April 30, 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 - INTEGRATED INSPECTION REPORT 50-293/03-04

Dear Mr. Bellamy:

On March 29, 2003, 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 April 8, 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 two self-revealing findings of very low significance (Green), which involved violations of NRC requirements. However, because of the very low safety significance and because the issues have been entered into your corrective actions program, the NRC is treating the issues as non-cited violations (NCV), in accordance with Section VI.A of the NRC's Enforcement Policy. If you contest any NCV noted 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 Pilgrim.

Since the terrorist attacks on September 11, 2001, the NRC has issued five Orders (dated February 25, 2002, January 7, 2003 and April 29, 2003) and several threat advisories to licensees of commercial power reactors to strengthen licensee capabilities, improve security force readiness, and enhance controls over personnel 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 50-293/03-04
w/Attachment: Supplemental Information

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REGION I

Docket No:	50-293
License No:	DPR-35
Report No:	50-293/03-04
Licensee:	Entergy Nuclear Operations, Inc.
Facility:	Pilgrim Nuclear Power Station
Location:	600 Rocky Hill Road Plymouth, MA 02360
Inspection Period:	December 28, 2002, through March 29, 2003
Inspectors:	W. Raymond, Senior Resident Inspector C. Welch, Resident Inspector P. Cataldo, Resident Inspector Millstone D. Pelton, Senior Resident Inspector, Vermont Yankee D. Silk, Sr. Emergency Preparedness Inspector (in-office) 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 05000293/2003-004; Entergy Nuclear Operations, Inc.; 12/28/2002 - 3/29/2003; Pilgrim Nuclear Power Station, Personnel Performance During Non-routine Evolutions.

The report covered a 13 week inspection by resident inspectors and a regional health physicist. In addition, an in-office review of emergency plan changes was conducted by an emergency preparedness inspector. Two Green findings were identified, which involved non-cited violations (NCVs) of NRC requirements. 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. Self-Revealing Findings

Cornerstone: Mitigating Systems

- Green. An inadequate procedure used to control the residual heat removal (RHR) system resulted in the unintended decrease of reactor vessel level with the plant in cold shutdown on February 23. The combination of inadequate procedure controls for the RHR minimum flow valve and inadequate operator procedure use caused vessel level to decrease about 21 inches. The finding is greater than minor because a loss of reactor level can be viewed as a precursor to a more significant event, the loss of shutdown cooling. The issue had very low safety significance when evaluated in the Significance Determination Process (Manual Chapter 0609 Appendix G) because the level decrease was less than 24 inches, which defines a loss of control. The failure to provide adequate procedures was a non-cited violation of 10CFR 50 Appendix B, Criterion V, "Instructions, Procedures, and Drawings." (Section 1R14)

- Green. The rod worth minimizer (RWM) was bypassed when the control rods were being withdrawn on February 27, 2003. The issue occurred because the operators failed to follow procedure 2.1.1 for plant startup and failed to assure the RWM was operable when taking the reactor critical. This issue was more than minor because a system used to protect a safety barrier (fuel cladding) was not operable. The finding is of very low safety significance because a second licensed operator was present per Technical Specification (TS) 3.3.F to verify control rod movement was in accordance with the banked position withdrawal sequence. The operators failure to correctly implement the procedure and ensure the RWM was operable were examples of a cross-cutting issue in human performance. The failure to follow procedure 2.1.1 was a non-cited violation of Technical Specification 5.4.1. (Section 1R14)

B. Licensee-Identified Violation

None

Report Details

SUMMARY OF PLANT STATUS

Pilgrim Nuclear Power Station operated at full power during the period, except for short periods of planned operation at reduced power for routine testing and maintenance. The plant was shut down on February 21 after 417 days of operation to repair the A recirculation pump following failure of the motor-generator set rotor. The reactor was manually scrammed during the shutdown, and the plant entered cold shutdown on February 22. The reactor was taken critical on March 1 following replacement of the A recirculation motor generator rotor, and operation at full power resumed on March 3. Power was reduced to 40% on March 3 when the A recirculation pump tripped during testing and voltage regulator adjustments. The A recirculation pump was restarted and full power operations resumed on March 4.

1. REACTOR SAFETY
(Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity)

1R01 Adverse Weather Protection

a. Inspection Scope

The inspector performed reviews and walkdowns of plant systems during periods of extended cold weather in the weeks of January 12th and 19th, 2003. The inspector assessed Entergy's cold weather preparations and verified that the cold conditions did not render key safety systems inoperable. The safety systems, structures, and components focused on during the inspection included the fire water storage tanks, the condensate tanks, the A and B emergency diesel generators (EDG), the station blackout diesel generator, and the salt service water pumps located in the screen house bays. Completed station procedure 8.C.40, "Cold Weather Surveillance," and the Updated Final Safety Analysis Report section 10.9.3 and Table 10.9-1 "Design Temperatures (Winter)," were reviewed and utilized for the review.

The inspector verified with chemistry personnel that EDG ethylene glycol levels were greater than 40% as required by the winter lineup section of procedure 2.2.108, "Diesel Generator Cooling and Ventilation System." The inspector discussed the overall health of the heating ventilation and air conditioning (HVAC) system with the system engineer.

The inspector reviewed condition reports related to cold weather generated during the inspection (listed in the attachment to this report). The inspector discussed with station personnel condition reports related to pipe freezing and building temperatures below design specifications, and the significant maintenance backlog associated with the HVAC system. Room temperatures found below design requirements were verified to pose no threat to safety systems. Low temperatures in the SSW pump rooms was noted to be a long standing issue and earlier engineering evaluations have established an acceptable lower room temperature of 35F.

c. Findings

No findings of significance were identified.

1R04 Equipment Alignment

.1 Partial System Alignment

a. Inspection Scope

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 conducted a partial system review of the residual heat removal (RHR) system during the time when the A and C pumps were out of service for scheduled preventive maintenance. The inspector reviewed the appropriate system drawings (M243 and M244 for HPCI, M245 and M246 for RCIC and M 241 for RHR) and valve line-up procedures to walkdown and verify the correct system lineup. The Updated Final Safety Analysis Report and the Technical Specifications were reviewed to ascertain the required system configuration.

- HPCI System walkdown - January 23, 2003
- RCIC System walkdown - January 24, 2003
- RHR System walkdown - February 4, 2003

b. Findings

No findings of significance were identified.

1R05 Fire Protection

.1 Quarterly Fire Protection 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. The areas inspected included:

- Fire Zone 4.1, B Emergency Diesel Generator Room
- Fire Zone 1.15, Standby Liquid Control Pump - Reactor Building 91 ft
- Fire Zone 3.5, Vital MG Set Room Elevation 23 ft (CR 02.9558)
- Fire Zone 1.20, Refueling Floor - Reactor Building 117 ft
- Fire Zone 2.5, Turbine Building Clean and Dirty Lube Oil Storage Room
- Fire Zone 2.6, Turbine Building Hydrogen Seal Oil Supply and Truck Lock Area
- Fire Zone 2.7, Turbine Building Lube Oil Reservoir

b. Findings

No findings of significance were identified.

.2 Annual Fire Drill Observation

a. Inspection Scope

The inspector monitored the performance of the fire brigade training drill conducted on February 5, 2003. The drill involved a simulated fire in the A emergency diesel generator (EDG). The inspector observed fire brigade personnel performance, and verified that the licensee's pre-planned drill scenario was followed and that the drill objectives were met. The inspector verified that proper protective clothing and breathing apparatus were donned, that sufficient fire fighting equipment was brought to the scene, and fire protection personnel entered the fire area in a controlled manner. The inspector also ensured that the fire hose was capable of reaching the fire location and that the fire equipment specified in procedure PNPS 5.5.2, "Special Fire Procedure," was properly stored for the A EDG room.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification

.1 Licensed Operator Just-In-Time Training

a. Inspection Scope

The inspector observed the performance of just-in-time simulator training conducted on February 20, 2003. The training scenarios involved the shutdown of the reactor plant from a single loop condition per station procedure 2.1.5, "Controlled Shutdown from Power"; and recovery of an idle reactor recirculation pump per procedure 2.2.84, "Reactor Recirculation System." The training was conducted in preparation for planned activities during the shift. The inspector assessed the crews performance in the areas of communication, command and control, and emergency operating procedure execution. The inspector verified that the crew met the training objectives and verified proper use of

the system operating procedures and emergency operating procedures to stabilize the plant in hot shutdown.

b. Findings

No findings of significance were identified.

.2 Licensed Operator Simulator Training

a. Inspection Scope

The inspector observed the performance of licensed operator simulator training conducted per module 0-RQ-06-02-40 on March 13, 2003. The training scenario involved the loss of offsite power and the loss of reactor shutdown cooling. The operators responded using procedures 2.2.19.1, "Residual Heat Removal-Shutdown Cooling Mode of Operation," 2.4.25, "Loss of Shutdown Cooling," and 2.4.16, "Distribution Alignment Electrical System Malfunctions. The inspector assessed the crews performance in the areas of communication, command and control, and procedure adherence. The inspector verified that the crew met the training objectives and verified proper use of operating procedures to stabilize the plant. The inspector observed licensee assessment of operator performance in the areas of communications, crew briefs, peer checking and procedure use.

b. Findings

No findings of significance were identified.

1R12 Maintenance Rule Implementation

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 PNPS's maintenance activities. The inspector reviewed PNPS's problem identification and resolution actions for these issues in accordance with PNPS'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, the system health reports, and the corrective actions that were taken or planned to verify whether the actions were reasonable and appropriate. The inspector attended license meetings and reviewed licensee plans to address the 11 systems in maintenance rule a(1) status as of March 1, 2003. The following issues were reviewed:

- Proper classification of equipment failures for the station blackout diesel generator (SBODG) system. The inspector reviewed licensee actions for the trip of the SBO DG during routine tests on February 14 (condition report CR 20030557) and March 4 (CR

20030802). Additional references used in this review are listed in the attachment to this report. The inspector reviewed the licensee's basis for placing the SBODG system in maintenance rule a(1) status during this period.

- Proper classification of equipment failures for the primary containment isolation system. The inspector reviewed condition reports issued within the last year for the selected system, as listed in the attachment to this report. The inspector reviewed the licensee's basis for placing the PCIS system in maintenance rule a(1) status.

- Proper classification of equipment unavailability for the 23 KV system. The inspector reviewed condition report CR 20030931for the selected system unavailability during maintenance on the F-15 switcher. The inspector reviewed the licensee's basis for placing the 23 KV system in maintenance rule a(1) status.

b. Findings

No findings of significance were noted.

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 03100929, SLC Squib Valve Continuity (CR 200213102, 20030058, 20030173)
- MR 03103914, SBODG Trip on Overspeed (CR 03.0802, MR 03103995)
- MR 03102880, B EDG Failed to Start due to Faulty Crankcase Pressure Switch
- MR 03104261, Shutdown Transformer Switcher F-15
- MR 03103262, LPCI Loop A Injection Valve #2 Breaker Tripped (CR 200300642)
- MR 03102995, RCIC Steam Line High Flow Functional
- MR 03103004, RCIC Steam Line Low Pressure Functional

The inspector also reviewed risk management for the slightly elevated risk condition (Yellow) that existed on February 18 and 24, 2003, due to planned maintenance and testing on the RCIC system.

The inspector reviewed the licensee actions to manage plant risk during the period from February 14 through 16 when both the B emergency diesel generator and the station blackout (SBO) diesel generator were inoperable. The B emergency diesel generator failed to start during testing at 12:48 p.m. on February 14 due to a faulty crankcase pressure switch (Condition Report 20030550). The station blackout diesel tripped on overspeed when tested at 5:11 p.m. on February 14 (Condition Report 20030802). Both the emergency diesel and blackout diesels were restored to an operable status on February 16. The SBODG subsequently tripped on overspeed during testing on an accelerated test schedule on March 4 (Condition Report 20030802). The inspector reviewed the bases for the licensee determination that the SBODG was operable during the period from February 16 to March 4. The inspector reviewed the basis for the determination that the SBO and emergency diesel failures did not have a common cause and should be treated as independent failures. The inspector reviewed the licensee risk assessments for the impact on plant risk due to inoperable diesels.

The inspector reviewed the licensee actions to manage plant risk and emergent work on February 23 when the breaker for the LPCI Injection Valve MO-1001-29A tripped when the operator opened the valve to begin shutdown cooling on Loop A (CR 20030642). The inspector reviewed the licensee actions to evaluate and repair the loose cartridge screws on the position limit switch inside the valve actuator and to investigate the extent of condition for the problem. Additional references used for this review are described in the attachment to this report.

b. Findings

No findings of significance were identified.

1R14 Personnel Performance During Non-routine Plant Evolutions

a. Inspection Scope

Loss of A Recirculation Pump and Single Loop Operations

The inspector reviewed the operating crews response to the loss of the A reactor recirculation pump and the accompanying plant transient on February 20, 2003. This inspection focused on whether the response to the off normal condition was in accordance with station procedures and complied with license conditions and technical specification requirements. The inspector also reviewed the operator response to the trip of the A recirculation pump during testing on March 3, 2002 following repair to the motor generator set. The inspection included: a review of the operating license, technical specifications, logs, plant computer information, station procedure 2.4.17, “Recirculation Pump(s) Trip”; discussion with operations and engineering personnel; and a walkdown of the control room panels.

Entergy's February 20, 2003, request for enforcement discretion to allow plant operation with one reactor recirculation pump beyond the 24 hour limitation specified in the plant's operating license was reviewed and denied by NRC letter dated February 26, 2003.

Inadvertent Draindown During Shutdown Cooling Operations

On February 23, 2003, reactor vessel level was inadvertently lowered approximately 21 inches while swapping shutdown cooling loops per Attachment 6 of procedure 2.2.19.1, "Residual Heat Removal System-Shutdown Cooling Mode of Operation." The inspector reviewed the procedure change, discussed the event with operations personnel, and observed the presentation to the corrective action review board on March 21. This matter is discussed further below.

Plant Startup - Approach to Critical

The inspector observed operator performance during the plant restart activities from February 27 to March 3. The inspection consisted of control room observations and a review of the operator logs, plant computer information, station procedures 2.1.1, "Startup from Shutdown," 2.1.14, "Station Power Changes," and MAN.C14-23, "Power Maneuver Plan." The inspection included a review of the licensee response to a short reactor period during the initial approach to critical on February 27 (CR 20030736). The inspector observed the corrective actions for the final approach to critical on March 1, 2003, using a revised rod pull sequence. The inspector verified the licensee action to insert and bypass high worth rods met the Technical Specification 3.3.B.1.D requirements for compliance with the banked position withdrawal sequence (BPWS). The inspector reviewed the licensee actions for the failure to have the rod worth minimizer operable during the approach to critical (as discussed further below).

Rod Pattern Exchange

The inspector observed the operators conduct a power reduction to 45% full power on March 7, 2003, and complete a control rod pattern exchange. The inspector noted the coordination between the operators and reactor engineering personnel during the withdrawal of high worth control rods. The inspection included a review of the licensee actions to revise the rod pull sequence (CR 20030850).

b. Findings

.1 Inoperable Rod Worth Minimizer During Reactor Startup

Green. The rod worth minimizer (RWM) was bypassed when it was required to be operable during control rod withdrawal on February 27. The operators failed to assure all prerequisites for a reactor startup were complete per procedure 2.1.1. The issue had very low safety significance since rods were withdrawn per the power maneuvering plan. The failure to follow procedures is being treated as a non-cited violation.

Procedure 2.1.1, step 57, required that the RWM be operable for the reactor startup on February 27. The operators completed step 57 at about 3:00 p.m. and placed the mode switch in STARTUP at 4:38 p.m. The operators started to withdraw control rods and the approach to critical at 4:45 p.m. The oncoming shift crew identified the RWM was bypassed while performing control board walkdowns during shift turnover. The operators had withdrawn group 1 (20 rods to position 48) and part of group 2 (12 rods to position 04) when the error was discovered. The RWM was made operable.

The Control Room Supervisor (CRS), a licensed SRO, incorrectly verified that the RWM was operable by misreading the position of the key lock switch on the RWM console; further the CRS failed to note the status on the RWM display which showed the RWM was bypassed. The reactor operator used the RWM but also failed to assure the RWM was operable. The oncoming crew used these same indications to identify the RWM was bypassed. The operators failure to correctly implement the procedure and ensure the RWM was operable were examples of a cross-cutting issue in human performance.

The reactor startup with the RWM in bypass was more than minor because the RWM provides assurance that control rod worth remains within the assumptions of the accident analyses for a postulated rod drop accident below 20% full power. This issue affects the Barrier Integrity cornerstone objective to protect the fuel cladding. The issue was determined through a review of the Significance Determination Process Phase 1 screening worksheet to have a very low safety significance. A second licensed operator verified that control rods were withdrawn per the banked position withdrawal sequence (BPWS) as specified in the power maneuvering plan.

Technical Specification (TS) 3.3.F.A.2 allows reactor startup with the RWM inoperable provided a second licensed operator verifies control rod movement is in accordance with the BPWS. Further, there had been no plant startup within the previous 12 months (TS 3.3.F.A.2.1). Thus, there was no violation of these TS requirements. However, Technical Specification (TS) 5.4.1 requires that reactor operating procedures be followed. Procedure 2.1.1 requires the operator to assure the rod worth minimizer (RWM) be operable prior to the approach to critical. Contrary to this requirement, the licensee identified that the RWM was bypassed when the control rods were being withdrawn. The issue is being treated as a non-cited violation of NRC requirements in accordance with Section VI of the NRC Enforcement Policy, NUREG-1600. The inspector reviewed the licensee short term corrective actions completed to resume startup activities. This issue was entered in the corrective action program as CR 20030735. (**NCV 50-293/03-04-01**)

.2 Inadvertent Reactor Vessel Draindown During Shutdown Cooling Operations

Green. An inadequate procedure used to control the residual heat removal (RHR) system resulted in the unintended decrease of reactor vessel level with the plant in cold shutdown on February 23. The inadvertent decrease in reactor water level by about 21 inches was of very low safety significance. The failure to provide adequate procedures was a non-

cited violation of 10CFR 50 Appendix B, Criterion V, “Instructions, Procedures, and Drawings.”

Licensee procedures in effect prior to the February 2003 shutdown required the operating RHR loop be secured before starting the alternate RHR loop. To support repair of the A RHR injection valve MO-1001-29A without interrupting core cooling, the licensee revised procedure 2.2.19.1 (Revision 6) to allow initiating shutdown cooling on the alternate loop prior to securing the operating loop. The revised procedure did not initially de-energize the minimum flow valve. The past practice was to disable the valve at the beginning of the process to prevent it from opening and inadvertently draining down the reactor vessel. The revised procedure contained guidance in steps 6.c and 6.d that was subject to interpretations by the operators.

While performing the revised procedure on February 23, the operators incorrectly performed the steps that directed the loop injection valves be operated to swap RHR loops providing shutdown cooling. The intent of the procedure was to inject all flow from the A RHR pumps to the vessel through the B loop lines. The operators opened valve MO-1001-28B, but did not fully close valve MO-1001-28A since in-series valve M0-1001-29A was inoperable. The valve lineup allowed flow through both the A and B loop injection lines, which lowered the individual RHR loop flows. During the subsequent change in pump lineups, the B loop flowrate dropped below 2500 gpm which caused the B loop minimum flow valve (MO-1001-18B), which had not been de-energized, to open as designed to provide minimum flow protection for the RHR pumps. With valve 18B open, a direct flow path existed from the reactor to the torus, and vessel water level decreased by about 21 inches (from 76 to 55 inches). The operators noted the flow diversion to the torus and closed valve 18B.

Reactor vessel level remained in the established normal control band of 40 to 80 inches. Nonetheless, an inadvertent loss of vessel level occurred because plant procedures did not establish positive control over the minimum flow valve and the operators did not fully close the A loop injection valves MO-1001-28A and 29A as directed by the procedure. Licensee actions were documented in Condition Report 20030651.

The loss of control of reactor water level is an issue that is more than minor because it is a precursor to a more significant event, the loss of shutdown cooling. The issue had very low safety significance when assessed in accordance with Manual Chapters 0612 and 0609, Appendix G, based on the level loss being less than 24 inches.

10 CFR 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” which requires in part that activities affecting quality be prescribed and performed in accordance with procedures appropriate to the circumstance. Contrary to this requirement, procedure 2.2.19.1, Revision 6, was not adequate to assure the successful changeover of shutdown cooling loops. This violation is being treated as a non-cited violation consistent with section VI.A of the NRC enforcement policy. (**NCV 050-293/03-04-02)**.

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:

- OE 03-002, A SLC Pump Test Flow Anomaly January 24 (CR 200300305),
- CR 20030173, Standby Liquid Control Squibb Valve Continuity (Drawing M1F4-9)
- CR 20030802, SBODG Trip on Overspeed During Testing Mar 4 and Feb 14 (Failure Analysis dated 3/19/3)
- OE 03-007, AO-N-98 Tagged in its Open Position
- CR 200301118, RBCCW pump P-202E bearing noise and motor temperature.

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:

- MR 01126008, Rod 02-27 Timing per 2.2.87.3 Following DCV Solenoid Replacement
- MR01110262, PWT for Weld Repair of MO1001-50 valve drain line (CR 20030641)
- MR 02106690, PWT for Panel C-221 Fire Zone 1A Alarms (8.B.4.7)
- MR 02120380, PWT for PDC01-08 A CRHEAFs Humidistat (8.C.6)
- MR 03102880, PWT for B EDG crankcase pressure switch
- MR P9900349, PWT for MO-1001-29A (8.I.11.3, 8.Q.3-8.2, 3.M.3-24.16)

b. Findings

No findings of significance were identified.

1R20 Refueling and Outage Activities

a. Inspection Scope

The inspectors reviewed activities associated with a maintenance outage in February 2003 to verify that shutdown risk was being properly considered, technical specifications observed, and key safety functions maintained. The inspection included activities in the following areas:

Review of Outage Plan

The inspector reviewed the forced outage work schedule and associated risk assessment performed in accordance with 3.M.1-45. The qualitative risk assessment focused on the following six key safety functions: reactor inventory, electrical power, primary and secondary containment, reactivity control, and decay heat removal. Each area was determined to be in a Green (low risk) condition.

Plant Shutdown and Shutdown Activities

The inspector observed operator performance during the plant shutdown on February 21, 2003, from single loop operation. The inspection focused on command and control, communications, and compliance with station procedure 2.1.5, “Controlled Shutdown From Power.” The inspection consisted of control room observations and a review of the operator logs, plant computer information, station procedures 2.1.5, 2.1.6, “Reactor Scram,” and 2.1.14, “Station Power Changes.” The inspector reviewed the licensee’s initial root cause assessment for unanticipated runback of the reactor recirculation pump (CR200300634) which led to a manual full reactor scram. Additionally, the inspector reviewed the cool down data obtained per station procedure 2.1.7, “Vessel Heatup and Cooldown,” and verified the data was in compliance with the technical specifications.

Licensee Control of Outage Activities

The inspector verified primary plant indications associated with reactor pressure, level, and temperature were functioning properly and reflected plant conditions. Satisfactory removal of decay heat was verified by observation of the main control board indicators, review of plant computer data, and station procedures 2.2.19, “Residual Heat Removal,” and 2.1.7, “Vessel Heatup and Cooldown.” Both emergency diesel generators, the off-site power sources, and the electrical buses were verified to be energized and operable. (See Section R14 for a discussion regarding the inadvertent reactor vessel draindown.)

New Fuel Receipt and Inspections

The inspector observed licensee activities to receive and inspect new fuel for operating cycle 15, install fuel channels and store the fuel in the spent fuel pool. The inspector used the following references for the review: procedure 4.1, "Receiving and Handling of Unirradiated Fuel Assemblies, procedure 4.2, "Inspection and Channeling of Nuclear Fuel," Technical Specifications 3.7, "Containment Systems" and 3.10. "Core Alterations," and Updated Final Safety Analysis Report Section 10.3, "Spent Fuel Storage." Additional references for this review are identified in the attachment to this report.

b. Findings

No findings of Significance were identified

1R22 Surveillance Testing and Inspections

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:

- 8.5.5.1, RCIC Pump Operability Flow Rate and Valve Test
- 8.A.17, RCIC System Integrity Surveillance
- 8.4.1, A SLC Pump Testing February 6
- 8.7.2.1, Test of Humidity Controls and CRHEAFs Heater Capability March 12
- 8.B.4.7, Fire Panel C221 Control Room Functional Test March 12

The inspector reviewed licensee actions for testing of the standby liquid control system on February 6, 2003 (CR 20030305). The inspector reviewed the licensee actions following the discovery of a minor leak (60 dpm) noted on the RCIC turbine trip throttle valve during testing (CR 200300286).

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications

a. Inspection Scope

The inspector reviewed temporary plant modification TM 03-11,Recirc MG Set Room Block Wall - Reactor Building 54 ft." The inspection included a review of PNPS procedure 1.5.9, Temporary Modifications," TM 03-11 and the associated
10 CFR 50.59 safety evaluation to ensure that the modification did not adversely affect system operability. The inspector also reviewed the post installation test results to confirm that the test was satisfactory, and verified that the modified structures were properly annotated to reflect the installation of the temporary modification.

b. Findings

No findings of significance were identified.

EMERGENCY PREPAREDNESS

1EP4 Emergency Action Level and Emergency Plan Changes

a. Inspection Scope

During this inspection period, an in-office review was conducted by a regional inspector that reviewed recent changes to emergency plan documents (listed in the attachment) to determine if the changes decreased the effectiveness of the plan. A thorough review was conducted of documents related to the risk significant planning standards (RSPS), such as classifications, notifications and protective action recommendations. A cursory review was conducted for non-RSPS documents. These changes were reviewed against 10 CFR 50.54(q) to ensure that the changes do not decrease the effectiveness of the plan, and that the changes as made continue to meet the standards of 10 CFR 50.47(b), the requirements of Appendix E, and the intent of NUREG-0654, Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants. These changes are subject to future NRC inspections to ensure that the results of the changes continue to meet NRC regulations.

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation

a. Inspection Scope

The inspector observed portions of the February 5, 2003, emergency planning drill to evaluate Entergy's drill performance and post drill critique. The inspection focused on

licensee actions to implement emergency operating and emergency plan implementing procedures, and on communication among the emergency response facilities. The inspector observed the drill from the technical support center (TSC) to assess facility activation, technical support, event classification and notifications. 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 response personnel. The inspector verified that licensee-identified areas for improvement were entered in the corrective cation process, as listed in the attachment to this report. The areas for improvement included facility activation times, classification of emergency action levels, the onsite protective actions for workers, and the communications between the emergency response facilities and with offsite response personnel.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

2OS1 Access Control to Radiologically Significant Areas

a. Inspection Scope

During the period from January 27-31, 2003, 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.

Significant radiological work being performed during this inspection included a reactor water clean-up system outage involving the repair/replacement of four valves located in a high radiation area (controlling documents included RWP # 03-0096 and ALARA Review #02-006). The inspector reviewed work activities on the refueling floor associated with preparations for the spring 2003 refueling outage (RFO14) which included work in potential hot particle areas (controlling documents included RWP #03-0039 and PNPS Procedure # 6.1-032, Rev 3, "Hot Particle Contamination Control Program").

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 exposure results versus initial exposure estimates for current 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).

Annual exposure for 2002 was 37.41person-rem against a goal of 36 person-rem (original 2002 exposure goal was 45 person-rem, which was subsequently lowered to 36 person-rem in the middle of 2002). The annual exposure goal established for 2003 is 211.6 person-rem, which includes 175 person-rem for the spring refueling outage (RFO14). Major jobs during RFO14 include: replacement of control rod drives (16.07 person-rem); replace in-board feed water check valves (23.9 person-rem); and, work on the moisture separator reheaters (7.41 person-rem).

b. Findings

No findings of significance were identified.

2OS3 Radiation Monitoring Instrumentation

a. Inspection Scope

The inspector reviewed field instrumentation used by health physics technicians and 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 the current calibration record for nine portable radiological instruments located in the radiologically controlled area (RCA), representing four different instrument types (RM-14; RO-2, RO-20 & Extender).

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES [OA]

4OA1 Performance Indicator Verification

a. Inspection Scope

The inspector reviewed operator logs and licensee records for the period of June 2002 to March 2003 to determine the accuracy and completeness for the reported Pilgrim performance indicators (PIs). The inspector verified that the licensee had reported performance indicator data elements in accordance with NRC endorsed criteria contained in NEI 99-02, “Regulator Assessment of Performance Indicator Guideline.”
The following PI was reviewed:

- RCS Leak Rate

The inspector also reviewed licensee actions to trend and evaluate increases in RCS leak rate (reference Condition Reports 2003-612, 641, 643, 926, 965 and 1077). The inspector reviewed licensee activities to quantify and locate unidentified reactor coolant system leakage, including the performance of measurements using procedure 7.4.62, “Tracer Injection for Drywell Leakage.”

b. Findings

No findings of significance were identified.

4OA2 Problem Identification and Resolution

.1 Radiation Safety Cornerstone

a. Inspection Scope

The inspector reviewed self-assessment reports related to occupational radiation safety, and determined if identified problems were entered into the corrective action system for resolution. Documents reviewed include radiation protection department self-assessments performed between September 2002 and January 2003. Areas which were subject of these assessments included: human performance; radiological surveys; passive monitoring program; personnel contaminations; and, radioactive material storage. The inspector also reviewed the tracking, evaluation and resolution of identified issues.

b. Findings

No findings of significance were identified.

4OA4 References to Cross Cutting Issues

.1 Human Performance

Section 1R14 describes two findings related to the operator failure to follow procedures which resulted in unintended loss of vessel level (Condition Report CR 20030651), and beginning a reactor startup with the rod worth minimizer inoperable (CR 20030735). The licensee recognized these events as an adverse trend in operator performance errors. The licensee issued CR 20030940 to review this tend in a common cause evaluation and to identify additional corrective actions.

4OA6 Management Meetings

Exit Meeting Summary

The inspectors presented the inspection results to Mr. R. Bellamy and other members of licensee management at the conclusion of the inspection on April 8, 2003. The licensee acknowledged the findings presented.

A public meeting was conducted with Mr. R. Bellamy, Pilgrim Site Vice President, and other members of the licensee staff at the John Carver Inn in Plymouth, Massachusetts on March 26, 2003. The meeting was held to discuss the Annual Assessment of the Pilgrim Nuclear Power Station. A copy of the slides can be found in ADAMS (Accession Number ML030900103).

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee personnel

W. Coady, ALARA Specialist
W. Cook, I&C Supervisor
W. Corbo, Maintenance Supervisor
C. Dugger, Vice President, Operations
P. Dietrich, General Manager
D. Ellis, Licensing Engineer
B. Ford, Licensing
L. Foreaker, ALARA Specialist
G. James, Reactor Engineering Superintendent
J. Keene, EDG Systems Engineer
W. Lobo, Licensing Engineer
W. Mauro, ALARA Team Manager
B. Olson, Radiation Protection Specialist - Instruments
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

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Open and Closed

50-293/03-04-01	NCV	Operator Failed to Assure RWM Operable for Startup
50-293/03-04-02	NCV	Inadequate Procedures for Shutdown Cooling Resulted in Vessel Drain Down

LIST OF DOCUMENTS REVIEWED

References for Section 1R01
Condition Reports
200300344, Enhance procedures for lessons learned for cold weather below 20F
200300257, SSW pump room temperatures reading below UFSAR 60F minimum
200300179, Could not verify valve positions due to valves being iced over
200300274, Feedwater line frozen to Ionics demineralizer skid, cannot operate skid
200300280, Minimum temperature in turbine building microwave room <60F

200209146 and 200209149, plant heating system performance during cold weather
200109130 and 199909444, issues associated with SSW room temperatures

References for Section 1R12
Condition Reports
20030990, SBODG Functional Failures and Unavailability Hours
20030359, SBODG Air Leak during Pre-start Checks
20030425, SBODG Air Start System Conditions
20030557, SBODG Trip on Overspeed during Test on 2/14/3
20030567, SBODG Surveillance Interval
20030572, Procedures for Testing SBODG Overspeed Trip
20030668, SBODG Radiator Operations During Winter Months
20030802, SBODG Trip on Overspeed during Test on March 4
20030857, SBODG Increase in Unavailability Hours due to lack of parts
20030870, Water on SBODG Fuel Tank Fill Connection
20030884, SBODG Lockout Relay Failure Following Overspeed Trip Test
200212523, PCIS Isolation Reset Switch Failure during test
200212568, PCIS Isolation Switch Contact Blocks
200300518, PCIS Isolation Switch Spring Return to Normal
200300894, PCIS Isolation Switch Potential Deficiency

Reference for Section 1R13
Condition Report 20030642, MO-1001-29A Open Limit Switch Failed
Equipment Failure (Weak Link) Analysis for CR 20030642 (MO-1001-29A)
Maintenance Request P9900349, PM on MO-1001-29A
3.M.3-24.16, QUICKLOOK Operations Procedure
8.Q.3-8.2, LIMITORQUE Type HBC, SB/SMB-0 through B/SMB-3Valve Operator Maintenance
8.I.11.3, Residual Heat Removal A Loop Valve Cold Shutdown Operability
Engineering Summary dated 4/2/03 of IST Data for RHR MOVs

Reference for Section 1R19
8.Q.3-8.2, EQ PM for Limitorque Type HBC, SMB Valve Operator Maintenance
MR 03103223 (P9900349), MO-1001-29A Breaker Tripped While Opening
8.I.11.3, Residual Heat Removal A Loop Valve Cold Shutdown Operability
3.M.3-24.16, Quicklook Operations Procedure for MO-101-29A

Reference for Section 1R20
Shift Refueling Checklist per OPER-14
Daily Refueling Checklist per OPER-13
MR 02107560, Receipt and Inspection of New Fuel IAW Procedure 4.0, 4.1 and 4.2
Condition Reports 20030993 and 20030947
Procedure 1.4.35, Personnel and Material FMEA Controls
Procedure 4.2, Attachment 1, Fuel Assembly Inspection Plan (bundles JLG649 and JLG650)
MBA Inventory Account for Reactor Operating Floor
RWP 03-137, Reactor 23 ft and 117 ft Receive, Store, Inspect, Channel and Load New Fuel
ENN-QV-111 Qualification Certificates for 10 Inspection Personnel

Reference for Section 1EP4
Pilgrim Nuclear Power Station Emergency Plan, Rev 26
EP-IP-310, Radiation Monitoring Team Activation and Response, Rev 5
EP-IP-440, Emergency Exposure Controls, Rev 7

Reference for Section 1EP6
Condition Reports for February 5 EP Drill
20030461, Communication Issues Between ERFs
20030462, Awareness of Response Time
20030463, EOF 30 Minute Activation Time
20030464, HP Brief of OSC Teams
20030465, Delayed Protective Action Announcement
20030467, Classification Opportunity and Miss
20030513, Drill Containment H2/O2 Analyzer Operation
20030514, Drill Technical Support for Containment Venting

LIST OF ACRONYMS

ALARA	as low as reasonable achievable
BPWS	banked position withdrawal sequence
CFR	Code of Federal Regulations
CR	condition reports
CRS	control room supervisor
CRHEAF	control room high efficiency air filtration
EDG	emergency diesel generator
HVAC	heating ventilation and air conditioning
ICMs	interim compensatory measures
IR	inspection 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

RFO	refueling outage
RHR	residual heat removal
RP	radiation protection
RSPS	risk significant planning standard
RWM	rod worth minimizer
RWP	radiation work permit
SBO	station blackout
SBODG	station blackout diesel generator
SSC	system, structure, or component
TS	Technical Specifications
TSC	technical support center
UFSAR	Updated Final Safety Analysis Report