

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

Region I

Report No. 50-293/81-08

Docket No. 50-293

License No. DPR-35 Priority -- Category C

Licensee: Boston Edison Company

800 Boylston Street

Boston, Massachusetts 02199

Facility Name: Pilgrim Nuclear Power Station

Inspection at: Plymouth, Massachusetts

Inspection conducted: April 1-30, 1981

Inspectors: Jon R Johnson  
J. Johnson, Senior Resident Inspector

May 14, 1981  
date signed

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date signed

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date signed

5-22-81

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date signed

Approved by: R. R. Keimig  
R. R. Keimig, Acting Chief, Reactor Projects  
Section No. 1B

Inspection Summary:

Inspection on April 1-30, 1981 (Report No. 50-293/81-08)

Areas Inspected: Routine unannounced safety inspection of plant operations including followup on previous inspection findings, an operational safety verification, followup on events occurring during the inspection, surveillance activities, maintenance activities, a review of activities involved with the installation of a Scram Discharge Air Header Automatic Dump System in accordance with an NRC Order dated April 8, 1981, an in-office review and followup of LER's. The inspection involved 87 hours by the resident inspector.

Results: Three items of noncompliance were identified in one area. (Failure to implement station procedures for equipment control red tagging, Paragraph 3.b(1); Failure to implement station procedures for reviewing completed system valve lineup check sheets, Paragraph 3.b(2); and, Failure to perform a safety evaluation as required by 10 CFR 50.59 for modifications to the Instrument Air and Service Air systems, Paragraph 3.b(3).)

DCS Numbers for Report 50-293/81-08

50293-790214  
50293-790304  
50293-790429  
50293-790705  
50239-790725  
50293-790816  
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50293-810107  
50293-810402  
50293-810403  
50293-810406  
50293-810410  
50293-810419  
50293-810430

DETAILS1. Persons Contacted

J. Alukonis, Watch Engineer  
G. Anderson, Watch Engineer  
R. Belanger, QC Inspector  
A. Caputo, Fire Protection Engineer  
G. Fiedler, Watch Engineer  
P. Giardiello, Sr. Compliance Engineer  
E. Graham, Sr. Plant Engineer  
D. Lang, I&C Supervisor  
C. Mathis, Deputy Nuclear Operations Manager  
E. Margalejo, NED - Design Engineer  
T. McLoughlin, Sr. Compliance Engineer  
A. Morisi, Nuclear Operations Support Manager  
P. Smith, Chief Technical Engineer  
R. Smith, Sr. Chemical Engineer  
T. Vankataraman, Project Manager - Fire Protection  
E. Ziemianski, Management Services Group Leader

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

2. Followup on Previous Inspection Findings

(Closed) Unresolved Item (293/79-06-01) The inspector reviewed station procedure No. 1.1.1 "Station Organization Responsibilities", Revision 7, which is in agreement with the organizational description in the Technical Specifications, Section 6.0, as revised by Amendment No. 46. This item is closed.

(Closed) Infraction (293/80-29-02) The licensee has revised procedure No. 7.4.14 "Calibration of Main Steam Line Process Radiation Monitors", Revision 3, which includes specific guidance on determining set points for the monitors. The inspector compared current actual readings on the monitors at full power and the latest trip set point calibration records as of April 21, 1981, and verified compliance with the settings required by Technical Specifications. This item is closed.

(Closed) Infraction (293/80-26-04) The inspector reviewed revised station procedures No. 9.1 "APRM Calibration", Revision 6, and No. 2.1.15 "Daily Surveillance Log", Revision 35, which require the APRM Gain Adjustment Factors (AGAF) to fall within the range of .95 to 1.00. These values of AGAF's, together with the current trip settings of  $118 \pm 1\%$  at rated flow, ensure that the APRM trip settings are in accordance with the Technical Specifications. The inspector has observed implementation of the required range of AGAF's on daily control room tours. This item is closed.

(Open) Unresolved Item (293/80-26-06) The NRC has issued Information Notice No. 80-45 describing this design of the Mode Switch - to - Shutdown scram circuitry. The licensee stated that their engineering department is evaluating a General Electric Co. Service Information Letter (SIL) issued concerning this item. This item remains open pending a review of the licensee's evaluation and any proposed design changes, if necessary.

(Closed) Infraction (293/79-09-01) The inspector reviewed revised station procedures No. 2.2.8 "Standby AC Power System (Diesel Generators)," Revision 6, and No. 2.2.21 "High Pressure Coolant Injection System", Revision 8. These procedures were revised to add the two 2.5 inch outlet valves from the 'A' and 'B' Diesel Generator fuel oil storage tanks, and the one inch manual upstream block valve for VRV 9066 (on the HPCI system) to the system operating procedure valve check off lists. The inspector questioned the licensee concerning the addition of a .75 inch manual nitrogen supply valve (on the HPCI exhaust line) to the valve lineup check sheet. The licensee stated that this was inadvertently left out of the procedure change and immediately issued a procedure change notice on April 23, 1981 to include this nitrogen valve to the HPCI system valve check sheet. This item is closed.

(Closed) Unresolved Item (293/79-09-02) The licensee has revised procedure No. 2.2.70 "Primary Containment Atmosphere System", Revision 15, Section VII.H, to include a requirement to verify that all hand operated valves on the makeup line are open prior to the nitrogen addition, and to close the appropriate valves upon completion of the evolution. This item is closed.

(Open) Unresolved Item (293/79-09-03) The inspector reviewed the Appendix B instrument lineup check sheets for system operating procedures. The licensee still has one of three checks to make: operable, inoperable, or OK. The inspector questioned the licensee to determine if a check of the instrument root valves was required during these lineup checks. The licensee stated that the 'OK' meant that the instrument was not known to be inoperable, and that the root valves were open. The licensee further stated that procedure No. 2.1.11 "Current Valve Lineup File" would be revised to state that designating an instrument as 'OK' includes a check that the root valves are open. Pending a review of this revision to procedure No. 2.1.11, this item remains open.

(Closed) Infraction (293/79-09-04) The licensee counselled the individuals involved in designating the valve in two different positions at the same time. To verify implementation of this corrective action the inspector physically observed about 50 (out of 151) valves designated on the locked open, locked closed valve line-up surveillance, procedure No. 8.C.13, between March 4, 1981 and April 17, 1981. All valves checked were in the required locked position as specified by the procedure and documented on the licensee's completed surveillance sheets. This item is closed.

(Closed) Infraction (293/79-09-05) The inspector reviewed station procedures No. 8.C.13 "Locked Open, Locked Closed, Valve Lineup Surveillance", Revision 5, and No. 2.2.21 "High Pressure Coolant Injection System", Revision 8. These two procedures were revised to specify the normal position of two valves (1-74, and one inch block to VRV 9066) as locked open, as shown on P&ID drawing no. M243 Rev. 15. The inspector reviewed the latest completed surveillance no. 8.C.13 performed on April 17, 1981 which verified these two valves were locked. This item is closed.

(Closed) Unresolved Item (293/79-09-06) The inspector reviewed completed surveillance procedure No. 8.5.3.4 "Drywell and Torus Header Nozzle Air Test", performed on April 28, 1980. This test verified air flow through all six torus nozzles. This item is closed.

(Open) Unresolved Item (293/80-26-07) The licensee has not yet revised procedure No. 8.M.2.3.2 "Rod Block Monitor Calibration", to include a requirement to record the as found data for the downscale trip setpoint. The licensee stated that this procedure would be revised by the end of May, 1981. This item remains open pending a review of the approved procedure revision.

(Open) Unresolved Item (293/78-03-01) The inspector reviewed the licensee's corporate engineering memo dated March 13, 1980 which proposes to modify the two Core Spray Pump and four RHR pump breaker spring charging circuits. This modification involves adding a time delay relay together with a latching relay which will provide for an automatic recharging capability in the event of a simultaneous ECCS initiating signal and a loss of offsite power with the startup transformer supplying the emergency buses A5 and A6.

The inspector also reviewed LER No. 80-16 (see Paragraph 9) which describes a similar event observed in May, 1980.

The inspector questioned the licensee concerning justification for continued operation pending implementation of the modifications described above which are currently planned for the upcoming September, 1981 refueling outage. The licensee stated that the trip free operation observed was due to the previous methods of performing the surveillance test and that these methods did not simulate the sequence of events that would occur during an actual event.



The licensee further stated that the probability of the sequence of events which would cause an actual trip free operation was extremely low, that the problem had only been observed with the 'A' core spray pump, and that following a change in the test procedure (No. 8.M.3.1), satisfactory operation was observed.

The inspector discussed these events with personnel from the NRC:NRR who stated that, based on the information provided, and the extremely low probability of this sequence of events, the licensee's proposed actions were acceptable.

This item remains open pending completion of modifications as described above.

(Closed) Unresolved Item (293/80-18-03) The inspector reviewed revised LER No. 79-19/01T-1 submitted on July 23, 1980 which corrects which HPCI system valve was throttled. The licensee has subsequently returned the HPCI system outboard isolation valve to its normally full open position following re-analysis and plant modifications. The inspector verified that surveillance and system operating procedures reflect the current system configuration. This item is closed.

(Open) Unresolved (293/80-18-04). The licensee stated that modifications to the necessary doors within the reactor building had been performed to protect over pressurizing rooms with concrete block walls but was unable to provide the inspector with documentation supporting the acceptability of these changes. This item remains open pending a review of this documentation.

(Open) Unresolved Item (293/80-26-10) The licensee has performed an analysis of the dynamic loading experienced during actual operation of the HPCI system. Instrumentation was placed on the exhaust line and stress/strain correlations were made. The licensee stated that the preliminary results indicate satisfactory piping support for operational loads observed, and that a written report of the results should be available from the engineering staff by the end of May, 1981. This item remains open pending a review of the report and the final updated LER.

### 3. Operational Safety Verification

#### a. Scope and Acceptance Criteria

The inspector observed control room operations, reviewed selected logs and records, and conducted discussions with control room operators. The inspector verified the operability of selected emergency systems and verified the proper return to service of affected components. Tours of the reactor building, turbine building, intake structure, diesel generator building, auxiliary bay, radwaste corridor, and the control room (daily) were conducted. The inspector's observation included a review of equipment condition (including control room annunciators), potential fire hazards, physical security, housekeeping, the implementation of radiological controls, and equipment control (tagging).

The inspector reviewed the documentation associated with several liquid radioactive waste discharges, and the logs, records, and control room indication pertaining to gaseous release rates from the station.

A walk down of the accessible portions of the Reactor Core Isolation Cooling (RCIC) System was performed, and a physical verification of locked closed/locked open valves was performed on portions of the following systems: RCIC, Emergency Diesel Generators, Service Water, Reactor Building Closed Cooling Water, Main Feed, Demineralized Water, and Condensate Transfer.

A review of the current completed system valve line-up check sheets on file was also performed.

These reviews and observations were performed in order to verify conformance with the Code of Federal Regulations, the facility Technical Specifications, and the licensee's procedures.

#### b. Findings

- (1) During tours of the station on various days during this period, the inspector observed several examples of the use of equipment control red tagging that were not in accordance with approved station procedures. These examples are described below:

-- On April 16, 1981, two red tags were observed attached to the CARDOX (CO<sub>2</sub>) tank fill lines just inside the turbine truck lock door. These tags, which were labeled "use only to fill", were placed on this equipment in 1976, and were not logged in the Watch Engineer's Tag Log as required by procedure No. 1.4.5 "PNPS Tagging Procedure", Revision 8. The Watch Engineer immediately cleared these tags and issued caution tags which were more appropriate.

- On April 16, 1981, a red tag was observed attached to the outlet valve in the nitrogen supply to the TIP room downstream of flow meter FQ 5028 (23' level reactor building). This tag was attached on November 6, 1980, and was not entered in the Watch Engineer's Tag Log. The Watch Engineer on duty immediately issued a new tag and properly logged this in the W.E.'s Tag Log.
- On April 23, 1981, the inspector observed two red tags attached to the Auxiliary Heating Boilers. Both tags were illegible because of being sprayed with grey paint and one was on a light bulb instead of being attached to the damper control switch. The Watch Engineer on duty immediately issued new tags.
- On April 27, 1981, a red tag was observed attached to a service air outlet connection in the radwaste corridor. This tag was not filled out properly and was not entered in the W.E.'s Tag Log. Also, on April 27, 1981, two red tags were attached to connections for a 3/8 inch air tubing from nonessential instrument air to the service air for the flat bed filter seals in the radwaste corridor. These two tags were not logged in the W.E.'s Tag Log. The Watch Engineer on duty immediately corrected these items.

The inspector discussed these problems with tagging with station management and stated that these examples of failure to follow procedure No. 1.4.5 were considered an item of noncompliance (293/81-08-01).

- (2) On April 20, 1981, the inspector performed a review of the completed current system valve lineup check sheets on file to verify conformance with station procedure No. 2.1.11 "Current Valve Lineup File", Revision 0. These valve lineups were performed prior to startup from the January-May, 1980 refueling outage. Discrepancies were identified in six of the ten systems checked. These items are described below.
- The completed copies of the Appendix A (valve lineup) and/or Appendix B (instrument lineup) were not signed by the Watch Engineer indicating his review and acceptance prior to system operation.



<u>Procedure No.</u>	<u>System</u>	<u>Appendix not Signed</u>
2.2.21	HPCI	Appendix A and B
2.2.23	ADS	Appendix A
2.2.77	Drywell Leak Detection	Appendix A
2.2.32	Service Water	Appendix A
2.2.22	RCIC	Appendix A

-- The following completed lineup checks identified valves out of the normal position, or not locked as required, with no explanation or resolution provided:

<u>Procedure</u>	<u>System</u>
2.2.19	Low Pressure Coolant Injection (LPCI)
2.2.77	Drywell Leak Detection System

The inspector determined through a review of these completed surveillance tests that these valves had subsequently been verified to be in their proper position and did not have concern as to their present position.

The inspector discussed these problems (concerning review of valve lineup check sheets prior to plant startup) with the station management and stated that these examples of failure to follow procedure 2.1.11 were considered an item of noncompliance (293/81-08-02).

- (3) On April 27, 1981, the inspector observed a modification made to the Instrument Air and Service Air Systems in the radwaste corridor.

The modifications consisted of connecting the instrument air system to the low pressure service air. Two sets of 3/8 inch tubing were involved. One connected the instrument air to the low pressure service air for sluicing the radwaste demineralizer, and the second connected the instrument air to the low pressure service air connection for the flat bed filter seals.

Following discussions with plant operators, the inspector determined that, in both cases, a dehydrated higher pressure source of air was desired to operate these two components, and that the service air was secured and instrument air was connected.

The inspector reviewed the Pilgrim Station FSAR Section 10.11, and FSAR Figure 10.11-1, Instrument and Service Air P&ID. This drawing in the FSAR, as well as current system drawings (M220 Revision E4 "Compressed Air", M-233, Revision E6 "Clean Radwaste System", and M-226, Revision E1 "Misc. System"), show that low pressure service air is supplied to the Radwaste Demineralizer for sluicing air and to the Flat Bed Filter seals.

Following discussions with the licensee's management, the inspector determined that no safety evaluation had been performed prior to these modifications to systems as described in the FSAR and stated that this was contrary to 10 CFR 50.59 and was considered an item of noncompliance (293/81-08-03).

- (4) On April 23, 1981, the inspector questioned the licensee's management concerning the Standby Gas Treatment System (SGTS). The licensee placed the SGTS dampers in the accident position on April 13, 1981 and deenergized the damper controls pending replacement of the solenoid valves.

The licensee stated that calculations performed concerning environmental qualification of various electrical equipment in the SGTS showed that certain components (internals of the solenoid valves) were "marginally acceptable" and that the questionable equipment would be replaced.

The licensee has maintained the SGTS in the accident position following replacement of four solenoid valves (see Paragraph 6.) pending completion of the qualification analysis and any resulting modifications.

No items of noncompliance were identified and the inspector had no further questions at this time. The status of the SGTS will continue to be reviewed during future routine inspections.

- (5) During tours of the control room and a review of the control room logs, the inspector noted that several instances of control rod accumulator alarms have occurred. The cause has been either a low nitrogen pressure or small amounts of water leakage into the accumulator. Action has been taken in each case to either add nitrogen to the accumulator or drain the water out and thus clear the alarms.

The inspector questioned the licensee concerning whether or not the conditions present during these accumulator alarms constituted an inoperable accumulator, and whether or not these instances of accumulator alarms were reportable in accordance with Technical Specification (T.S.) Section 6.9.B.2.b (conditions leading to operation in a degraded mode permitted by a limiting condition for operation...). T.S., Section 3.3.D, allows a rod accumulator to be inoperable provided that no other rod in a nine rod array around this rod has an inoperable accumulator, is disarmed but not fully inserted, or has an out of specification scram time.

The licensee stated that a review would be performed concerning the criteria for declaring control rod accumulator inoperable and determine the reportability of these events.

Pending a review of the licensee's determination of the criteria for declaring a control rod accumulator inoperable, this item is unresolved (293/81-08-04).

- (6) During tours of the control room, a review of logs and records, and discussions with licensee personnel, the inspector noted that the low pressure seal on the 'A' Recirculation Pump has indications of possible failure. Seal leakage high flow annunciators have been received, the pressure in the number 2 seal cavity has dropped from about 350 psi to atmospheric, the drywell equipment leakage has decreased by about one gpm, and the drywell floor leakage has increased by about one gpm.

The inspector verified that reactor coolant leakage requirements of the Technical Specifications are being met and observed that additional monitoring of the recirculation pump seals has been instituted to detect any degradation of the remaining high pressure seal.

The licensee stated that replacement seals are available on site and that personnel have been recently trained in anticipation of the need for replacement.

No items of noncompliance were identified and the inspector had no further questions.

4. Followup on Events Occurring During the Inspection

a. 'B' Recirculation Pump MG Set Trip on April 2, 1981

The inspector reviewed the licensee's actions in response to a trip of the 'B' Recirculation Pump at 11:00 a.m. on April 2, 1981, with the reactor at full power. This review included discussions with control room operators, a review of control room indications, a review of logs and records and discussions with licensee management. Investigation of the circuit breaker and MG set control panel revealed no cause for the trip. Conditions required by the Technical Specifications for restart of an idle pump were verified and the 'B' Recirculation MG Set returned to service at about 12:05 p.m. on April 2, 1981. No further associated problems have been identified since.

No items of noncompliance were identified.

b. 'A' Core Spray Pump Inoperable on April 3, 1981

The inspector reviewed the events surrounding an inadvertent start of the 'A' Core Spray Pump at 5:03 p.m. on April 3, 1981. The operator was performing a routine evolution consisting of ensuring that the discharge line was maintained pressurized when the pump control switch was mistakenly turned to the start position.

The operator immediately recognized this error and turned the pump off. However, this close/trip sequence resulted in requiring manual reset of the pump circuit breaker.

The inspector verified that surveillance testing for redundant equipment was initiated, that the 'A' Core Spray Pump breaker was reset, that operability surveillance testing was performed and the system returned to normal at 8:59 p.m. on April 3, 1981.

The inspector also discussed this event with the control room operator involved and determined that no further action was appropriate and that this was an isolated event.

No items of noncompliance were identified.

c. Reactor Scram on April 6, 1981

The inspector reviewed the licensee actions involving a Reactor Scram at 12:43 p.m. on April 6, 1981. Troubleshooting of a malfunctioning level control valve for the 'C' Moisture Separator Drain Tank was in progress when the scram occurred. The cause of the reactor scram was due to a turbine trip (stop valve closure) initiated because of a high level in the 'C' Moisture Separator.

The inspector reviewed logs; held discussions with operators and plant management, and observed control room indication. No ECCS systems were necessary and other plant systems functioned normally during the scram.

The licensee's investigation revealed that the cause of the high moisture separator level was due to a malfunctioning normal level control valve and, that during troubleshooting, the high level dump valve could not be opened before the high level turbine trip occurred.

The reactor was made critical at 9:34 p.m. on April 6, 1981, and the turbine placed in service at 1:42 a.m. on April 7, 1981. No abnormalities in turbine operation were observed, and the licensee plans to continue operation with the dump valve controlling level in the 'C' moisture separator until an outage of sufficient duration to inspect the internals of the normal level control valve can be scheduled.

No items of noncompliance were identified.



## 5. Surveillance Activities

The inspector reviewed the licensee's actions associated with surveillance testing in order to verify that the testing was performed in accordance with station procedures and met the Technical Specification limiting conditions for operation.

Portions of the following tests were observed/reviewed:

- RCIC System out of service on April 1, 1981; redundant equipment (HPCI system) testing prior to removing the RCIC System from service, and operability testing of the RCIC System following maintenance on April 2, 1981.
- 'A' Core Spray Pump inoperable on April 3, 1981; redundant equipment testing and operability testing following maintenance on April 3, 1981.
- 'A' and 'B' Emergency Diesel Generators; routine once-per-month one hour start and load testing on April 16, 1981.
- LPRM calibration of APRM channel's 'B' and 'E'; routine periodic surveillance testing on April 24, 1981. Test equipment (Fluke Voltmeter SN. 16115) was verified to be in calibration.
- 'B' RBCCW Heat Exchanger out of service for cleaning on April 23, 1981; redundant cooling loop surveillance testing prior to taking equipment out of service and operability testing following restoration on April 24, 1981.
- RCIC system inoperable on April 30, 1981 due to failure of the out-board isolation valve to close during routine testing; redundant equipment testing.

No items of noncompliance were identified during this review of surveillance activities.

## 6. Maintenance Activities

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

The items/documents reviewed are listed below.

- Maintenance Request (M.R.) No. 81-35-5; repack RCIC valve 1301-32.
- M.R. No. 81-3-36; implement Plant Design Change Request (PDCR) No. 81-06B, Scram Discharge Air Header Automatic Dump System.
- M.R. No. 81-48-3; implement PDCR No. 81-14, Replace Standby Gas Treatment System (SGTS) solenoid valves. The licensee placed the SGTS in the configuration required during an accident condition on April 13, 1981 and de-energized the system damper control solenoid valves in accordance with M.R. No. 81-48-2. The licensee stated that the installed solenoid valve internals were identified to be marginally acceptable for the required environmental qualification and a decision was made to replace the solenoid valves with spares available on site.

The inspector reviewed the additional documents associated with this activity:

- Safety Evaluation No. 1109
- PDCR 81-14 Narrative and approval forms
- Purchase Order No. 16296
- QC Inspection Report No. I-81-48-3
- Withdrawal Requisition dated April 17, 1981 (for ASCO solenoid valves 9320A184E, Raychem splices, and cable).

The licensee completed the replacement of the solenoid valves on April 22, 1981 but has maintained the dampers for the SGTS in the accident position pending further review of the system.

The inspector will continue to review the licensee's actions to restore the SGTS to its normal configuration.

- M.R. No. 81-30-08; clean 'B' RBCCW Heat Exchanger.

No items of noncompliance were identified during this review of maintenance activities.

## 7. Scram Discharge Air Header Automatic Dump System

### a. Scope and Acceptance Criteria

The inspector reviewed the licensee's activities concerning the installation of an Automatic Dump System in the scram discharge air header in accordance with a recent NRC Order. The requirements and guidance are specified in the documents listed below.

- NRC Order for Modification of License Concerning BWR Scram Discharge Systems, dated January 9, 1981.
- NRC Modification of January 9, 1981 Order Requiring an Automatic Air Header Dump System, dated April 8, 1981 (changes implementation date from April 9, 1981 to April 22, 1981).
- NRC I.E. Information Notice No. 81-12, dated March 31, 1981 (provides guidance for the criteria in the NRC Orders issued by NRR).

### b. Findings

The licensee had previously modified the scram discharge air header (while shutdown during the first week of March, 1981) by installing a piping manifold in order to be able to hook up the Automatic Dump System at a later date while the plant was operating. Subsequent to this earlier modification, the licensee performed testing via Temporary Procedure No. 81-09 to verify that by energizing the back up scram valves, the air would be vented through the manifold and properly operate the scram pilot valves and the scram discharge vent and drain valves.

The licensee completed the installation of the Automatic Dump System on April 21, 1981, completed pre-operational testing on April 22, 1981 and valved the system into service at 5:36 pm on April 22, 1981 meeting the implementation date imposed by the above referenced NRC Order.

The inspector's review included observation of the installation in the Reactor Building, a review of completed Maintenance Requests, and Pre-operational tests, and a review of station procedure changes made as a result of this modification. The documents reviewed are listed below.

- Maintenance Request No. 81-3-36 dated April 10, 1981
- Plant Design Change Request No. 81-06B, "Independent Air Dump System for the Scram Pilot Valve Air Header"
- Safety Evaluation No's. 1108 and 1111
- Field Revision Notices No. 81-06B-01 through 81-06B-04
- Drawing No. E14, Revision 2, Instrument Bus Y-1
- Procedure No. 2.2.11 "120 VAC Instrument Power System Y-1", Revision 2
- Purchase Order No's. 32530, 32531
- Temporary Procedure No. 81-14, "Cut-in of the Scram Pilot Valve Air Header Dump Valve, Revision 0
- Temporary Procedure No. 81-15, "Auto CRI on Low Air Header Pressure", Revision 0
- Procedure No. 2.3.28, "Alarm Response Procedure - Panel 905", dated April 22, 1981
- Procedure No. 2.1.5, "Controlled Shutdown from Power", Revision 20, and
- Procedure No. 2.1.6, "Reactor Scram", Revision 13.

The licensee has installed a control grade system which will automatically dump the scram pilot valve air header at an air header pressure of 55 psi. The system is not connected to the Reactor Protective System (RPS) and allows for scram reset. The reset is accomplished by energizing a newly installed 120 VAC solenoid valve from the Y-1 Instrument Bus via an existing test switch in the control room on panel 905.

The system is self-actuating and does not require electrical power to automatically dump. An independent review of the design was documented in the modification and safety evaluation packages. A preoperational test was performed of the auto dump system (while isolated from the scram pilot valve air header) which showed that the system dumps at 55 psi and resets at about 73 psi. Station procedures were revised to require a functional test following each reactor scram. This test requires that following scram reset, the low air pressure alarm does not clear until after the auto dump is reset and that it does clear (reapplying air pressure to the scram pilot valves) after reset.

The inspector determined that the licensee had complied with the April 8, 1981 Order, however, an integrated system test is still required. The licensee stated that an integrated system test would be performed at the next plant shutdown and would include a verification of the proper operation of an installed check valve (V4) in the air header manifold.

This integrated system test will be reviewed in a future routine inspection (293/81-08-05 ).

No items of noncompliance were identified during this review.

#### 8. Licensee Event Report (LER) Review

The inspector reviewed the following LER's to verify that the details of the event were clearly reported, including accuracy of the description of the cause, corrective action, whether further information was required, whether generic implications were involved, and whether the reporting requirements of the Technical Specifications had been met.

<u>LER Number</u>	<u>Subject</u>
79-17	Control Rod No. 26-27 would not respond to an insert signal
80-19	HPCI and RCIC system control problems
80-23	Rod Block Monitor inoperable
80-24	RCIC automatic flow control inoperable
80-33	Nitrogen purge isolation valve time
80-36	Hourly fire check of the off-gas building not performed
80-37	'B' Salt Service Water Pump trip
80-45	RCIC isolation valve would not close
80-46	Yarway level switch out of adjustment
80-52	Leak Detection Air Sampler inoperable
80-54	Station Organization changes



<u>LER Number</u>	<u>Subject</u>
80-60	HPCI control oil/oscillations
80-63	Containment air sampler inoperable due to moisture in the sample lines
80-65	Nitrogen purge isolation valve inoperable
80-68	Failure to log RPS MG-Set voltage once per shift
80-71	'A' Standby Gas Treatment System Fan inoperable
80-73	Monthly surveillance of piping six days late
80-76	Drywell floor sump integrator inoperable
80-86	Condenser $\Delta T$ above 32 <sup>o</sup> F
81-01	Unidentified RCS leakage above 5 GPM
81-02	Main Stack sample pump inoperable

No items of noncompliance were identified.

#### 9. Licensee Event Report (LER) Followup

Through direct observation, discussions with licensee personnel, and a review of records, the following LER's were reviewed to determine that the reporting requirements were fulfilled, and that corrective action to prevent recurrence had been accomplished in accordance with the Technical Specifications.

79-08; HPCI inoperable. The inspector stated that NRC Inspection Report 293/79-06 indicated that this LER had not described the correct cause of the HPCI turbine tripping. The auxiliary oil pump had tripped before the turbine had come up to full speed. The licensee stated that a revised LER would be issued. This LER remains open pending a review of the revised report.

79-10; Slow Scram time for CRD 46-31. The inspector reviewed the revised LER No. 79-010/03L-1 dated April 24, 1979 which addressed the more specific cause of the slow scram time as a partially blocked exhaust post on the solenoid valve. The pilot valve was replaced, the control rod satisfactorily timed and returned to service. This LER is closed.

79-30, and 79-37; RHR valve No. 1001-36B Motor Overload. These LER's describe failures of an RHR System motor operated valve due to shearing of the valve stem guide keys. The stem is restrained from rotating by a stem clamp which is held in place by a 1/4 inch key. Following discussions with the vendor and the licensee's engineering staff, the licensee modified the stem clamps by the addition of two set screws. The inspector reviewed Plant Design Change Request (PDCR) No. 79-19, Safety Evaluation No. 655, and Maintenance Requests No's. 79-2098 and 79-2099 which implemented this modification on October 2, 1979. No similar failures have been reported since this modification. These LER's are closed.

79-31; Unit Aux. Breaker Trip Logic Not Seismic. PDCR No. 79-18 was issued to modify the under voltage trip to breakers 152-505 and 152-605. The inspector reviewed the completed PDCR package, Maintenance Request No. 79-1907, QC Inspection Report No. I-79-39, and Surveillance Test No. 8.M.2.2.1.10 verifying completion of this modification on August 25, 1979. This LER is closed.

79-32; Drywell Sump Isolation Valve Solenoids unqualified. The inspector reviewed completed Maintenance Requests No's. 80-4104 through 80-4107 and QC Inspection Report No. I-80-135 verifying that the solenoid valves for the drywell floor and equipment sump isolation valves no's. AO 7011 A and B, and AO 7017 A and B, were replaced on March 15, 1980 and satisfactorily tested for operability. This LER is closed.

79-36; 'B' Salt Service Water Pipe Supports not seismic. The inspector reviewed completed Maintenance Request No. 79-2219 which implemented PDCR No. 79-248 on October 5, 1979 and modified the appropriate piping supports. This LER is closed.

79-39; 'B' RBCCW Pipe Supports not seismic. The inspector reviewed completed Maintenance Request No. 79-2636 which implemented PDCR No. 79-24A-1 on March 6, 1980 modifying the appropriate piping supports. This LER is closed.

79-42, 80-18, and 80-41; Oxygen Analyzer isolation valve times. The inspector reviewed completed operability surveillance tests between January 3, 1981 and March 21, 1981 (twelve separate surveillances) which verified satisfactory operation of all the oxygen analyzer isolation valves. LER's 79-42 and 80-18 are closed. LER 80-41 remains open pending review of a revised LER to be submitted by the licensee.

79-50, 80-34, and 80-53; HPCI Exhaust Line Snubber failures. The licensee stated that following modifications to the exhaust line snubbers, instrumentation was placed on the exhaust line, movement measured during actual operation of the HPCI system, and analysis of the dynamic loads performed. The station representative stated that a written report of the results of this analysis should be available from the engineering staff by the end of May, 1981. These LER's are open pending review of this report and a final updated LER.

80-01; Fire Hazards Analysis. The licensee has taken compensatory measures for fire protection in the nine critical areas identified in this LER but has not completed all permanent modifications required. The inspector discussed operator training, instructions to plant operators, and specific precautions and actions in the station fire response procedures with the station Fire Protection Engineer. The licensee stated that a review of station procedures would be made and procedures revised with appropriate precautions. This LER is open pending a review of the revised station procedures and completed modifications.

80-02; ADS/HPCI Cable Interaction. This LER stated that a computer search (following NRC Information Notice No. 79-32) had indicated interaction between the ADS and HPCI cable schemes and that the station would probably be re-routing the ADS cables prior to startup from the January-May, 1980 refueling outage. The inspector questioned the licensee concerning verification of corrective action and was informed by the licensee's Fire Protection Project Manager that subsequent to the issuance of the LER a detailed review had been performed and no corrective action was necessary. The inspector reviewed two licensee internal memoranda which describe this review: NED No. 80-310 dated March 13, 1980, and P&CS No. 80-77, dated February 20, 1980. The licensee's review revealed two ADS cables which are routed with HPCI cables (SBD 501A - used for ADS 'B' power supply, and SBNS 20B - used for ADS logic). In both cases (power supply and logic) there are redundant ADS cables which are not routed with HPCI cables and therefore the single failure criterion is not violated and no further action was required. This LER is closed.

80-15; 'A' Diesel Generator Dry Chemical System inoperable. The inspector reviewed completed surveillance test No. 8.B.7.B, which documented satisfactory performance of the dry chemical system on June 18, 1980 following repairs to the heat actuating device. This LER is closed.

80-16; Trip Free operation of 'B' Core Spray Pump. This LER describes the failure of 'B' Core Spray Pump to start (due to a trip free condition on its circuit breaker) during performance of routine surveillance test No. 8.M.3.1 "Simulated Auto Initiation of Diesel Generators (Core Spray, RHR)," on May 13, 1980. The licensee changed the test procedure to require the use of a test device which eliminated the trip free operation, and satisfactorily performed the surveillance. The LER states that a plant design change No. 77-115 is addressing a permanent resolution to this problem.

The inspector reviewed LER 77-40 which describes a similar event (with the 'B' Core Spray Pump) during performance of the same surveillance test on October 9, 1977.

This test (8.M.3.1) simulates loss of power to the emergency 4160 volt buses (A5) and simulates low low reactor vessel level in order to provide auto start of the core spray pumps, RHR pumps (LPCI mode), the two Emergency Diesel Generators (EDG's) and loading of the EDG's.

The cause of the trip free action on the Core Spray pump breaker was due to the timing sequence during the test. If the Core Spray pump got a start signal (from the low low level simulation), and then the under voltage inhibit signal (from the loss of power to bus A5 and A6 simulation), the core spray pump breaker would attempt to close and then trip free before the closing springs were able to recharge (anti pump feature).

This previous event of October 9, 1977 was reviewed in NRC Inspection Report No. 78-03 and was considered unresolved pending implementation of PDCR 77-115. The licensee stated in LER 80-16 that PDCR 77-115 is addressing permanent resolution of this condition.

The inspector questioned the licensee concerning the justification for continued operation while waiting for permanent corrective measures to be implemented. The licensee stated that the trip free operation observed was due to the previous methods of performing the test, and that these methods did not simulate the sequence of events that would actually occur during a real event. The licensee further stated that the probability of the sequence of events which could cause an actual trip free operation of this breaker was extremely low, that during these previous surveillance tests the problem had only been observed with the 'A' Core Spray Pump, and that following a change in the method of testing satisfactory operation was observed.

This LER remains open pending a review of permanent modifications planned by the licensee during the refueling outage in September, 1981 and a review by the NRC for generic implications.

(This event is also described in Paragraph 2.; Unresolved Item No. 293/78-03-01).



80-17; Failure of 'A' Emergency Diesel Generator (EDG). This LER describes an electrical fire in the 'A' EDG exciter high voltage chassis during a 24 hour load test on May 5, 1980. The licensee's investigation revealed a failure of the potential transformer in the high voltage chassis followed by failure of the voltage regulator. The entire high voltage chassis, voltage regulator circuit and the manual-auto transformer were replaced, and a satisfactory 24 hour load test completed on May 9, 1980. The failed components were sent to the manufacturer (Basler Co.) for their review to determine whether any other action should be taken.

The licensee's representative stated that the manufacturer agreed with the licensee's actions and did not provide any further information as to the cause of the event. The EDG's have not exhibited any similar failure subsequent to this. This LER is considered closed.

79-19; High Energy Line Break Analysis. The inspector reviewed revised LER No. 79-19/JIT-1 submitted on July 23, 1980 which corrects the HPCI system valve which was throttled to the 10 percent open position. The licensee has subsequently returned the HPCI outboard isolation valve to its normally full open position following re-analysis and plant modifications. The inspector verified that surveillance and system operating procedures reflect the current system valve configuration. This LER remains open pending a review of documentation supporting the decision to return the HPCI outboard isolation valve to the full open position.

80-44; RCIC Isolation Valve Failed to Close. This LER describes the failure of the RCIC inboard isolation valve to close from a low reactor pressure signal while the plant was being placed in cold shutdown on August 1, 1980 for unrelated reasons. The LER describes that the valve motor was found to be burned out and contactor seized; these parts were replaced, and the valve tested for operability.

The inspector questioned the licensee concerning the cause of this event because the LER was not clear in this area. The licensee stated that the cause of the motor overload may have been due to the valve having been on its backseat because of previous steam leaks and that the plant cool down to cold shutdown conditions may have caused the valve binding. This LER remains open pending further review of the cause of this event.

80-49; Salt Service Water (SSW) Pump Trips. This LER describes trips of the 'B' and 'E' SSW pumps during the period August 10, 1980 through August 17, 1980. No specific cause was identified. An analysis was initiated to determine the cause and recommend corrective action. The licensee believes that a combination of factors (inlet water level, number of pumps in operation, improved inlet water flow) shifted the dynamic operating range of these pumps and resulted in thermal overload trips.



The licensee stated that a followup LER will be issued upon completion of the analysis and implementation of permanent corrective measures. This LER remains open pending a review of the updated LER and a review of the permanent corrective measures.

80-91; Drywell to Torus Vacuum Breaker Inoperable. This LER describes failure of vacuum breaker no. 5045K to operate during routine surveillance testing on November 22, 1980. The LER stated that a followup LER would be issued upon correction of the problem. The inspector verified that the vacuum breaker has remained shut as indicated by control room indication and the requirements of the Technical Specifications have been met. This LER remains open pending a review of the followup LER.

No items of noncompliance were identified during this followup review of LER's.

10. Unresolved Items

Areas for which more information is required to determine acceptability are considered unresolved. Unresolved items are discussed in Paragraphs 2 and 3.b(5).

11. Exit Interview

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