January 27, 2003

Mr. Robert M. Bellamy
Site Vice President
Entergy Nuclear Operations, Inc.
Pilgrim Nuclear Power Station
600 Rocky Hill Road
Plymouth, Massachusetts 02360-5599

SUBJECT: PILGRIM NUCLEAR POWER STATION - NRC INTEGRATED INSPECTION REPORT 50-293/02-07

Dear Mr. Bellamy:

On December 28, 2002, the US Nuclear Regulatory Commission (NRC) completed an inspection at your Pilgrim reactor facility. The enclosed integrated inspection report documents the inspection findings, which were discussed on January 17, 2003, with you and members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

The report documents three self-revealing findings of very low safety significance (Green), two of which were determined to involve violations of NRC requirements. However, because of the very low safety significance and because the issues have been entered into your corrective action program, the NRC is treating the issues as non-cited violations (NCV), consistent with Section VI.A of the NRC Enforcement Policy. If you contest any NCV in this report, you should provide a response with the basis for your denial, within 30 days of the date of this inspection report, to the Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington, D.C. 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Resident Inspector at the Pilgrim Nuclear Power Station.

Since the terrorist attacks on September 11, 2001, the NRC has issued two Orders (dated February 25, 2002, and January 7, 2003) and several threat advisories to licensees of commercial power reactors to strengthen licensee capabilities, improve security force readiness, and enhance access authorization. The NRC also issued Temporary Instruction 2515/148 on August 28, 2002, that provided guidance to inspectors to audit and inspect licensee implementation of the interim compensatory measures (ICMs) required by the February 25th Order. Phase 1 of TI 2515/148 was completed at all commercial nuclear power plants during calendar year (CY) '02, and the remaining inspections are scheduled for completion in CY '03. Additionally, table-top security drills were conducted at several licensees to evaluate the impact of expanded adversary characteristics and the ICMs on licensee protection and mitigative strategies. Information gained and discrepancies identified during the audits and drills were reviewed and dispositioned by the Office of Nuclear Security and Incident Response. For CY ‘03, the NRC will continue to monitor overall safeguards and security controls, conduct inspections, and resume force-on-force exercises at selected power plants. Should threat conditions change, the NRC may issue additional Orders, advisories, and temporary instructions to ensure adequate safety is being maintained at all commercial power reactors.

In accordance with 10 CFR 2.790 of the NRC's “Rules of Practice,” a copy of this letter and its enclosures will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of the NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Clifford Anderson, Chief
Projects Branch 5
Division of Reactor Projects

Docket No. 50-293
License No. DPR-35

Enclosure: Inspection Report 50-293/02-07
w/Attachment: Supplemental Information

cc w/encl:
M. Krupa, Director, Nuclear Safety & Licensing
W. Riggs, Director, Nuclear Assessment Group
D. Tarantino, Nuclear Information Manager
B. Ford, Regulatory Affairs Department Manager
J. Fulton, Assistant General Counsel
R. Hallisey, Department of Public Health, Commonwealth of Massachusetts
The Honorable Therese Murray
The Honorable Vincent deMacedo
Chairman, Plymouth Board of Selectmen
Chairman, Duxbury Board of Selectmen
Chairman, Nuclear Matters Committee
Plymouth Civil Defense Director
D. O'Connor, Massachusetts Secretary of Energy Resources
J. Miller, Senior Issues Manager
Office of the Commissioner, Massachusetts Department of Environmental Protection
Office of the Attorney General, Commonwealth of Massachusetts
Chairman, Citizens Urging Responsible Energy
S. McGrail, Director, Commonwealth of Massachusetts, SLO Designee
Electric Power Division
Commonwealth of Massachusetts, Secretary of Public Safety

R. Shadis, New England Coalition Staff

Distribution w/encl:
H. Miller, RA/J. Wiggins, DRA
H. Nieh, RI EDO Coordinator
C. Anderson, DRP
F. Arner, DRP
P. Bonnett, DRP
J. Bobiak, DRP
J. Clifford, NRR
T. Tate, PM, NRR
R. Pulsifer, Backup PM, NRR
W. Raymond, SRI - Pilgrim
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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No:	50-293
License No:	DPR-35
Report No:	50-293/02-07
Licensee:	Entergy Nuclear Operations, Inc.
Facility:	Pilgrim Nuclear Power Station
Location:	600 Rocky Hill Road Plymouth, MA 02360
Inspection Period:	September 29, 2002, through December 28, 2002
Inspectors:	W. Raymond, Senior Resident Inspector C. Welch, Resident Inspector F. Paul Bonnett, Project Engineer B. Sienel, Resident Inspector (Millstone) K. Young, Reactor Inspector L. Scholl, Senior Reactor Engineer T. Fish, Senior Operations Engineer J. Furia, Senior Health Physicist
Approved By:	Clifford Anderson, Chief Projects Branch 5 Division of Reactor Projects

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SUMMARY OF FINDINGS

IR 05000293/2002-007; Entergy Nuclear Operations, Inc.; 09/29/2002-12/28/2002; Pilgrim Nuclear Power Station, Maintenance Risk Assessment and Emergent Work Control, Post-Maintenance Testing and Surveillance Testing.

The report covered a 13 week period of inspection by resident inspectors, a regional security inspector and a regional health physicist. In addition, an in-office review was conducted by a senior operations engineer of licensed operator requalification exam results. Two Green non-cited violations (NCVs), and one Green finding, were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using IMC 0609, “Significance Determination Process” (SDP). The NRC’s program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, “Reactor Oversight Process,” Revision 3, July 2000.

A. Inspector Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

- Green. The licensee failed to properly isolate and check for voltage during maintenance on the rod position information system (RPIS) X-page 28V power supply. The maintenance error resulted in the unplanned loss of rod position indication for about 60% of the control rods (all X-page rods) for about 13.5 hours. The momentary short on the power supply further resulted in a momentary loss of the Y2 vital AC bus, and resulted in minor perturbations in plant conditions. The failure to properly isolate the equipment prior to performing maintenance was an example of a cross-cutting issue in human performance.

  The issue was more than minor because the lack of rod position information affects the ability of the operator to verify the controls rod position and to make a timely determination that the reactor is shutdown following a scram. The issue had very low safety significance because the failure of RPIS alone does not affect the safety function of the control rods to shutdown the reactor. (Section 1R13)

- Green. The post maintenance test for the replacement of the "B" control room high efficiency air filtration (CRHEAF) humidistat was inadequate in that the test failed to identify that the humidity switch was wired incorrectly and would not function to control humidity below 70 percent. The operators failure to perform a required surveillance, which would have detected the design error, was an example of a cross-cutting issue in human performance.

  This issue was more than minor because the "B" CRHEAF system was returned to service and declared operable prior to the licensee discovering the problem, similar to example 5.b. in Appendix E of Manual Chapter 0612. The issue had very low safety significance because only the radiological barrier function provided for the control room was affected and the issue screened to Green in Phase 1 of the Significance Determination Process. The failure to correctly translate the design to the as-built configuration and check the adequacy of the design by a suitable test

was a non-cited violation of 10 CFR 50, Appendix B, Criterion III, "Design Control." (Section 1R19)

- Green. The "A" reactor protection system (RPS) channel flow-biased APRM scram function was inoperable because of a failure of the "A" flow converter FC-Z7a due to age related degradation. The scram function was lost because the licensee failed to establish adequate preventive maintenance practices following the age related failure of the redundant flow converter in 1997. Further, procedures and trending of flow converter performance were inadequate to assure timely action could be taken in response to a failing transmitter on October 2 to preserve the safety function. The ineffective corrective actions were an example of a cross-cutting issue in problem resolution.

  This issue is more than minor because it affected the Mitigating system cornerstone objective that the APRM scram preclude plant operation in the minimum flow area of the power flow map. The finding had very low safety significance since an automatic scram and operator manual action would have mitigated a power instability event. The failure to take the actions within the time-frame specified in T.S. Table 3.1.1. for the inoperable Flow Biased APRM scram function, was considered a non-cited violation. (Section 1R22)

B. Licensee Identified Violations

None

REPORT DETAILS

Summary of Plant Status

Pilgrim Nuclear Power Station operated during the period at 100 percent (%) core thermal power, except for short periods of planned operation at reduced power for routine testing and maintenance.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection

a. Inspection Scope

The inspector reviewed licensee procedure 2.1.37, “Coastal Storm - Preparations and Actions," for site preparations for adverse weather on October 16 and November 6, 2002. The inspector reviewed the implementation of the procedure with Operations personnel, and toured the intake structure and the protected area to verify adequate precautions for adverse weather had been taken.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment

a. Inspection Scope

Partial System Walkdowns: The inspector conducted a partial system review of the high pressure coolant injection (HPCI) system during the time when the reactor core injection cooling (RCIC) system was out of service for scheduled preventive maintenance. The inspector also conducted a partial walkdown of the RCIC system after the licensee returned it to service. The inspector reviewed the appropriate system drawings (M243 and M244 for HPCI and M245 and M246 for RCIC) and valve line-up procedures to walkdown and verify the correct system lineup.

The inspector performed a partial walk down of the B train of the residual heat removal (RHR) system during planned maintenance on the A train. Procedure 8.C.43, “Monthly System Valve Lineup Surveillance,” drawing M241, the Updated Final Safety Analysis Report and the Technical Specifications were reviewed to ascertain the required system configuration.

- HPCI System walkdown - October 22, 2002
- RCIC System walkdown - October 27, 2002
- RHR System walkdown - November 5, 2002

Complete System Walkdowns: The inspector conducted a complete system walkdown of the safety-related portions of the 125 VDC and 250 VDC distribution systems. The inspection included reviews of the system normal operating and emergency procedures, Drawing E13, “Single Line Diagram 125V and 250V DC Systems,” Updated Final Safety Analysis Report Sections 8.6, "125 and 250 volt DC Power System," and the plant technical specifications. The inspector performed a system line-up review including verifying electrical breakers were in the proper line-up condition and the condition of the 125V and 250V batteries. The inspector interviewed licensee personnel and reviewed the status of open work orders, problem reports, temporary modifications, the system health report, and operability evaluations to assess any outstanding deficiencies in the 125/250 VDC distribution systems. The inspector reviewed the adequacy of the ventilation for the DC enclosures in the Reactor Building. Other references used for this review are included in the attachment to this report.

b. Findings

No findings of significance were identified.

1R05 Fire Protection

1. Routine Area Inspection

a. Inspection Scope

The inspector toured selective areas of the plant to observe conditions related to: (1) transient combustibles and ignition sources; (2) the material condition and readiness of fire protection systems and equipment; and (3) the condition and status of readiness of fire barriers used to prevent fire damage or fire propagation. The inspector verified that any identified degraded conditions were compensated by compensatory measures until appropriate corrective actions could be taken. The inspector also reviewed the applicable fire hazard analysis fire zone data sheets and selective surveillance procedures to ensure that the specified fire suppression systems surveillance criteria were met. Selected documents reviewed are listed in the enclosed Attachment. The areas inspected included:

- Fire Zone 1.5 RCIC Pump Quadrant
- Fire Zone 1.7 RCIC Quadrant Mezzanine
- Fire Zone 1.9 CRD Hydraulic Control Units - East Side
- Fire Zone 1.10 CRD Hydraulic Control Units - West Side
- Fire Zone 1.15, Standby Liquid Control Pumps and Equipment
- Fire Zone 2.1 “B” Switchgear and Load Center Room
- Fire Zone 1.2 B RHR and Core Spray Pumps Quadrant
- Fire Zone 1.3 HPCI Pump/Turbine Room
- Fire Zone 1.6 CRD Pump Quadrant
- Fire Zone 1.8 CRD Quadrant Mezzanine

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures

1. External Flooding

a. Inspection Scope

The inspectors on November 6, 2002, walked down the emergency diesel generator (EDG) building and intake structure during a coastal storm involving heavy rains and high winds to assess the effectiveness of the installed flood barriers and the implementation of procedure 2.1.37, "Coastal Storm - Preparations and Actions." The inspectors performed an in-field step-by-step review of the procedure with an operator to ensure that all traveling screens were operating, that repair equipment and tools for the traveling screens were appropriately staged, and that operations personnel were adequately monitoring the intake structure conditions as the storm progressed. Observations of the intake conditions and traveling screens were made to ensure that intake water was free of debris. The inspectors interviewed the operations shift supervisor and operator monitoring the intake structure to determine the status of the implemented procedure and if the high water levels, as a result of the storm, were challenging the plant systems in any way.

The inspector witnessed performance of maintenance request 02112714, inspection of manhole 28A, which contains safety related electrical cables, for significant water intrusion.

b. Findings

No findings of significance were identified.

2. Internal Flooding

a. Inspection Scope

The inspector conducted a walked down of the reactor building and emergency diesel generator (EDG) building to assess the condition of the installed internal flood protection features and potential flooding sources. Items which were focused on during the walkdowns included the condition of watertight doors and penetrations, curbing, floor drains, and the scuppers in the EDG building.

The inspector reviewed the engineering evaluation for the lack of preventive maintenance and/or testing of the check valves located in the EDG building floor drain system and relied upon for compartment/train separation (condition report 2002-13604). The analysis assumptions and outcome were reviewed to determine that EDG operability would not be challenged by failure of either check valve. Proposed corrective actions were also reviewed.

The inspector reviewed related portions of the Updated Final Safety Analysis Report, Technical Specifications (TS), the Individual Plant Examination (for risk insights), procedure 2.1.37, and Safety Analysis Report 50-84, “Internal Flooding Analysis.” The inspector also discussed the pending revised internal flooding risk assessment with the station’s risk analyst.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification

1. Licensed Operator Requalification Exams

a. Inspection Scope

An in-office review was conducted of licensee requalification exam results for the biennial testing cycle. The inspection assessed whether pass rates were consistent with the guidance of NUREG-1021, Revision 8, “Operator Licensing Examination Standards for Power Reactors” and NRC Manual Chapter 0609, Appendix I, “Operator Requalification Human Performance Significance Determination Process (SDP).”

The inspector verified that:

- Crew pass rate was greater than 80%. (Pass rate was 100%)
- Individual pass rate on the dynamic simulator test was greater than or equal to 80%. (Pass rate was 100%)
- Individual pass rate on the comprehensive written exam was greater than 80%. (Pass rate was 100%)
- Individual pass rate on the walk-through (JPMs) was greater than 80%. (Pass rate was 100%)
- More than 75% of the individuals passed all portions of the exam. (100% of the individuals passed all portions of the exam)

b. Findings

No findings of significance were identified.

2. Licensed Operator Simulator Training

a. Inspection Scope

The inspector observed the performance of an operating crew perform just-in-time training drills on the simulator on November 22, 2002. The training was performed to demonstrate the operator's ability to implement alarm and emergency operating procedures without the use of control room annunciators. The scenarios involved abnormal operational transients with multiple problems and equipment failures. The inspector verified that the crew met the training scenario objectives and performed the critical tasks. The inspector verified proper use of the system operating procedures and emergency operating procedures to stabilize the plant in hot shutdown. The inspector also verified that the post-scenario critique discussed any relevant lessons learned.

b. Findings

No findings of significance were identified.

1R12 Maintenance Rule

a. Inspection Scope

The inspector reviewed the follow-up actions for selected system, structure, or component (SSC) issues and reviewed the performance history of these SSCs to assess the effectiveness of Entergy's maintenance activities. The inspector reviewed Entergy's problem identification and resolution actions for these issues in accordance with Entergy's procedures and the requirements of 10 CFR 50.65(a)(1) and (a)(2), "requirements for Monitoring the Effectiveness of Maintenance." In addition, the inspector reviewed selected SSC classification, performance criteria and goals, and the corrective actions that were taken or planned, to verify whether the actions were reasonable and appropriate. The following issues were reviewed:

- Based on the large number of deficiencies tags associated with emergency lighting, the inspector reviewed the emergency lighting system health report and the results of the last two surveillance tests, 8.B.2, Emergency Lighting Units - Fixed. The inspector also reviewed condition reports 200212442 and 200212534. The inspector discussed the system condition with the System Engineer to determine that the system was acceptable to remain under (a)(2) monitoring.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspector evaluated on-line risk management for planned and emergent work. The inspector reviewed maintenance risk evaluations, work schedules, recent corrective actions, and control room logs to verify that other concurrent planned and emergent maintenance or surveillance activities did not adversely affect the plant risk already incurred with the out of service components. The inspector verified that the licensee took the necessary steps to control work activities, took actions to minimize the probability of initiating events and maintained the functional capability of mitigating systems. The inspector assessed Pilgrim's risk management actions during plant walkdowns. The inspector also discussed the risk management with maintenance, engineering and operations personnel for the following activities:

- MR 02119063, Investigate AO-203-2D MSIV Failed Stroke Test
- MR 02118236, APRM "A" Train Flow Converter Replacement (CR 200212011)
- MR 02120149, Power supply PS1 Failure (Beta Annunciators), 11/26/02
- MR 0212295, Unit Aux Transformer to A5 light bulb on C3 De-energized
- MR 02120438, Rod Block Monitor Spiking (CRs 2002012423, 2002012600)
- MR 02121314, RPIS 28v Power Supply Fan Replacement (CR 200212719)

The licensee documented that the Unit Aux Transformer to Bus A5 light bulb on Panel C3 was de-energized due to a fuse continuity problem (CR 200212295). The inspector evaluated the licensee's on-line risk management of this emergent work which prevented manual operation of the Unit Auxiliary Transformer breaker in the control room and the fast transfer associated with breakers 104 and 105 tripping open. At the time of the troubleshooting for this issue, the station blackout diesel generator was out of service for maintenance. The inspector reviewed the maintenance risk evaluation for this condition and discussed the plant configuration with the shift manager to verify the licensee understood the configuration of the plant and took actions to minimize the probability of an initiating event during troubleshooting activities. The inspector noted that the other fast transfers (turbine trip, backup scram relay, generator lockout) associated with the safety related 4160V bus, A5, were still operable throughout this time and bus A5 remained energized, resulting in a green online risk condition.

The inspector evaluated the management of on-line risk on December 13 and December 18, 2002, following the unexpected loss of the E RBCCW pump. The on-line risk was slightly elevated (Yellow) on these days due to planned maintenance and testing of the emergency diesel generators and the core spray A train logic.

b. Findings

Green. The licensee failed to properly isolate and check voltages during maintenance on the rod position information system (RPIS) under MR 02121314. The maintenance error resulted in the unplanned loss of rod position indication for about 60% of the control rods (X-page rods) for about 13.5 hours. The issue had very low safety significance (Green) because the failure of RPIS alone does not affect the safety function of the control rods to shutdown the reactor.

The licensee had evaluated the impact of loss of the RPIS 28 V power supply prior to conducting the maintenance, and planned to conduct the maintenance in a short time period to assure the ability to complete the TS 4.3.B.1.5 surveillance requirement to determine the position of each control rod once per 24 hours. The inspector reviewed the licensee's documented bases for control rod operability for the period the RPIS was inoperable. The licensee failed to adequately isolate the RPIS 28V power supply before replacing a fan within the power supply drawer. The licensee failed to adequately check for voltage prior to attempting to solder the fan leads. The grounded solder gun resulted in a transient short circuit and caused the loss of the X-page RPIS 5V logic power supply because of a common fuse, and resulted in a more extensive and extended loss of rod position information than planned. The momentary short on the power supply further resulted in a momentary loss of the Y2 vital AC bus, and resulted in minor perturbations in plant conditions.

The licensee evaluated this event in Condition Report 200212719. This issue was more than minor because the lack of rod position information affects the ability of the operator to verify the controls rod position and to make a timely determination that the reactor is shutdown following a scram. The inoperable RPIS increases the likelihood of human error while responding to plant transients, which impacts the Mitigating system cornerstone whose objective is to ensure the reliability of systems that respond to initiating events to prevent undesirable consequences (core damage). The loss of RPIS alone does not affect the safety function of the control rods to shutdown the reactor. This issue screens to Green in a Phase 1 SDP analysis since there was no actual loss of safety function. Additionally, the licensee utilized other appropriate methods for determining the position of the rods. The failure to properly isolate the equipment prior to performing maintenance was an example of a cross-cutting issue in human performance. No violations of regulatory requirements were identified. **(FIN 50-293/02-07-01**).

1R14 <u>Personnel Performance During Non-routine Plant Evolutions</u>

a. <u>Inspection Scope</u>

The inspector reviewed the operator response to a failure of the Beta 4100 system and the loss of all control board overhead annunciators for about 18 hours while the plant operated at steady state, 100% full power. The Beta system failed when the second of two redundant 5 vdc power supplies failed at 11:53 p.m. on November 21 (reference CR 200212641); the first 5 vdc power supply had failed on November 1, 2002 (reference CR 200212331). The inspector reviewed the operator's use of operating procedures to monitor plant status and implement compensatory measures. The control board annunciator function was restored with one power supply and one Beta controller at 5:30 p.m. on November 22. Full Beta system redundancy with two power supplies and controllers was restored on November 26, 2002. The inspector monitored plant operations on an around-the-clock basis until the annunciators were restored and the licensee completed an evaluation to ascertain annunciator system reliability.

The inspector reviewed the licensee's evaluation to characterize the risk significance of the protracted loss of annunciators. The licensee analysis showed that the change in core damage probability remained below the threshold value to determine risk significance (plant risk condition remained Green). The licensee made a management decision to classify the plant risk condition as Yellow and augmented the actions taken to control protected equipment.

The inspector reviewed the remaining plant status information in the control room and noted that sufficient information remained available to provide for plant assessment capability in the event of off-normal plant conditions. The inspector observed the conduct of just-in-time training for oncoming operator crews (see Section 1R11) to verify the operators could appropriately respond to plant transient conditions without the annunciators. The inspector reviewed the licensee evaluation of the event for reportability per 10 CFR 50.72 and the emergency plan implementing procedures.

The inspector reviewed the licensee actions to support the operators by augmenting plant operations, engineering and technical staff to institute compensatory measures, protect sensitive plant equipment, identify and reschedule surveillance and test activities, and investigate and repair the Beta system. The licensee provided management oversight and technical support on an around the clock basis pending restoration of the annunciator function.

The inspector reviewed the licensee short and long term corrective actions as described in Condition Report 200212641, which included a root cause evaluation for the event. The licensee concluded that the Beta system redundant power supplies failed due to age related degradation and the failure of components internal to the power supplies. The corrective actions included actions to improve preventive maintenance of Beta system power supplies and to assure timely replacement of components in the warehouse. The licensee also prepared temporary modification 023-36 to reduce the vulnerability to a loss of annunciators by use of a standby controller and chassis, and planned Beta system design enhancements to improve power supply reliability.

Previous NRC review of the loss of control board overhead annunciators was described in Inspection 50-293/02-06. The control room annunciators had failed in July 2002 (reference CR 200210889) when the Beta system software stopped processing inputs.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspector reviewed selected operability determinations to assess the adequacy of the evaluations, the use and control of compensatory measures, compliance with the technical specifications, and the risk significance of the issues. The inspector used the technical specifications, Final Safety Analysis Report, associated Design Basis Documents and PNPS Procedure 1.3.34.5, “Operability Evaluations,” as references. The specific issues reviewed included:

- CR 2002-12683, Calibration Error in Reactor Water Level Instruments Due to Difference Between Design and Operating Temperature and Pressure Conditions

- CR 2002-12613, EDG A air start solenoid valve SV-4586B is not the correct model valve for the application

- CR 2002-12885, EDG A rheostat set at 45% while B is at 7.5%

The inspector reviewed the licensee's final disposition for operability of the control room high efficiency air filtration system per OE 02-029. This matter is also described in Section 1R19 of this report.

b. Findings

No findings of significance were identified.

1R16 Operator Work-Arounds

a. Inspection Scope

The inspector reviewed the operator work-arounds, burdens, and tour list to evaluate the potential impact on the operators' ability to implement abnormal or emergency operating procedures. The inspector walked down the control room panels and selected plant areas to review the impact of the deficiencies and to ensure that applicable deficiencies were captured in the licensee's deficiency list. During the review, the inspector used the criteria contained in licensee procedure 1.3.34.4, "Compensatory Measures."

The inspector discussed the operator workarounds with licensee personnel to assess the aggregate impact on plant operations. The inspector noted the planned maintenance activities to correct the identified operational deficiencies.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing

a. Inspection Scope

The inspector reviewed post-maintenance test activities on risk significant systems to verify that the effect of the test on the plant had been evaluated adequately, test equipment was appropriate and controlled, the test was properly performed in accordance with procedures, and the test data met the required acceptance criteria, and the test activity was adequate to verify system operability and functional capability following maintenance. The inspector verified that systems were properly restored following testing and that discrepancies were appropriately documented in the corrective action process. The inspector reviewed the following post maintenance testing (PMT) activities:

- 8.5.5.1, RCIC Pump Operability Flow Rate and Valve Test at approximately 1000 psig, October 25, 2002;

- 8.M.2-3.6.5, A APRM Flow Converter Testing After Replacement on 10/4/02 (CR 200212011)

- MR 02120705, Testing and Calibration of the A Rod Block Monitor per 8.M.2-3.1 and 8.M.2-3.2 following repair, 11/19-20/02 and 11/25/02 (CR 2002012480);

- MR 02120149, Test of Beta Annunciator PS1 after Replacement, 11/26/02

- MR 01116079, Post maintenance test of the "B" control room high efficiency air filtration (CRHEAF) following replacement of the humidistat in accordance with plant design change (PDC) 01-08;

b. Findings

Green. The post maintenance test for MR 01116079 and PDC 01-08 was inadequate in that the test failed to identify that the humidity switch (humidistat) for the "B" control room high efficiency air filtration (CRHEAF) system was wired incorrectly. This issue has very low safety significance (Green) and is being treated as a non-cited violation.

On September 12, 2002, the humidistat for the "B" CRHEAF system was replaced under plant design change (PDC) 01-08 to correct a long standing equipment deficiency. The function of the humidistat is to energize a heater to maintain the inlet air at less than 70% humidity and thereby assure optimal performance of the charcoal filters. The newly installed humidistat was incorrectly wired. The error resulted in the heater turning off instead of on whenever the CRHEAF system is in operation and a humidity condition greater than 70 percent is detected. The post maintenance test failed to detect the error and the system was restored to service and declared operable, and the "A" train subsequently tagged out for maintenance. This resulted in both trains of the CRHEAF system being inoperable for about 4.5 hours. This condition was identified by the licensee and the "A" train restored to service. This event was reported to the NRC in accordance with 10 CFR 50.72. Technical specification 3.7.B.2 was not violated since the "A" train was returned to service within the allotted LCO action time of 36 hours.

The licensee evaluated this event in Condition Report 200211609, and reported the condition to the NRC as Licensee Event Report 2002-002 on November 12, 2002. The licensee's root cause analysis determined that a licensed operator erred in his decision to declare the B CRHEAFs operable without completing required operability testing per procedure 8.7.28 as required by tracking LCO A02-671. Further, the contributing causes included procedural weaknesses that made it difficult to determine the correct operability testing requirements. The licensee determined the safety significance was low because even though the control of inlet air humidity was degraded, the charcoal filters would still function to remove iodine and protect worker safety.

This issue was considered more than minor because the "B" CRHEAF system was returned to service and declared operable prior to the licensee discovering the problem, similar to example 5.b. in Appendix E of Manual Chapter 0612. The issue had very low safety significance because the finding only represented a degradation of the radiological barrier function provided for the control room and screened to Green in a phase 1 evaluation per the Significance Determination Process. The operators failure to perform a required surveillance which would have detected the design error, was an example of a cross-cutting issue in human performance.

10 CFR 50, Appendix B, Criterion III, "Design Control," requires, in part, that design measures shall be provided for checking the adequacy of the design by the performance of a suitable test program. The failure to correctly translate the design to the as-built configuration and properly test the adequacy of PDC 01-08 was a violation. Due to its low safety significance, this violation is being treated as a non-cited violation consistent with Section VI.A of the NRC Enforcement Policy (NUREG 1600). This condition is in the licensee's corrective action program as condition report 2002-11609. **(NCV 50-293/02-07-02)**

1R22 Surveillance Testing

a. Inspection Scope

The inspector reviewed and observed surveillance testing to verify that the test acceptance criteria was consistent with technical specifications and Updated Final Safety Analysis Report requirements, the test was performed in accordance with the written procedure, the test data was complete and met procedural requirements, and the system was properly returned to service following testing. The inspector observed pre-job briefs for the test activities. The inspector verified that systems were properly restored following testing and that discrepancies were appropriately documented in the corrective action process.

The inspector reviewed the results of the following surveillance tests:

- 8.7.4.5, MSIV Weekly Exercise Test (CR 200212099)
- 8.M.2-2.10.1-5, Core Spray System "B" Logic Functional Test
- 8.M.2-3.1, Functional Test of the B Rod Block Monitor (CR 200212584, 2002012577)
- 8.M.2-3.6.5 and 9.17, A APRM Flow Converter Testing, 10/02/02 (CR 200212011)
- 8.M.2-3.6.5, B APRM Flow Converter Testing, 11/21/02
- 8.9.1, Emergency Diesel Generator and Associated Emergency Bus Surveillance for the B diesel on 11/15/02
- 8.M.2-2.5.7, Instrument Functional/Calibration Test for HPCI Suppression Chamber Water Level
- 8.3.2, Control Rod Exercise and Timing per 2.2.87

The inspector reviewed licensee actions for mis-positioned control rod 34-47 during procedure 8.3.2 and 2.2.87.3 on November 16, 2002 (CR 200212573 and 200212550). The inspector reviewed licensee actions for the multiple notch of control rod 30-47 during procedure 8.3.2 on September 29, 2002 (CR 200211878).

b. Findings

Green. The flow-biased APRM scram function became inoperable due to drift in flow converter FC-Z7a as it was failing due to age related degradation on October 2. The plant operated with an inoperable APRM scram for about 11 hours, contrary to the requirements of Technical Specification Table 3.1.1. Inadequate corrective actions for past flow converter failures, including inadequate preventative maintenance, procedures and actions to trend flow converter performance, contributed to the failure to take timely action in response to a failing transmitter to preserve the safety function. The ineffective corrective actions were an example of a cross-cutting issue in problem resolution. This issue has very low safety significance (Green) and is being treated as a non-cited violation of Technical Specification Table 3.1.1.

Recirculation flow converter FC-Z7a provides a signal representing reactor core flow to the flow biased scram circuitry for APRM channels A, C and E (flow control trip reference cards). During core flow evaluations using procedure 9.17 on October 2, 2002, the licensee determined at 12:27 p.m. that the A recirculation flow signal was approximately 5.7% higher than the calculated flow, which was greater than the procedure acceptable tolerance of 5%. Two additional core flow evaluations per 9.17 showed flow was outside the limit (an average of 5.3% based on three measurements). The licensee initiated a review to determine the bases for the 5% limit. A priority work request was initiated at 11:20 p.m. to check the calibration of flow converter FC-Z7a. The licensee concluded the A flow channel could not be calibrated within the 5% tolerance, and at 1:50 a.m. on October 3, 2002, the operators declared the A average power range monitor (APRM) flow biased scram and rod block channels inoperable. The operators had inserted a one-half scram into the reactor protection system (RPS) as part of the flow converter channel calibration. Following additional investigations and adjustments of the flow converter on October 3, the A RPS channel was returned to normal following a successful calibration of the flow converter. The A RPS channel was again placed in an one-half scram condition on October 3 when converter FC-Z7A exhibited a step change in output and was determined to be failing. Flow converter FC-Z7A was replaced (reference MR 02118236) and returned to service on October 4, 2002, following calibration and testing.

When flow converter FC-Z7a drifted out of calibration, the A train RPS flow-biased scram set points were non-conservative. Although the B train RPS flow biased scram set points were unaffected, the APRM flow biased scram function could not be assured at the correct set point because the trip signals are arranged in a logic which requires one trip signal from train A (APRM channels A, C, E) and one from train B (APRM channels B, D, F). The licensee determined that operation with a degraded flow converter was an operability issue (reference Engineering Evaluation EE#02.033) which resulted in plant operations in excess of the Technical Specification 3.1.1 limits. The technical specification required that the trip system be tripped within 1 hour if the scram function could not be assured. The A APRM channel was not operable for approximately 11 hours from the time the drift was first discovered at 12:27 on October 2, until the operators inserted the one-half scram at 11:30 p.m. as part of the channel calibration on October 2, 2002. Calculation IN1-125 provides the flow instrument loop uncertainty calculation for the APRM and Rod Block flow biased set points and limits the loop uncertainty to 5%. However, this information was not provided in the procedures used to evaluate core flow nor available to the operators on October 2, 2002.

The licensee evaluated this event in Condition Report 200212011, which included a root cause evaluation. The licensee determined that the flow converter failed due to age related degradation of internal components after over thirty years of operations (FC-Z7A was original plant equipment). The causes for the event included inadequate preventive maintenance to identify the need to replace flow converters due to their age. The licensee failed to take appropriate follow up action on the A flow converter following the failure of the B flow converter in 1997 due to age related degradation. Further, the licensee identified that surveillance procedures and trending practices were inadequate to track corrective maintenance activities to detect degrading flow converter conditions. Finally, the inspector noted the procedures and actions in response to the detection of a degraded flow condition (failing transmitter) on October 2 were inadequate to assure timely action could be taken per Technical Specification 3.1.1 to preserve the safety function.

This event was reported to the NRC in accordance with 10 CFR 50.72 as a condition that could have prevented the fulfillment of a safety function needed to shutdown the reactor. The APRM flow biased scram is not credited in the accident analyses for any accident. However, the scram function is credited to prevent the reactor from operating in a region of instability in the high power, low flow area of the power-flow map. The APRM flow biased scram set point defines the boundary of the Exclusion Region specified in the Core Operating Limits Report, and as described in the Enhanced Option 1-A Long Term Stability Solution for Pilgrim (reference GE Topical Report NEDO-32339 dated March 1994). The licensee reported the condition to the NRC as Licensee Event Report 2002-003 on December 2, 2002.

The safety significance of the issue was low based on an analysis summarized in LER 2002-03 of events resulting in power operation at low flow. The most limiting event was the runback of both recirculation pumps to minimum speed, which could lead to a power instability as core inlet subcooling increased. The A RPS scram set point was not conservative on the left-most boundary of the scram envelope such that entry into the Exclusion Region would not have been prevented. However, the licensee concluded that an instability would lead to core-wide oscillations that would be detected by the APRMs such that an automatic scram would have occurred from the APRMs in the “clamp” region of scram envelope (at about 80% power). Thus, a transient would be mitigated by the APRM flow biased scram in the region not susceptible to the flow error. Further, the inspector noted that alternate, diverse systems remained functional to alert the operator to reactor operation in an area of instability, and procedures were in place to direct operator actions to avoid unstable power oscillations. The alternate systems included the B channel flow biased scram, the B APRM flow biased rod block and the period-based detection system (which operates based on inputs from the local power range monitors).

The inspector determined this issue to be more than minor because the APRM channel failure represented a degradation of a safety system designed to prohibit plant operation in a region of instability in the power-flow operating regime, which could lead to a challenge of the fuel clad safety barrier. Based on consultation with the NRC Region Senior Reactor Analyst and a Phase 1 evaluation in the Significance Determination Process, the inspector determined this issue to be of very low safety significance (Green) because an automatic scram would have occurred to mitigate a power instability, and by crediting operator actions to avoid unstable power oscillations. The ineffective corrective action was an example of a cross-cutting issue in problem resolution.

The failure to maintain the APRM flow biased scram operable and take the actions within the time frame specified in T.S. Table 3.1.1 for the inoperable Flow Biased APRM Scram function, was considered a violation of Technical Specifications. Due to its low safety significance, this violation is being treated as a non-cited violation consistent with Section VI.A of the NRC Enforcement Policy (NUREG 1600). This condition is in the licensee's corrective action program as condition report 200212011. **(NCV 50-293/02-07-03)**

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation

a. Inspection Scope

The inspector observed portions of the December 17, 2002, emergency planning drill to evaluate Entergy's drill performance and post drill critique. The inspection focused on event classification and notification, and communication among the emergency response organizations. The inspector observed the drill from the technical support center (TSC) and was therefore limited in providing independent assessment of the various groups involved in the function of event classification and notification and protective action recommendations. The inspector observed the TSC's post drill critique, and discussed the results of Entergy's overall drill critique with the lead drill controller and other emergency planning department personnel. Included in the discussion was CR 2002-13046, written to capture drill performance concerns associated with an event declaration at the General Emergency level and wording of the emergency action level (EAL) statement itself.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2OS1 Access Control to Radiologically Significant Areas

a. Inspection Scope

During the period from September 30 - October 4, 2002, the inspector reviewed exposure significant work areas, high radiation areas, and airborne radioactivity areas in the reactor, turbine (including radwaste), augmented off-gas and retube buildings, and the trash compaction facility and yard, and evaluated associated controls and surveys of these areas to determine if the controls (i.e., surveys, postings, barricades) were acceptable. For these areas, the inspector reviewed radiological job requirements and attended job briefings to determine if radiological conditions in the work area were adequately communicated to workers through briefings and postings. The inspector also verified radiological controls, radiological job coverage, and contamination controls to ensure the accuracy of surveys and applicable posting and barricade requirements. The inspector obtained this information via: interviews with licensee personnel; walkdown of systems, structures, and components; and, examination of records, procedures, or other pertinent documents. The inspector determined if prescribed radiation work permits (RWPs), procedure and engineering controls were in place; whether licensee surveys and postings were complete and accurate; and if air samplers were properly located. The inspector conducted reviews of RWPs used to access these and other high radiation areas to identify the acceptability of work control instructions or control barriers specified. The inspector reviewed electronic pocket dosimeter alarm set points (both integrated dose and dose rate) for conformity with survey indications and plant policy. Plant technical specification (TS) 5.7 and the requirements contained in 10 CFR 20, Subpart G were utilized as the standard for access control to these areas.

b. Findings

No findings of significance were identified.

2OS2 ALARA Planning and Controls

a. Inspection Scope

The inspector reviewed current ALARA job evaluations, exposure estimates, and exposure mitigation requirements and compared ALARA plans with the results achieved. The inspector obtained this information via: interviews with licensee personnel; walkdown of systems, structures, and components; and, examination of records, procedures, or other pertinent documents.

A review of actual exposures versus initial exposure estimates for work was conducted including: comparison of estimated and actual dose rates and person-hours expended; determination of the accuracy of estimations to actual results; and determination of the level of exposure tracking detail, exposure report timeliness and exposure report distribution to support control of collective exposures to determine conformance with the requirements contained in 10 CFR 20.1101(b). Year-to-date exposures stood at approximately 24 person-rem at the time of the inspection, against a revised annual exposure goal of 36 person-rem (original annual goal was 45 person-rem).

b. Findings

No findings of significance were identified.

2OS3 Radiation Monitoring Instrumentation

a. Inspection Scope

The inspector reviewed field instrumentation utilized by health physics technicians and plant workers to measure radioactivity including portable field survey instruments, friskers, portal monitors and small article monitors. The inspector obtained this information via: interviews with licensee personnel; walkdown of systems, structures, and components; and, examination of records, procedures, or other pertinent documents. The inspector conducted a review of instruments observed, specifically verification of proper function and certification of appropriate source checks for these instruments, which were utilized to ensure that occupational exposures were maintained in accordance with 10 CFR 20.1201.

The inspector also reviewed calibration records of five randomly selected area radiation monitors, listed in Table 7.13-2 of the Updated Final Safety Analysis Report (UFSAR), and reviewed the records of their most recent calibration. The monitors reviewed were RIS-1815-3A, RIS-1815-8B, RIS-1815-8C, RIS-1815-3E, and RIS-1815-3F. The inspector also reviewed the daily source check and response check data for the two high purity intrinsic germanium counting systems utilized by radiation protection for gamma spectroscopy of plant samples. Data for the two instruments collected between July 1 and September 30, 2002 was reviewed, together with plant procedure 6.4-346, Rev. 2, “Operation of the Radiation Protection (RP) Gamma Spectroscopy System,” and procedure 6.7.2-100, Rev. 9, “Quality Control of Radiation Protection Gamma Spectroscopy and Whole Body Counting Systems.”

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES [OA]

4OA1 Performance Indicator Verification

a. Inspection Scope

Reactor Safety Cornerstone: The inspector reviewed licensee event reports, portions of operator logs, maintenance records, maintenance rule documents, and NRC Inspection reports for the period of July 2001 to October 2002 to determine the accuracy and completeness for the reported Pilgrim performance indicators (PIs). The inspector verified that the licensee had classified safety system failures in accordance with NRC endorsed criteria contained in NEI 99-02, "Regulator Assessment of Performance Indicator Guideline." The following PIs were reviewed:

- Safety System Functional Failures

The inspector also verified the licensee's program would address anomalies in equipment performance and data reporting.

Occupational Radiation Safety Cornerstone: The inspector reviewed a listing of licensee condition reports for the period January 1, 2002 through September 30, 2002 for issues related to the occupational radiation safety performance indicator, which measures non-conformances with high radiation areas greater than 1R/hr and unplanned personnel exposures greater than 100 mrem TEDE, 5 rem SDE, 1.5 rem LDE, or 100 mrem to the unborn child.

b. Findings

No findings of significance were identified.

4OA2 Problem Identification and Resolution

1. Reactor Safety Cornerstone

a. Inspection Scope

In accordance with the guidance provided in Inspection Procedure (IP) 71152, the inspector selected condition reports (CR) CR-PNP-2002-09073 and CR-PNP-2001-09046 for detailed review. The inspector reviewed these CRs to ensure that the full extent of the issues was identified, that appropriate evaluations were performed, that appropriate extent of condition reviews were performed, and that appropriate corrective actions were specified and prioritized. For corrective actions not completed, the inspector verified an appropriate plan was in place to resolve the issue. The inspector also reviewed completed surveillance data to ensure that the systems met their requirements and functioned as designed.

CR-PNP-2002-09073 identified that during a monthly surveillance on February 11, 2002, the "A" emergency diesel generator (EDG) would not start in less than the ten second requirement with the air starter motor switch in the M2 position. The inspector reviewed Pilgrim Nuclear Power Station's (PNPS) cause evaluation to determine the reason the "A" EDG was not meeting the start time requirement of less than ten seconds and reviewed the proposed corrective actions to resolve the issue. PNPS identified several potential causes, including potential fuel rack binding and a broken mechanical speed switch, that could have contributed to the slow starting times of the "A" EDG. The inspector reviewed the corrective actions, which included performing an overhaul on the "A" EDG, repairing potential fuel rack binding and repairing a mechanical speed switch, to determine their effectiveness. The inspector verified that these corrective actions were accomplished during overhaul of the "A" EDG in July 2002.

CR-PNP-2001-09046 identified that on January 17, 2001, operations made several attempts to raise the "B" recirculation motor generator (MG) set speed. Demand speed was changed but actual speed of the MG set did not change. This event occurred following refurbishment of the "B" recirculation MG set scoop tube positioner circuit. The inspector reviewed PNPS's root cause analysis to determine why the actual "B" recirculation MG set speed did not change when operators initiated a speed change. PNPS identified the cause of the "B" recirculating MG set not appropriately changing speed was a damaged solder trace on the scoop tube positioner circuit board. The inspector reviewed short term and proposed long term corrective actions to repair the damaged solder trace on the "B" recirculation MG set scoop tube positioner circuit board. This included review of PNPS's actions following the event to repair and return to service the "B" recirculation MG set. This also included review of PNPS's plans to replace aged components in both recirculation MG set scoop positioner circuits. Review of a purchase order was accomplished to ensure that PNPS had planned to order the necessary parts to replace the scoop tube positioner circuits and components for both recirculation MG sets during refueling outage (RFO) 14 (spring 2003).

The inspector reviewed system report cards (health reports) for the EDGs and the recirculation system to determine the current status of the systems. The system report card assigns a color for system health status and trends progress for improvement. Additionally, the system report card provides information on significant system issues at the site and plans to return these systems to the highest status (green) in the color scheme.

The inspector toured the EDG rooms and the location in the reactor building that the recirculation MG sets were located to assess material condition of these systems and components. Additionally, the inspector observed the alignment of the air start switches to ensure that they were in the M1/M2 position, thus providing two trains of starting air to all air start motors on each EDG. The inspector also interviewed systems and design engineering personnel to determine their familiarity with the issues inspected and to gain insights to how the issues were and would be resolved.

b. Findings

No findings of significance were identified.

The inspector found that the corrective actions associated with the reviewed CRs were appropriate and were acceptable upon completion. Root cause evaluations were detailed and thorough. PNPS appropriately conducted extent of condition reviews for the identified issues. Subsequent to the overhaul of the “A” EDG in July 2002, surveillance data for start times showed that the EDG started in less than the ten second requirement with the air motor switch in the M1, M2 or M1/M2 position. PNPS had appropriate plans in place to upgrade circuit boards and components for the scoop tube positioner circuit for both recirculation MG sets during RFO 14 (spring 2003). This issue had been identified as a “start restraint” item for RFO 14.

2. Radiation Safety Cornerstone

a. Inspection Scope

The inspector reviewed quality assurance surveillances and self-assessment trend reports related to occupational radiation safety, and determined if identified problems were entered into the corrective action system for resolution. Documents reviewed included: 2Q02 Quarterly Integrated Self-Assessment/Trend Report; Quality Assurance Surveillance Report (QASR) 02-026; QASR 02-030; QASR 02-031; QASR 02-038; and, QASR 02-040. The inspector also reviewed the tracking, evaluation and resolution of these identified issues.

b. Findings

No findings of significance were identified.

3. Cross-References to PI&R Findings Documented in the Report

Section 1R22 describes a finding related to a licensee performance deficiency noted in the lack of a PM program for the A APRM flow converter which led to the loss of the APRM flow-bias scram function on October 2, 2002. The licensee had failed to adequately address the flow converters after the B APRM flow converter had failed due to age related degradation in 1997.

4OA3 Event Follow-up

1. (Closed) LER 50-293/2002-002: Control Room High Efficiency Air Filtration System (CRHEAFs) Inoperable: The inspector reviewed the corrective actions associated with Licensee Event Report (LER) 50-293/2002-002-00, when both CRHEAFs trains were inoperable for 4.25 hours due to an inadequate post maintenance test on the B train prior to taking the A train out of service for planned maintenance. This issue is also discussed in Section R19 of this report and Report 50-293/2002-06, Section 1R19. This LER is closed.

2. (Closed) LER 50-293/2002-003: APRM flow Biased Scram Inoperable due to Failed Flow Converter: The inspector reviewed the corrective actions associated with Licensee Event Report (LER) 50-293/2002-003-00, when the APRM scram function was inoperable due to a failed flow converter. This issue is also discussed in Section R22 of this report. This LER is closed.

4OA5 Security Interim Compensatory Measures

a. Inspection Scope

An audit of the licensee's performance of the interim compensatory measures imposed by the NRC's Order Modifying License, issued February 25, 2002 was completed in accordance with the specifications of NRC Inspection Manual Temporary Instruction (TI) 2515/148, Revision 1, Appendix A, dated September 13, 2002.

b. Findings

No findings of significance were identified.

4OA6 Meetings, Including Exit

The inspectors presented the inspection results to Mr. R. Bellamy and other members of licensee management at the conclusion of the inspection on January 17, 2003. The licensee acknowledged the findings presented.

SUPPLEMENTAL INFORMATION

a. Key Point of Contact

Licensee personnel:

S. Beneduci, System Engineer
W. Cook, I&C Supervisor
W. Corbo, Maintenance Supervisor
C. Dugger, Vice President, Operations
P. Dietrich, General Manager
D. Ellis, Licensing Engineer
R. Emmitt, Radiation Protection Specialist - Support
B. Ford, Licensing
G. James, Reactor Engineering Superintendent
J. Keene, EDG Systems Engineer
J. Hurley, Radiation Protection Supervisor
W. Lobo, Licensing Engineer
W. Mauro, ALARA Team Manager
J. McClellan, Senior Engineer - Nuclear
W. Nelson, Design Engineering
E. Olson, Director, Operations
W. Perks, Technical Services Manager
D. Perry, Radiation Protection Manager
W. Riggs, Director, Safety Assessment
R. Rose, Security Manager
T. Sowdon, Superintendent Emergency Preparedness
S. Wollman, Nuclear Manager

NRC personnel:

W. Raymond, Senior Resident Inspector
C. Welch, Resident Inspector

b. List of Items Opened, Closed, and Discussed

Open and Closed

50-293/02-07-01	FIN	Failed to properly isolate and check voltages during RPIS maintenance (rod position information system) (Section 1R13)
50-293/02-07-02	NCV	Inadequate Design Change and Post-Work Test Resulted in Inoperable B Train CRHEAFs (Section 1R19)
50-293/02-07-03	NCV	Inadequate Maintenance and procedures Resulted in Plant Operation with an Inoperable APRM Scram (Section 1R22)

Closed

50-293/2002-002	LER	CRHEAFs Train B Inoperable Due to Inadequate PMT
50-293/2002-003	LER	APRM flow Biased Scram Inoperable due to Failed Flow Converter

c. List of Documents Reviewed

Section 1R04, Equipment Alignment

Procedure 2.2.13, "250V DC Battery system"
Procedure 2.2.14, "125V DC Battery System"
Procedure 5.3.11," Loss of Essential DC Bus D16 or D4 and D36"
Procedure 5.3.12, "Loss of Essential DC Bus D17 or D5 and D37"
Condition Reports 01.05128, 01.05082, 02.09270, 01.00908, 01.11371
Drawing E5037, Schematic Diagram HPCI System Valves MO2301-3 and MO2301-8
Drawing E9A3, Bill of Material for 125 VDC, NEMA 1& 2 and 250 VDC, NEMA 1 & 2
Drawing E9-2, Arrangement Diagram 125 VDC MCC D8
Specification Sheet for CR124K and CR124L Ambient Compensated Thermal Overload Relays
Calculation PS-140, Thermal Overload Sizing for Priority 1 MOVs
Calculation PS-57, MCC Enclosure Heat Gain
System Health Report for 24/125/250 Vdc for November 2002
Work Orders MR 0011030, 0011031, 01113452, 01124050

Section 1R14, Personnel Performance During Events (Beta Annunciator)
Vendor Manual - V-1217, Rev. 0, "Instruction Manual 4100R Sequential Events Recorder"
Temp Mod TM02-36, "Change Annunciator System to the Standby Chassis/Controller"

Section 4OA2, Problem Identification and Resolution
Licensing Documents
Pilgrim Nuclear Power Station Technical Specification
Updated Final Safety Analysis Report - Pilgrim Nuclear Power Station

Condition Reports
CR-PNP-2001-09046
CR-PNP-2002-09073
CR-PNP-2002-10398

Drawings

M1E33-6	Elementary Diagram Recirculation System, Recirculating Pump and MG SET
M2195	P&ID Diesel Generator Air Start System
M6-22-14	Schematic Diagram Diesel Generator Engine Control

Procedures
NOP99A1 Organizational Participation in Training Process, Rev. 2R
3.M.2-15 Scoop Tube Positioner Calibration
1.19.1 Conduct of Training, Rev. 1
8.9.1 Emergency Diesel Generator and Emergency Bus Surveillance, Rev. 69

Completed Surveillances
EDG & SBO Unavailable & Reliable Data Spread Sheet (Surveillance Data for EDG Start Times)

Purchase Orders
PS02-11760

Miscellaneous Documents
Field Revision Notice 00-04-47, “A” Recirc. Scoop Tube - Removal of Relay K2/K3
Kepner Tregoe Analysis Report for EDG Issue
I&C Night Orders - 01-016
Root Cause Analysis for “B” Recirculation MG Set Issue
PNPS System Report Card - EDG & Fuel Storage, Third Quarter 2002
PNPS System Report Card - Recirc., Third Quarter 2002
T-CC-15-02-13, Instruction Module - Soldering Techniques For Circuit Board Repair, Instructor Guide

d. List of Acronyms

ALARA	As Low As Reasonable Achievable
APRM	Average Power Range Monitor
CFR	Code of Federal Regulations
CR	Condition Reports
CRHEAF	Control Room High Efficiency Air Filtration
EDG	Emergency Diesel Generator
ICM	Interim Compensatory Measures
IR	Inspection Report
LER	Licensee Event Report
MG	Motor Generator
MR	Maintenance Request
NCV	Non-Cited Violations
OE	Operability Evaluations
PI&R	Problem Identification and Resolution
PNPS	Pilgrim Nuclear Power Station
QASR	Quality Assurance Surveillance Report
RFO	Refueling Outage
RPIS	Rod Position Indication System
RPS	Reactor Protection System
RWP	Radiation Work Permit
SDP	Significant Determination Process
SSC	System, Structure or Component
TS	Technical Specifications
TSC	Technical Support Center
UFSAR	Updated Final Safety Analysis Report