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

Region I

Report No. 50-293/79-21

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: December 10-14, 1979

Inspectors: _____ 1/11/80
N. Blumberg, Reactor Inspector — date signed

_____ 1/11/80
J. Chung, Reactor Inspector — date signed

_____
date signed

Approved by: W. Baunack 1/14/80
W. Baunack, Acting Chief, Nuclear Support Section No. 2, RO&NS Branch — date signed

Inspection Summary:

Inspection on December 10-14, 1979 (Report No. 50-293/79-21)

Areas Inspected: Routine, unannounced inspection by two regional based inspectors of licensee action on previous inspection findings; administrative controls for facility procedures; conformance to Technical Specifications; temporary and permanent changes in conformance to Technical Specifications and licensee procedures; changes in procedures to 10 CFR 50.59(a) and (b) requirements; checklists and related forms for currency to latest changes; observations of radiation emergency drill; and, control room observations. The inspection involved 56 inspector-hours onsite by two regional based NRC inspectors.

Results: Of the eight areas inspected, no items of noncompliance were identified in seven areas, one item of noncompliance was identified in one area (Deficiency - failure to adequately implement fire protection operating procedures, Paragraph 4.c(1)).

DETAILS

1. Persons Contacted

H. Balfour, Technical Assistant, Boston Edison
A. Caputo, Fire Protection Officer
E. Cobb, Chief Operating Engineer
*E. Graham, Senior Plant Engineer
R. Machon, Assistant Plant Manager
*C. Mathis, Methods, Training and Compliance Group Leader
R. Smith, Chemical Engineer
K. Taylor, Watch Engineer
J. Vender, Instrument and Control Supervisor
**C. Vantrease, Chief Technical Engineer

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*D. Kehoe, Reactor Inspector

The inspector also interviewed other licensee employees during the inspection, including reactor operators, technical support, administrative, and clerical personnel.

*denotes those present at the exit interview.
**Acting Plant Manager on date of exit interview.

2. Licensee Action on Previous Inspection Findings

(Closed) Unresolved Item (293/79-11-01): Failure to perform the functional test of the High Reactor Pressure Instrumentation on a one-month interval as required by Technical Specification (TS) Table 4.1.2. The inspector verified by review of surveillance test records (8M-1.17 and 8M2-1.1) that the subsequent functional tests were performed on one-month intervals (within $\pm$ 25%) as required by TS.

(Closed) Inspector Follow Item (293/79-11-03): Failure to bring the procedures acceptance criteria into conformance with the instrument accuracy. The inspector verified by review of all "8.E" series procedures that the procedures (8.E.10/11/12/14/19/38) were revised to bring the acceptance criteria into $\pm$ 2 percent of full scale as specified by the manufacturers.

(Closed) Unresolved Item (293/79-04-02): Failure to substantiate the additional half second footnoted in the acceptance criteria of Surveillance Procedure 8.7.4.4, Main Steam Isolation Valve Trip.

The inspector confirmed the validity of the Surveillance Procedure footnote by a review of the Final Safety Analysis Report (FSAR, Section 14 and 4.6.4) which allows up to 0.5 second for the instrumentation to initiate valve closure.

(Open) Unresolved Item (293/77-13-04): Failure to revise the facility chemistry procedure and to provide the reagent shelf life. The inspector verified that conductivity procedures 7.2.20 and 7.2.3 were revised by Revision 2, dated January 3, 1979; and that chloride procedure 7.1.4 was superceded by procedure 7.1.40 and 7.1.41 issued July 13, 1978. A licensee representative informed the inspector that a mechanism to control the shelf life of reagents will be implemented by February 1, 1980. This item remains unresolved pending completion of licensee action and further NRC:RI review.

(Open) Unresolved Item (293/79-06-01): Failure to reflect actual change of station organization into procedures and Technical Specification. The inspector verified that a licensee event report (LER 78-04/03L-0) was submitted on November 2, 1978, as required by TS 6.9.B.2.e, and that a TS change request was submitted on July 6, 1979. Procedure 1.1.1, "Station Organization Responsibilities," will be revised after approval in the TS of organizational changes. This item remains open pending approval of the TS change request, licensee action, and subsequent NRC:RI review.

3. Facility Administrative Control Procedures

a. The inspector performed a review, on a sampling basis, of the below listed administrative procedures for conformance with Technical Specifications, Section 6, ANSI 18.7, and Regulatory Guide 1.33:

-- 1.2.1, Operations Review Committee, Revision 8, March, 1979.

-- 1.3.2, Special Orders, Revision 8, March, 1979.

-- 1.3.3, Authority to Shutdown or Startup Station, Revision 7, March, 1979.

-- 1.3.4, Procedures, Revision 20, May, 1979.

-- 1.3.6, Adherence to Technical Specifications, Revision 6, March, 1979.

-- 1.3.7, Records, Revision 16, November, 1979.

No items of noncompliance 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, "Administrative 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) General Operating Procedures

*-- 2.1.3, Hot Standby Manuevers, Revision 8, April 26, 1978.

*-- 2.1.9, Reactor Recirculation Pump Operation, Revision 9, November 11, 1978.

(2) System Operating Procedures

-- 2.2.24, Standby Liquid Control System, Revision 6, November 2, 1978.

-- 2.2.70, Primary Containment Atmosphere System, Revision 12, July 25, 1979.

-- 2.2.85, Fuel Pool Cooling and Filling System, Revision 7, June 4, 1979.

*-- 2.2.92, Main Steam Line Isolation and Turbine Bypass Valves, Revision 7, August 22, 1979.

-- 2.2.94, Sea Water System, Revision 10, August 22, 1979.

*-- 2.2.25, Fire Water System, Revision 5, February 21, 1979.

-- 2.2.26, Deluge and Sprinkler System, Revision 2, March, 1978.

-- 2.2.27, Carbon Dioxide System, Revision 3, March, 1978.

-- 2.2.28, Dry Chemical Systems, Revision 3, March, 1978.

-- 2.2.29, Smoke Detection System, Revision 3, March, 1978.

-- 2.2.90, Rod Worth Minimizer, Revision 4, August 22, 1979.

-- 2.2.79, Reactor Protection System, Revision 3, December 21, 1977.

(3) Off-Normal Procedures

-- Procedure No. 2.4.14, Leak Inside the Primary Containment, Revision 3, March 20, 1978.

-- Procedure No. 2.4.15, Large Steam Leak Outside Drywell, Revision 3, March 20, 1978.

*-- Procedure No. 2.4.25, Loss of Shutdown Cooling, Revision 4, September 20, 1978.

-- Procedure No. 2.4.36, Loss of Condenser Vacuum, Revision 4, March 20, 1978.

-- Procedure No. 2.4.1, Stuck or Inoperable CRD, Revision 3, March 20, 1979.

-- Procedure No. 2.4.2, Uncoupled Control Rod, Revision 4, March 20, 1978.

*-- Procedure No. 2.4.4, Loss of CRD Pumps, Revision 3, March 20, 1978.

-- Procedure No. 2.4.48, Loss of Sea Water Pumps, Revision 5, November 11, 1979.

(4) Emergency Procedures

*-- Procedure No. 5.3.2, Inability to Shutdown with Control Rods, Revision 4, November 14, 1979.

-- Procedure No. 5.3.10, Loss of All Feedwater, Revision 4, August 7, 1979.

-- Procedure No. 5.3.16, Loss of Coolant With No Pipe Break, Revision 1, October 10, 1979.

-- Procedure No. 5.4.2, Pipe Break Inside Primary Containment, Revision 4, July 30, 1979.

*-- Procedure No. 5.4.4, Pipe Break Inside Reactor Building, Revision 4, July 30, 1979.

(5) Alarm Response Procedures

-- 2.3.2.5, Panel 904 Center, Revision 3, November 30, 1977:

A-7, Recirculation Pump A Seal Leakage Hi Flow

B-9, Recirculation Pump A Motor Hi/Lo Oil Level

-- 2.3.2.7, Panel 905 Left, Revision 5, June 1, 1978:

A-1, Rod Withdraw Block

B-1, RWM Rod Block

B-10, Main Steam Line Leakage

*-- 2.3.2.8, Panel 905 Right, Revision 2, December 22, 1975:

A-3, Main Steam Line, Change A, Hi Flow

A-19, Standby Liquid Control Tank, Hi/Lo Level

A-21, Standby Liquid Hi/Lo Temperature

B-17, Drywell Hi/Lo Pressure

-- 2.3.2.9, Panel C-1 Left, Revision 2, December 22, 1975:

A-24, B Sea Water Pump Discharge Hi Pressure

B-22, Sea Water Pump Overload

-- 2.3.2.12, Panel C-2 Right, Revision 5, April 12, 1978:

A-12, Fire Pump Running

B-7, Fire Water Storage Tanks Low Level

(6) Maintenance Procedures

-- 3.M.4-8-1, Main Steam Isolation Valve Disassembly and Reassembly, Revision 2, February 7, 1979.

-- 3.M.3-11, Calibration Procedure for Recirculation Pump Megawatt Indicators, Revision 0, June 28, 1978.

-- 3.M.4-45-1, Fire Hose Coupling and Recoupling, Revision 0, October 24, 1979.

-- 3.M.4-3, Removal and Installation of Drywell Head, Revision 2, November 18, 1977.

c. Findings

Four operating procedures for fire protection systems were last revised during March, 1978; and a fifth procedure was revised February, 1979. The Technical Specifications for fire protection were issued December, 1978. A review of the fire protection operating procedures indicates these procedures do not conform to information contained in the Technical Specifications. The following are examples of instances in which the operating procedures do not reflect current Technical Specification requirements:

-- Procedure No. 2.2.25, "Fire Water System," specifies that at least one fire pump and one fire water storage tank be in operation as an acceptable condition. TS 3.12.B states that any condition in which there is less than two fire pumps or two fire water storage tanks operational is a limiting condition for operation (LCO) in which further action must be taken by the licensee. Additionally, the procedure appears to allow fire system operation between 110-125 psig with no operator or automatic actions. TS 4.12.B states that fire system operation will be at a minimum of 125 psig.

-- Procedure 2.2.26, "Deluge and Sprinkler Systems," does not address the sprinkler system for the Standby Gas Treatment System which is specified in TS 3.12.C (see also related unresolved item in Paragraph 6.b(2) below). In addition, the procedure does not address actions to be taken, as required by TS, in case of inoperable sprinkler or spray systems.

-- Procedure 2.2.27, "Carbon Dioxide Systems," does not address operation of the CO_2 system for the 37' and 23' Cable Spreading Rooms as specified in TS 3.12.D; nor does it address actions to be taken, as required by TS, in case of inoperable CO_2 systems.

-- Procedure 2.2.28, "Dry Chemical Systems," does not address actions required by TS 3.12.G in instances when the Dry Chemical System may be inoperable.

-- Procedure 2.2.29, "Smoke Detection Systems," does not include smoke detectors for the Augmented Off Gas (AOG) System as specified in TS Table 3.12.1; nor does the procedure specify actions to be taken, as required by TS 3.4.12.A, in case of inoperable fire and smoke detectors.

The above are examples and do not state all instances in which the procedures may not conform to the Technical Specifications. Fire protection surveillance procedures were also reviewed for conformance to recent Technical Specification changes, and except as noted in Paragraph 6.b.(2) below, no discrepancies were observed.

Failure to adequately implement fire protection operating procedures is contrary to Technical Specification 6.8.D and Plant Procedure 1.3.4, "Procedures," Paragraph III.A, and considered an item of noncompliance at the deficiency level (293/79-21-01).

(2) TS 6.8.C and Plant Procedure 1.3.4, Paragraph III.E, require that temporary changes be documented and reviewed by the Operations Review Committee (ORC) within seven days of implementation. A temporary change (79-2) was observed posted to Procedure 2.2.85, Fuel Pool Cooling and Filtering System, which changed the operating procedure for the Fuel Pool Surge Tank Level Controller. This change was not documented by a procedure change notice (PCN), nor was it reviewed by the ORC. This appears to have been an oversight and an isolated case. The licensee stated that this change would be documented on a PCN and reviewed by the ORC. This item is unresolved pending licensee action and subsequent NRC:RI review (293/79-21-02).

(3) The licensee has identified thirty-three alarm annunciators in the Control Room which are permanently in an alarm condition or are inoperable or in need of repair. The inspector discussed the following three alarms, which are permanently annunciated, with the licensee:

-- HPCI Isolated

-- Suppression Chamber Low Water Level

-- Torus Room Trough Hi/Low Level

The HPCI steam line inlet valve (2301-5) is approximately 10% open as a result of a licensee accident analysis which showed the valve should be shut in less time in order to minimize steam damage in case of a HPCI steam line break. The inspector verified from licensee data, that the HPCI pump met Technical Specification requirements for operability and that valve position is verified in the intermediate position by valve position indication at least once per shift. The licensee also stated valve operability is checked once per month as required by TS 4.5.C.1.c.

The Suppression Chamber Water Level, though still within current TS limits, has been lowered to a point below the level alarm setpoint taps as a result of a safety analysis which determined that lower Suppression Chamber Water Level will minimize hydraulic shocks in the torus in case of a LOCA in the Drywell. The inspector verified that Suppression Chamber Water Level is checked once per shift and that Drywell to Torus drywell differential pressure is constantly monitored on a large digital readout screen. The licensee noted that a change in Torus water level will cause an observable change to this differential pressure.

The licensee stated to the inspector that the torus water trough level has been verified as high within the last month and that there is no leakage from the trough hence adequate secondary containment is being provided. The pump for the water trough is currently in need of repair.

The licensee stated that the above alarms or conditions causing the above alarms will be corrected during the forthcoming refueling outage scheduled to commence January, 1980. This item is unresolved pending licensee action and subsequent NRC:RI review (293/79-21-03).

5. Technical Content of Facility Procedures

The inspector conducted a review of facility procedures, 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 (*) in Paragraph 4 (Review of Facility Procedures) of this report.

One item of noncompliance was identified and is detailed in Paragraph 4.c(1).

6. Procedure Changes Resulting From Licensee Amendments

a. The inspector reviewed license amendments (Amendments 32 through 38), which included Technical Specification changes, issued during the past fifteen month period and verified that applicable procedures were revised as necessary to reflect these changes.

b. Findings

(1) Amendment 38, dated December 7, 1979, had not been received by the station. The inspector confirmed by telephone that the amendment had been received by the licensee corporate headquarters but had not yet been forwarded to the station. The changes implemented by this amendment deleted certain existing surveillance requirements and hence had no immediate significant effect on station operations. Implementation of Amendment 38 will be the subject of further NRC:RI review during a subsequent inspection.

(2) Amendment 31, dated December 31, 1978, requires that a spray/sprinkler system be installed in the Standby Gas Treatment System and that surveillance be performed as required by TS 4.12.C. It appeared to the inspector, and a licensee representative concurred, that the built in spray system in the Standby Gas Treatment System may not meet the requirements of TS 3.12.C and 4.12.C. In addition, a surveillance procedure has not been written to accomplish the once per cycle fire protection surveillances for this sytem. The licensee representative stated that an engineering review will be conducted, modifications made as necessary, a surveillance procedure written, and the proper surveillances accomplished prior to the completion of the refueling outage scheduled to begin January, 1980. This item is unresolved pending licensee action and subsequent NRC:RI review (293/79-21-04).

7. Checklists and Related Forms

Operations Department procedures, including checklists and related forms in working files, were reviewed to see that current revisions and on-the-spot changes were posted. One unresolved item was identified and is detailed in Paragraph 4.c(2) above.

8. Changes to Procedures as Detailed in the Safety Analysis Report (Pursuant to 10 CFR 50.59(a) and (b))

The inspector verified, on a sampling basis, that changes made to facility procedures during the past fifteen month period were in compliance with 10 CFR 50.59(a) requirements and that records of these changes were maintained in compliance with 10 CFR 50.59(b). For the procedures reviewed, the licensee had determined that 10 CFR 50.59 safety evaluation documentation was not required (no change in procedures as described in the FSAR). The inspector had no questions in this area.

9. Observation of Radiation Emergency Drill

a. The inspectors observed the licensee performance of a radiation emergency drill to verify the following:

-- Response was in accordance with approved procedures and plans;

-- Response appeared coordinated, orderly, and timely;

-- Persons were designated by the license to evaluate the response;

-- A critique was held shortly following the drill;

-- Results of the drill and licensee self-evaluation are documented and reviewed (or apparently will be) by the licensee management and supervision; and,

-- Appropriate corrective actions are being taken to correct identified deficiencies.

b. The Simulated Incident Scenario

The station heat supply to the preheater of the catalytic hydrogen recombiner is lost causing an explosion of hydrogen in the condenser compartment area the force of which creates a crack at the base of the main stack releasing radiation to the environs. The explosion also causes a simulated injury with radiological contamination to a worker in the condenser compartment.

c. Findings

The inspector observed the following during the simulated emergency drill:

(1) The organization responded in accordance with approved procedures and plans.

(2) The response was well coordinated and orderly.

(3) The emergency control center was established with some delay due to slow evacuation.

(4) Communications were promptly established within the ECC:

-- Various state and local agencies were notified of the drill (and that no action was required on their part).

-- A decision was made not to use the "NRC Hotline" to notify the NRC duty officer as this was only a drill. The licensee was informed at the conclusion of the inspection that they should use the "Hotline" during simulated emergency drills.

-- Verified the nature of the incident and those injured.

-- Located and accounted for all personnel on site at the time of the incident.

-- Evacuated the site in an orderly manner.

-- Established necessary security and radiological controls as per plans and procedures.

(5) A critique was held immediately following the drill; and licensee representatives noted the following problems which will need further evaluation and possible correction:

-- Personnel in the turbine and auxiliary buildings proceeded to evacuate the site on building evacuation rather than site evacuation alarms.

-- Communication interruptions were experienced with personnel handling the simulated injury.

-- Personnel handling the simulated injury had a great deal of difficulty transporting the person on a stretcher.

-- A report to management will be prepared by personnel who conducted the drill identifying problem areas and corrective actions.

10. Control Room Observations

The inspector observed Control Room operations on both day and evening shifts for Control Room manning, shift turnover, and facility operation in accordance with Administrative and Technical Specification requirements.

No items of noncompliance were identified.

11. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, items of noncompliance, or deviations. Several unresolved items were identified and are detailed in Paragraphs 4.c(2), 4.c(3), and 6.b(2).

12. Exit Interview

The inspector met with licensee representatives (denoted in Paragraph 1) at the conclusion of the inspection on December 14, 1979, and summarized the purpose, scope, and findings of the inspection.