

-- MR 80-14, January 22, 1980. MSIV 203-2B Valve Position Switches Replaced, completed May 10, 1980.

-- 8.M.2-2.5.6, HPCI Condensate Storage Tank Level Calibration, Pressure Switches PS-2390 A and B. Tests performed June 11, 1980, September 13, 1980, and December 10, 1980.

-- 8.M.3-4, Reactor Building Vacuum Breaker Differential Pressure Sensor Calibration/Test, Revision 4, October 11, 1978. Tests performed June 30, 1980, September 29, 1980, and December 22, 1980 (Reference Findings Detail 4.c).

-- 8.M.2-1.4.4, Main Steam Low Pressure Calibration Test, Revision 2, November 4, 1976. Tests performed April 8, 1980, July 9, 1980, and October 10, 1980.

-- 8.M.2-4.1, Air Ejector Off-Gas Monitor Calibration, Revision 6, March 31, 1980. Four tests performed January 26, 1980 through October 21, 1980.

-- 8.M.2-4.2, Air Ejector Off-Gas Radiation Monitor, Revision 4, March 29, 1978. Four tests performed September 26, 1980 through Decem 18, 1980.

-- 8.M. 19, Reactor Water Level, Revision 5, July 25, 1980. Tests performed July 26, 1980, August 13, 1980, and November 4, 1980.

c. Findings

10 CFR 50, Appendix B, Criterion V requires that activities affecting quality shall be accomplished in accordance with documented instructions or procedures.

Administrative Procedure AP 1.3.4, "Procedures", Revision 21, December 24, 1980, requires adherence to written procedures. Also, AP 1.5.3, "Maintenance Requests" specifies that the Description/Procedure Number for the post-maintenance test should be identified in the maintenance request, that the persons performing the maintenance and post-maintenance testing should be identified by signing their names, and that the completed MR packages should be reviewed by the Maintenance Supervisor.

Contrary to the above, the following completed MR packages had not been properly documented or reviewed to meet the prescribed requirements.

-- MR 80-1566, and MR 80-1572, Description of post-maintenance testing and persons performing the tests were not identified.

-- MR 80-787, and MR 80-1587, a post-maintenance operational check was performed but the person performing the test was not identified.

-- MR 80-5685, post-modification testing was completed and the person performing the test was identified but the description of the testing was not provided.

-- MR 80-1599 and MR 80-606, persons performing the maintenance were not identified.

-- MR 80-210, after completion of MR, post-maintenance leak test was not conducted and the person performing the test was not identified.

Failure to follow written procedures is an item of noncompliance (50-293/81-01-03).

8. Maintenance Program

a. Corrective Maintenance Program

The inspector reviewed the licensee's corrective maintenance program to verify that:

-- Procedures have been established for initiating requests, review, and approval of routine and emergency maintenance.

-- Criteria and responsibilities have been established for designating the activity as safety/non-safety related, performing work inspection, and identification of appropriate inspection hold points.

-- Method and responsibilities have been established for functional testing of structures, systems or components following maintenance work and prior to their being returned to service.

-- Administrative control procedures were established to provide and store records which: identify persons performing or inspecting maintenance activities; identify persons performing post maintenance testing; identify the cause of the malfunction/failure; describe the corrective action taken, test equipment, and replacement parts used.

-- Special control procedures had been established for activities involving welding, open flame, or other ignition sources, and for activities which require a firewatch.

-- A program had been established for reviewing completed corrective maintenance records to assess the adequacy of the preventive maintenance program and to identify repetitive failures and design deficiencies.

b. Equipment Control

The inspector reviewed the licensee's equipment control program to verify that methods and responsibilities had been clearly defined including;

-- Permission by the operating staff to release equipment or systems, for maintenance.

-- When testing of redundant components or system is required, such testing shall be documented.

-- Procedures and responsibility for tagging equipment; and for returning equipment to service had been established.

c. Preventive Maintenance Program

The inspector reviewed the preventive maintenance (PM) program for safety-related structures, systems and components including;

-- Responsibility of the program,

-- Master schedule,

-- Documentation and review of the completed PM activities, and

-- Responsibilities and methods for establishing PM frequencies.

d. Special Processes

The inspector verified that administrative controls for special processes had been established which require written procedures, and specific personnel qualifications as well as special training and record keeping requirements.

e. Cleanliness Controls

The inspector reviewed the licensee's program to verify that procedures for cleaning safety-related components and systems had been developed including the cleanliness classifications of plant systems and assignment of responsibility for implementing the cleanliness requirements.

f. Housekeeping Controls

The inspector reviewed the licensee's program to verify that administrative controls and responsibilities for general housekeeping had been established, which included delineation of Housekeeping Zones and Control of Housekeeping during work activities.

g. The following procedures and documents were reviewed;

-- AP 1.5.7, Unplanned, Emergency Maintenance, Revision 11, November 28, 1979.

-- AP 1.5.3, Maintenance Requests, Revision 13, May 9, 1980.

-- AP 1.4.6, Personnel and Equipment Safety - Housekeeping, Revision 5, December 27, 1978.

-- AP 1.4.5, PNPS Tagging Procedures, Revision 8, December 27, 1978.

-- AP 1.3.7, Records; Revision 17, January 25, 1980.

-- 3.M.4-19, Maintenance Record System, Revision 1, August 17, 1978.

-- 3.M.1-1, Appendix, PM Procedure Master List, Revision 1, August 17, 1978.

-- Preventive Maintenance Monthly P[illegible]h List.

-- Quality Assurance Manual, Volume II, "Operation of Nuclear Power Plants", Section 9, "Control of Special Processes", Revision 2, August 6, 1979.

-- QA Departmental Procedure, 2.01, Indoctrination and Training Program, Revision 3, November 24, 1977.

-- "Plant Housekeeping", PNPS File No. AP-80-78, by W. J. Armstrong, December 11, 1980.

-- Memorandum, Preventive Maintenance Goal and Objective Outline, March 15, 1979.

-- AP 1.1.1 Station Organization Responsibilities, Revision 6, March 20, 1980; Draft Copy of Revision 7.

-- Procedures identified in Sections 5 and 6.

No unacceptable conditions were identified.

9. Control Room Observation and Plant Tour

The inspector observed Control Room Operations regarding minimum staffing and control room manning, shift turnover, log sheets, and facility operation to verify that operations were in accordance with the Administrative procedures and Technical Specifications requirements. The inspector also conducted a tour of Turbine/Generator Building and selected protected areas including the Reactor Building, Service Area, and Switchgear Room to ensure that housekeeping practices were adequate. Observations included:

-- Cleanliness,

-- Radiation protection and friskers, and

-- Posting signs and work in progress.

No unacceptable conditions were identified.

10. Entrance and Exit Interview

Licensee management was informed of the purpose and scope of the inspection at the entrance interview, and the findings of the inspection were periodically discussed with the licensee representatives as summarized in the following:

Date	Reportable Details Covered
January 5, 1981	Entrance
January 6, 1981	4.d(1)
January 7, 1981	2.b, 4.d(2), 7.(c)
January 8, 1981	4.d(1), 4.d(2)
January 9, 1981	2.b, 4.d(1), 4.d(2), 7.(c), Exit

The inspector conducted an exit interview with licensee representatives (denoted in paragraph 1) at the conclusion of the inspection. The licensee acknowledged the inspection findings.