

May 12, 2006

Mr. Michael A. Balduzzi  
Site Vice President  
Entergy Nuclear Operations, Inc.  
Pilgrim Nuclear Power Station  
600 Rocky Hill Road  
Plymouth, MA 02360-5508

SUBJECT: PILGRIM NUCLEAR POWER STATION - NRC INTEGRATED INSPECTION  
REPORT 05000293/2006002

Dear Mr. Balduzzi:

On March 31, 2006, 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 6, 2006, with Mr. Dietrich 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.

This report documents one finding of very low safety significance (Green), which involved a violation of NRC requirements. However, because of the very low safety significance and because the issue has been entered into your corrective action program, the NRC is treating the issue as a non-cited violation (NCV), in accordance with Section VI.A.1 of the NRC's Enforcement Policy. Additionally, a licensee-identified violation that was determined to be of very low safety significance is listed in Section 4OA7 of this report. 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 U.S. 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, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Resident Inspector at Pilgrim.

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Sincerely,

**/RA by Tracy Walker for Clifford Anderson/**

Clifford Anderson, Chief  
Projects Branch 5  
Division of Reactor Projects

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

Enclosure: Inspection Report 50-293/06-02  
w/Attachment: Supplemental Information

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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No: 50-293

License No: DPR-35

Report No: 05000293/2006002

Licensee: Entergy Nuclear Operations, Inc.

Facility: Pilgrim Nuclear Power Station

Location: 600 Rocky Hill Road  
Plymouth, MA 02360

Inspection Period: January 1, 2006 through March 31, 2006

Inspectors: W. Raymond, Senior Resident Inspector  
C. Welch, Resident Inspector  
J. McFadden, Senior Health Physicist  
K. Diederich, Reactor Engineer  
J. D'Antonio, Operator Licensing  
D. Silk, Senior Emergency Planning Inspector

Approved By: Clifford Anderson, Chief  
Projects Branch 5  
Division of Reactor Projects

Enclosure

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## SUMMARY OF FINDINGS

IR 05000293/2006-002 ; 01/01/2006 - 03/31/2006; Pilgrim Nuclear Power Station. Personnel Performance During Non-routine Plant Evolutions

The report covered a 13-week period of inspection by resident inspectors and announced inspections by regional specialists in health physics and engineering as well as an in-office review of emergency plan changes. One Green finding, which was a non-cited violation (NCV), was identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using IMC 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

### A. Inspector Identified and Self-Revealing Findings

#### Cornerstone: Initiating Events

Green. The inspectors identified a non-cited violation (NCV) of Technical Specifications for failure to evaluate the impact of an inoperable manual bypass valve (1-HO-154) in the augmented off-gas (AOG) system. Specifically, on January 12 and March 12, 2006, when the bypass valve could not be opened, plant personnel did not initiate a condition report, evaluate the impact on plant operations, and consider the need to establish compensatory measures, contrary to corrective action process procedure requirements. As a result, opportunities to repair the valve were missed and the valve's inoperable condition was not communicated effectively to station management and within operations. Consequently, on March 13 the operating crew was unaware the bypass valve was inoperable and attempted to use the bypass valve to restore dilution steam flow to the recombiner when the controller failed. The inability to restore dilution steam flow led to an increase in recombiner temperature which required the operating crew to initiate a manual reactor scram in accordance with procedure 2.4.141, "Abnormal Recombiner Operation." Corrective actions, immediate and long-term, are provided for in the root cause evaluation for condition report (CR) 20060977 and CR 20061024.

The finding was determined to be of very low safety significance (Green), when evaluated per the significance determination process of MC-0609, Appendix A. The finding is more than minor because it led to a plant transient. The finding's significance however, was not greater than Green because it did not contribute to both a reactor trip and the likelihood that mitigation equipment or functions would not be available. This finding has a cross cutting aspect in problem identification and resolution which significantly contributed to the performance deficiency because Entergy did not thoroughly evaluate the degraded condition of the manual bypass valve for impact on the plant or appropriate compensatory measures. (Section 1R14)

## Summary of Findings (cont'd)

### B. Licensee Identified Violations

A violation of very low safety significance, which was identified by the licensee, has been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. The violation and corrective actions are listed in Section 4OA7 of this report.

## REPORT DETAILS

### Summary of Plant Status

Pilgrim Nuclear Power Station operated for the majority of the period at 100 percent (%) core thermal power. The Unit was brought off-line for planned outages on January 11-12 and March 10-13 to support repair of the Unit Auxiliary Transformer (UAT) and thermal backwash of the main condenser. On March 13, 2006, while restoring the Unit to full power, the control room operators inserted a manual reactor scram at 49% power at 6:10 p.m. as required by station procedure 2.4.141, "Abnormal Recombiner Operation;" due to a high recombinder temperature (> 1000EF). Following repair of the failed 300 psi pressure reducing valve, a startup was initiated on March 13. Criticality was achieved on March 15 at 8:07 a.m. and the Unit placed onto the grid at 3:14 p.m. full power (100% ) was achieved on March 20, 2006.

#### 1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity and Emergency Preparedness

#### 1R01 Adverse Weather Protection (71111.01)

##### .1 Adverse (Cold) Weather Preparations

###### a. Inspection Scope (1 sample)

The inspector performed walkdowns of plant systems during periods of cold weather in February 2006, and reviewed the site preparations for adverse weather (storms). The inspector assessed Entergy's cold weather preparations and protection to verify that the adverse weather did not render key safety systems inoperable. The safety systems reviewed during the inspection included the emergency diesel generators, the salt service water system, and the blackout diesel generator. Completed copies of station procedure 8.C.40, "Cold Weather Surveillance," were reviewed for February 2006. The Updated Final Safety Analysis Report section 10.9.3 and Table 10.9-1, "Design Temperatures (Winter)," were used as references during the inspection.

The inspector confirmed that Entergy was identifying cold weather related issues and had entered them into the corrective action program. The inspector reviewed the corrective actions to verify they were appropriate to resolve the issues. The references used in this review are listed in the attachment to this report. This activity represented one inspection sample.

###### b. Findings

No findings of significance were identified.



.2 Site Specific Adverse Weather Events

a. Inspection Scope (2 samples)

The inspector reviewed licensee activities to protect plant systems during adverse winter weather conditions during the periods of February 9-13, 2006 (winter storm) and February 24-28 (cold temperatures). The inspector assessed Entergy's adverse weather preparations and actions to mitigate the impact of the storms on the plant, plant personnel and key safety systems. The inspector reviewed the impact of the February 12 snow storm on the site, including the challenges to site access, security, resources, cooling water supplies, and the normal and emergency power supplies. The review of the impact of cold temperatures focused on systems in the intake house, emergency diesel generator building and station blackout diesel generator building.

The safety systems, structures, and components reviewed included the station security systems, the A and B emergency diesel generators, the station blackout diesel generator, the security diesel generator, the 23 KV and 345KV electrical systems and the salt service water system. The references used during this review are included in the attachment and included: station procedures 8.C.40, "Cold Weather Surveillance," 2.1.37, "Coastal Storm Preparations," 2.1.42, "Operation During Severe Weather," and the Updated Final Safety Analysis Report Section 10.9.3.

The inspector confirmed that Entergy was identifying weather related issues and had entered them into the corrective action program. The inspector reviewed the corrective actions to verify they were appropriate to resolve the issues. This activity represented two inspection samples of specific events: one sample for a snow storm, and one sample for a period of cold temperatures.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04)

.1 Partial System Walkdowns

c. Inspection Scope (4 samples)

The inspectors completed a partial system review of the risk significant systems listed below during periods when the redundant train or system was out-of-service for maintenance and/or testing or following restoration of the system or train from maintenance. The position of key valves, breakers, and control switches required for system operability were confirmed by field walkdown and/or review of the main control board indicators. To ascertain the required system configuration, the inspectors reviewed plant procedures, system drawings, the Updated Final Safety Analysis Report, and the Technical Specifications. The references used for this review are described in the attachment to this report. This inspection activity represented 4 samples.

- Reactor Core Isolation Cooling valve lineup on 2/16/06
- B CRHEAFS lineup during alternate train work on 2/15/06
- Reactor Core Isolation Cooling lineup on 2/21/06
- Technical Support Center Emergency Ventilation 3/01/06

The inspector confirmed that Entergy was identifying system alignment issues and had entered them into the corrective action program. The inspector reviewed the corrective actions to verify they were appropriate to resolve the issues.

b. Findings

No findings of significance were identified.

.2 Full System Walkdown

a. Inspection Scope (1 sample)

The inspectors performed a full system review of the Residual Heat Removal (RHR) System to verify the system was properly aligned and capable of performing its safety function. To ascertain the required system configuration, the inspectors reviewed plant procedures, system drawings, the Updated Final Safety Analysis Report, and the Technical Specifications. A walkdown of the accessible portions of the system was performed to assess the material condition of the system and the following attributes:

- valves were correctly positioned and did not exhibit leakage that would impact the function(s) of any given valve;
- electrical power was available and properly aligned;
- major system components were properly labeled;
- hangers and supports were correctly installed and functional;
- ancillary equipment or debris did not interfere with system performance;
- valves were locked as required by the locked valve program.

The system's material condition was further assessed based upon discussion with the system engineer and review of the following documents:

- 2005 4<sup>rd</sup> quarter system health report;
- condition reports for the RHR system issued in 2005; and
- maintenance rule information.

Note: there were no open corrective maintenance work requests.

This activity represented one inspection sample.

1R05 Fire Protection (71111.05).1 Quarterly Fire Protection Inspectiona. Inspection Scope (10 samples)

The inspector toured selected areas of the plant to observe conditions related to: (1) transient combustibles and ignition sources; (2) fire detection systems; (3) manual firefighting equipment and capability; and (4) passive fire protection features. The inspector confirmed adequate material condition of active and passive fire protection systems features and the operational lineup and readiness. The inspector also reviewed the applicable fire hazard analysis fire zone data sheets and selected surveillance procedures to ensure that the specified fire suppression system surveillance criteria were met. This inspection activity represented 10 samples.

- Fire Zone 1.9A "A" RHR Pipe Room
- Fire Zone 1.11 EL 51" East Half Open Area and Rad Waste Cleanup Equipment
- Fire Zone 1.6 CRD Pump Quad
- Fire Zone 1.8 CRD Quad Mezzanine
- Fire Zone 1.5 RCIC Pump Quad
- Fire Zone 1.7 RCIC Quad Mezzanine
- Fire Zone 2.5 Clean and Dirty Lube Oil Storage
- Fire Zone 2.7 Turbine Lube Oil Reservoir
- Fire Zone 3.2 Cable Spreading Room
- Fire Zone 1.28 Reactor Recirculation Pump Motor Generator Set Room

The inspector reviewed CR-2006-00415 concerning the discovery that the fire detectors in Fire Zone 2B, RBCCW Loop B Aux Bay, were inoperable. The Zone 2B control switch on Fire Panel C222 was inadvertently left disabled for approximately 2 weeks in January 2006. The systems in the B Aux Bay are required for safe plant shutdown. The references used for this review are described in the attachment to this report.

b. Findings

A licensee identified finding is described in Section 4OA7 of this report. No other findings of significance were identified.

.2 Annual Fire Drill Observationa. Inspection Scope (1 sample)

The inspector monitored performance of the fire brigade during a training drill conducted on January 18, 2006 per procedure 1.4.23. The drill involved a simulated fire in the Machine Shop, Operations & Maintenance Building 23's elevation. The inspector observed fire brigade personnel performance, and confirmed that the licensee's fire fighting pre-plan strategies per procedure 5.5.2 were utilized, the pre-planned drill scenario was followed, and that the drill objectives were met. The inspector confirmed

that proper protective clothing and breathing apparatus were donned; that sufficient fire fighting equipment was brought to the scene; the fire brigade leader's fire fighting directions were clear; and communications with the plant operators and between fire brigade members were effective. The inspector confirmed the drill critique identified areas to enhance fire brigade performance. This activity represented one inspection sample.

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures (71111.06)

.1 Internal Flooding

a. Inspection Scope (1 sample)

The inspector reviewed protective measures in-place to protect against internal flooding of the auxiliary bay compartments housing the reactor building component cooling water (RBCCW) pumps, heat exchangers, and electrical switchgear. The inspection was performed during maintenance on the "B" turbine building component cooling water (TBCCW) heat exchanger, which required the salt service water piping in the B aux bay be opened. The inspector performed visual inspections of the water tight door separating the A and B compartments, curbing around switchgear, and the de-watering lines from each compartment to the torus room. Isolation of the salt service water system, established in accordance with protective tag out 30B-0006-E-122B, was confirmed by walkdown and review of station drawings. Operability of the A and B aux bay flooding alarms was confirmed by review of completed surveillance 8.E.30.1, "Closed Cooling Water System (CCWS) Instrumentation Calibration and Functional Test."

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance (IP 71111.07B)

a. Inspection Scope (4 samples)

Based on a plant specific risk assessment, past inspection results, and recent operational experience, the inspectors selected a sample of four safety-related heat exchangers (HXs) for review: the B Reactor Building Closed Cooling Water (RBCCW) HX, the B Residual Heat Removal (RHR) room cooler, the High Pressure Coolant Injection (HPCI) room cooler, and the Reactor Core Isolation Cooling (RCIC) room cooler. The Salt Service Water (SSW) system, which provides cooling to the RBCCW HXs, was also reviewed, as was the RBCCW system, which provides cooling to the safety-related room cooler heat exchangers.

The inspector reviewed performance tests, periodic cleaning, eddy current inspections, chemical control methods, tube leak monitoring, the extent of tube plugging, potential water hammer analysis, operating procedures, maintenance practices. The inspector also confirmed that controls for the selected components conformed to Entergy's commitments to Generic Letter 89-13, "Service Water System Problems Affecting Safety-Related Equipment." The inspector compared the inspection results to the established acceptance criteria to verify that the results were acceptable and that the HXs operated in accordance with design. The inspector walked down the systems, structures, and components, and monitored a performance test of the B RBCCW HX. The inspectors reviewed system health reports and interviewed applicable system engineers.

The inspector confirmed that potential common cause heat sink performance problems that had the potential to increase risk were identified and corrected by Entergy. The inspector closely examined potential macro fouling (silt, debris, etc.) and biotic fouling issues. The inspector walked down the Salt Service Water intake, chlorination system, and other support and sub components of the Salt Service Water system to assess the material condition of these systems and components.

The inspector reviewed a sample of condition reports (CRs) related to the RBCCW HXs, the safety-related room coolers, and the SSW system to ensure that Entergy was appropriately identifying, characterizing, and correcting problems related to these systems and components. The documents that were reviewed are listed in the attachment to the report.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification (71111.11)

.1 Licensed Operator Simulator Training

a. Inspection Scope (1 sample)

The inspector observed an evaluated licensed operator simulator training exercise on January 23, 2006. The training was performed using scenarios SES-148 and involved both operational transients and design basis events. The inspector evaluated both the crew's performance and evaluators' assessments in-terms of the crew meeting the scenario objectives, accomplishing the critical tasks, proper use of abnormal and emergency operating procedures, command and control, effective communication, and the crew's ability to implement the emergency plan in-terms of event classification and notification. The inspector reviewed the post-scenario critique and confirmed lessons learned and items for improvement were discussed with the crew to enhance future performance.

b. Findings

No findings of significance were identified.

1R12 Maintenance Rule (71111.12)a. Inspection Scope (2 samples)

The inspector reviewed follow-up actions and the past performance history for the system, structure, and component(s) (SSC) listed below to assess the effectiveness of Entergy's maintenance activities, problem identification and resolution actions, and implementation of the requirements of 10 CFR 50.65(a)(1) and (a)(2), "Requirements for Monitoring the Effectiveness of Maintenance." Review of the system's (a)(1) or (a)(2) classification, performance monitoring criteria and goals, and applicable functional failure (FF) determinations, including categorization as maintenance preventable (MPFF) or repetitive maintenance preventable (RMPFF), was also accomplished. References used for the review are listed in the attachment to this report. This activity represents 2 samples.

- Reactor Building Component Cooling Water (RBCCW) pump P-202F high vibration, CR 200600464: The inspector reviewed condition report 200600464, the fourth quarter 2005 system health report for RBCCW (System 30), and the current maintenance rule (a)(1) status (System Health Report Executive Summary).
- Heating, Ventilation, and Air Conditioning (HVAC) system review, for both the safety and non-safety related HVAC systems: Specific issues reviewed included thrown fan belts, loss of reactor building and retention building differential pressure, building/compartments temperature concerns, habitability concerns; and deficiencies in the technical support center ventilation. The inspection covered the period of January 2001 through February 2006. Greater focus was placed on the more recent period including the current maintenance rule (a)(1) action plan and Top Ten Equipment Reliability Issues Action Plan for HVAC Maintenance Backlogs. In addition to references listed in the attachment to this report, the inspector interviewed the system engineers and walked down various portions of the HVAC systems.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13)a. Inspection Scope (6 samples)

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 evaluated whether Entergy 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 as applicable for the activities. References used for the inspection are identified in the attachment to this report. The inspection covered the following six samples:

- The elevated risk condition (Yellow) on January 27 during surveillance procedure 8.M.2-2.10.8.2, which affected the B emergency diesel generator and residual heat removal system initiation logic;
- The elevated risk condition (Yellow) on January 30 during removal of salt service water piping in the auxiliary bay in support of MR 02104136;
- MR 06101532, Cable Spreading Room Fire Barrier Repair for TA-06-1-07 (CR 20060562) on February 9, 2006;
- MR 02104136, Hot Work (CR 200600415) in the B auxiliary Bay;
- The elevated risk condition (Yellow ) on February 21 for various planned maintenance activities on the High Pressure Core Injection system; and
- The unplanned elevated risk condition (Yellow) on March 29 due to a low engine cylinder temperature that caused the B emergency diesel generator to be declared inoperable.

b. Findings

No findings of significance were identified.

1R14 Personnel Performance During Non-routine Plant Evolutions (71111.14, 71153)

a. Inspection Scope (4 samples)

- .1 The inspectors assessed the control room operators performance during the following planned and unplanned, non-routine evolutions. The inspectors evaluated personnel performance during the power maneuvers (i.e., adequacy of personnel performance, procedure compliance, use of the corrective action process, etc.) against the requirements contained in station procedures. The inspectors evaluated personnel performance based on observations, reviews of operator logs, alarm response procedures, operating procedures, and interviews. This review covered three inspection samples.
- a) The plant power reduction to 15% full power on January 11-12 per procedure 2.1.14 to perform a control rod pattern exchange and disconnect the unit auxiliary transformer. The inspector also used power maneuvering plan MAN.C16-18R1 as a reference for this review.



- b) The operator response per procedures 2.4.A.23 and 2.2.135 following the loss of the 23 KV line #72 for about 2.5 hours on January 18 and the problems with the technical support system uninterruptible power supply and network servers. (CR 20060241, 20060242 and 20060243).
  - c) The plant power reduction to 15% full power on March 10-11 per procedure 2.1.14 to perform a condenser thermal backwash and to recover the repaired unit auxiliary transformer. The inspector used power maneuvering plan MAN.C16-27 as a reference for this review.
- .2 The inspector observed the operating crew respond to a manual reactor scram; initiated per the requirements of procedure 2.4.141, "Abnormal Recombiner Operation," on March 13, 2006, due to elevated temperature in the augmented off gas recombinder. Control room observation focused on operator response, communications, command and control, and procedure usage and adherence. A review of the Post Trip Report, operator logs, and plant computer alarm and data printouts, was performed to determine if the operators responded in accordance with station procedures and training. Preceding events that led to the unplanned manual reactor scram were reviewed to assess what role, if any, personnel error contributed to the event.

b. Findings

Introduction:

Green. A finding of very low safety significance, that constituted a non-cited violation of Technical Specification 5.4, "Procedures," was identified by the inspector. Operations personnel did not initiate a condition report, and did not evaluate the impact on the plant or potential need for compensatory measures for an inoperable manual bypass valve (1-HO-154) in the augmented off-gas (AOG) system. The failure to enter the degraded condition into the corrective action program resulted in missed opportunities to repair the inoperable valve and to effectively communicate the valve's inoperable condition to station management and operations personnel. As a result, operators were unable to restore dilution steam to the recombinder which led to the March 13 manual reactor scram.

Description:

On Monday, March 13, unaware of the inoperable condition of the manual bypass valve (1-HO-154), the operating crew attempted to manually adjust the controller for the 300 psi AOG reducing station. The controller was operating in manual, due to erratic operation while in automatic. However, output steam pressure had drifted low. The controller failed while attempting to manually raise the set point to increase output steam pressure. As a result, the regulating valve closed interrupting dilution steam flow to the recombinder. The control room supervisor's order to promptly restore dilution steam flow by opening bypass valve 1-HO-154 could not be implemented and recombinder temperature rose above 1000EF due to the loss of dilution steam flow. Upon exceeding



1000EF, the shift initiated a manual reactor scram in accordance with the requirements of procedure 2.4.141, "Abnormal Recombiner Operation."

The ensuing reactor scram was uncomplicated and all safety systems responded appropriately per design for the conditions encountered. Operator performance was in accordance with station procedures and the crew exhibited good command and control, communications, and procedure usage.

The manual bypass valve (1-HO-154) for the AOG 300 psi reducing station was identified as inoperable on January 13, 2006, while restoring the system to service per procedure 2.2.106, "Augmented Off-Gas System." The valve was frozen/stuck in the closed position. A condition report was not generated for the inoperable valve, as required by procedure EN-LI-102, "Corrective Action Process." The failed component was also not evaluated for plant impact or the need to establish a compensatory measure, as required by procedure 1.3.34.4, "Compensatory Measures."

The 1-HO-154 was again found stuck closed during AOG restoration on March 12. A condition report was generated, though not until the morning of March 13. The failed component, however, was again not evaluated for plant impact or the need to establish a compensatory measure in accordance with procedure 1.3.34.4.

A performance deficiency was identified in that Entergy did not follow station procedures, implement the corrective action program, or evaluate the impact on the plant and need for compensatory measures for the failed valve. The failure to enter the valve's inoperable condition into the corrective action program resulted in missed opportunities to: 1) repair the inoperable valve prior to March 13 and 2) to effectively communicate the degraded condition to station management and operations personnel, in particular to the March 13 operating crew; who were unaware the valve was stuck in the closed position and therefore did not have all the necessary information prior to attempting to manually adjust the controller for the 300 psi reducing station on March 13.

#### Analysis:

The finding, evaluated in accordance with the significance determination process, MC-0609, Appendix A, was determined to be of very low safety significance (Green). The finding is more than minor because it led to a plant transient (MC-0612, Appendix E, example 4.b). The finding's significance is not greater than Green because it did not contribute to both a reactor trip and the likelihood that mitigation equipment or functions would not be available.

This finding has a cross cutting aspect in problem identification and resolution which significantly contributed to the performance deficiency because Entergy did not thoroughly evaluate the degraded condition of the manual bypass valve for impact on the plant or appropriate compensatory measures.

Enforcement:

Technical Specification 5.4.1.a, requires in part written procedures be established and implemented covering the activities in Regulatory Guide (RG)1.33, which includes Entergy administrative procedures EN-LI-102, "Corrective Action Process," and 1.3.34.4, "Compensatory Measures." Contrary to the above, on January 12 and again on March 12, 2006, operators did not follow station procedures and initiate a condition report for an inoperable valve in the augmented off-gas system (1-HO-154), nor did they evaluate the failed component's impact on the plant or potential need to establish compensatory measures. Because the finding is of very low safety significance and has been entered into Entergy's Corrective Action Program (CR 20060977, 200601154), this violation is being treated as a Non-Cited Violation (NCV), consistent with Section VI.A of the NRC Enforcement Policy. **NCV 0500293/2006002-001, Failure to evaluate failed AOG bypass valve contributes to manual reactor scram.**

1R15 Operability Evaluations (71111.15)a. Inspection Scope (3 samples)

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, Procedure ENN-OP-104 "Operability Determinations," and the additional references listed in the attachment to this report for Section 1R15. This review covered three inspection samples.

- CR 200600254, General Electric Safety Communication 2006-001 reports a new worst case single active failure may impact torus peak temperature analysis
- CR 200600354, Intermittent Alarm "Squib Valve Continuity Failure" (C905R-A9)
- CR 200600464, RBCCW Pump P-202F high vibration

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19)a. Inspection Scope (6 samples)

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, the test was properly performed in accordance with procedures, 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 confirmed that systems were properly restored following testing and that discrepancies were appropriately documented in the corrective action process. The inspection activity represents six samples:

Enclosure

- MR 02116598, Inspect/Replace CRD Pump “B” Lube Oil Cooler Zinc Anodes
- MR 05116880, Replace Control Power Fuse for C7 Dry Well Vent SV-5043B
- MR 05116878, Replace Control Power Fuse for C7 Torus Vent SV-5041B
- MR 02116596, CRD flow control valve
- MR 06103985, RMCS Timer Replacement
- MR 06104291, RMCS Timer Replacement (CR 200601037)

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope (6 samples)

The inspector reviewed and/or observed surveillance testing to verify that the test acceptance criteria were consistent with Technical Specifications, ASME Code inservice test requirements, and Updated Final Safety Analysis Report requirements, and to confirm that the components were capable of performing their intended safety functions. The inspector also confirmed that 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 inspection activity represented six inspection samples:

- 8.5.2.2.1, LPCI System Loop A Operability - Pump Quarterly and Biennial (Comprehensive) Flow Rate Tests and Valve Tests
- 8.5.2.3, LPCI and Containment Cooling Motor-Operated Valve Operability Tests
- 8.M.2-2.10.8.2, Diesel Generator B Initiation by RHR Logic
- 8.5.1.1, Core Spray System Operability - Pump Quarterly and Biennial Comprehensive Flow Rate Tests and Valve Tests (Attachment 2B)
- 8.M.2-1.5.1, Main Steam Line Isolation Valve Logic - Test A - INBOARD
- 8.M.2-1.5.2, Main Steam Line Isolation Valve Logic - Test B - OUTBOARD

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications (71111.23)

a. Inspection Scope (1 sample)

The inspector reviewed the temporary modification identified below to verify that the licensing bases and performance capability of the associated risk significant system had not been degraded through the modification. The references used for this review are listed in the attachment to this report. This inspection activity represented one sample.

- Temporary Alteration 06-1-07 to install temporary power to EPIC modules from power panel Y2 in the cable spreading room on February 8-10, 2006. The temporary alteration was developed after the Technical Support Center UPS supply became unreliable as a power supply to power panel 48L which powers the plant computer. The EPIC modules provide the 3D Monicor program used by the plant operators to evaluate reactor core operating conditions. The licensee provided an analysis as part of the technical justification for TA 06-1-07. The inspector reviewed the design drawings and specifications, and discussed the temporary alteration with licensee personnel. The inspector reviewed the controls used by the licensee to assure the fire protection features of the cable spreading room were maintained. The inspector reviewed the changes to applicable plant drawings and confirmed the modification was installed per TA 06-1-07.

b. Findings

No findings of significance were identified

1EP4 Emergency Action Level and Emergency Plan Changes (71114.04)

a. Inspection Scope (1 sample)

An in-office inspection that reviewed recent changes to the Pilgrim emergency plan and implementing procedures was conducted on February 2 and March 27, 2006. Entergy made the changes in accordance with 10 CFR 50.54(q). Entergy determined that the changes did not decrease effectiveness of the Plan and concluded that the changes continued to meet the requirements of 10 CFR 50.47(b) and Appendix E to 10 CFR 50. During this inspection, the inspector conducted a sampling review of the changes which could potentially result in a decrease in effectiveness. This review does not constitute an approval of the changes and, as such, the changes are subject to future NRC inspection. The inspection was conducted in accordance with NRC Inspection Procedure 71114, Attachment 4, and the applicable requirements in 10 CFR 50.54(q) were used as reference criteria.

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation (71114.06)

b. Inspection Scope (1 sample)

The inspector observed an evaluated licensed operator simulator training exercise on January 23, 2006 and evaluated the crew's ability to implement the emergency plan. Specifically, the inspector confirmed the crew properly classified the event, activated the notification system, and appropriately completed and transmitted the event notification forms in a timely manner.

c. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety (OS)

2OS1 Access Control to Radiologically Significant Areas (71121.01)

a. Inspection Scope (7 samples)

The inspector reviewed radiological work activities and practices and procedural implementation during observations and tours of the facilities, and inspected procedures, records, and other program documents to evaluate the effectiveness of Pilgrim's access controls to radiologically significant areas. During this inspection, the inspector observed pre-job radiological briefings for the examination of fuel assemblies in the spent fuel pool and for the transfer of a radioactive waste liner from an on-site storage container to a shipping cask. Also, the inspector discussed aspects of a near-term spent fuel pool radioactive waste clean-up project with cognizant licensee and contracted personnel. The inspector performed a selective examination of documents (as listed in the List of Documents Reviewed section) to evaluate the adequacy of radiological controls. The review in this area was against criteria contained in 10 CFR 19.12, 10 CFR 20 (Subparts D, F, G, H, I, and J), Technical Specifications, and licensee procedures. This inspection activity represents the completion of seven samples relative to this inspection area (i.e., inspection procedure sections 02.01, 02.02.f, 02.03.b and d, and 02.05.a thru c) in partial fulfillment of the annual inspection requirements.

Planning (02.01)

The inspector confirmed that there were no licensee Performance Indicator (PI) events for the Occupational Exposure Cornerstone which required follow-up. During this inspection, the inspector reviewed issues identified in the corrective action program (CAP) and discussed selected occurrences related to this PI with radiation protection personnel. Also, during this inspection, the inspector met with the radiation protection person who was responsible for tracking and reporting the status of this PI within the site organization.

Plant Walk Downs and Radiation Work Permit (RWP) Reviews (02.02.f)

During this inspection, the inspector examined the licensee's physical and programmatic controls for highly activated or contaminated materials (non-fuel) stored within the spent fuel pool. The licensee had incorporated procedural controls in several procedures (i.e., procedures 1.16.1 and 6.1-009 which are listed in the List of Documents Reviewed section). Also, the inspector observed the implementation of these controls during fuel examinations which were being performed in the spent fuel pool during this inspection.

Enclosure

Problem Identification and Resolution (02.03.b and d)

The inspector reviewed selected corrective action reports related to access controls. This review included one radiological incident in a high radiation area measuring less than 1 Roentgen/hour that occurred since the last inspection in this area. The inspector interviewed staff and reviewed documents to determine if the follow-up activities were being conducted in an effective and timely manner commensurate with their importance to safety and risk. As stated previously, the inspector confirmed that there were no licensee PI events for the Occupational Exposure Cornerstone which would require review of the documentation packages for same.

High Risk Significant, High Dose Rate High Radiation Area (HDR-HRA) and Very High Radiation Area (VHRA) Controls (02.05.a thru c)

The inspector focused on verifying aspects of the licensee's performance indicator activities for high risk, high dose rate, high radiation areas and for very high radiation areas. The inspector discussed the licensee's controls and procedures for these types of areas with the Radiation Protection Manager (RPM). The RPM reported that the primary procedure for control of these areas (i.e., procedure 6.1-014) had not been changed since the last inspection. The inspector also discussed the controls and procedures with a health physics supervisor and another cognizant licensee health physicist. Also, during this inspection, the inspector confirmed the adequate posting and locking of all reasonably accessible entrances to HDR-HRAs and VHRAs. The inspector reviewed the status board list of current locations posted as VHRAs, locked high radiation areas (LHRAs), and high radiation areas (HRAs). Using this list, the inspector physically toured and examined reasonably accessible postings and physical controls in the reactor building, the turbine building, and the radioactive waste areas.

b. Findings

No findings of significance were identified.

2OS2 ALARA Planning and Controls (71121.02)a. Inspection Scope (4 samples)

The inspector reviewed the effectiveness of the licensee's program to maintain occupational radiation exposure as low as is reasonably achievable (ALARA). During this inspection, the inspector observed a Site ALARA Committee meeting and examined a post-work ALARA review record (review no. 05-013) for work on reactor water clean-up piping. The inspector performed a selective examination of documents (as listed in the List of Documents Reviewed section) for regulatory compliance and for adequacy of control of radiation exposure. The review was against criteria contained in 10 CFR 20.1101 (Radiation protection programs), 10 CFR 20.1701 (Use of process or other engineering controls), and licensee procedures. This inspection activity represents the completion of four samples relative to this inspection area (i.e., inspection procedure



sections 02.01.a, c, and d and 02.03.a) in partial fulfillment of the biennial inspection requirements.

Planning (02.01.a, c, and d)

The inspector reviewed pertinent information regarding plant collective exposure history, current exposure trends, and ongoing or planned activities in order to assess current performance and exposure challenges. The licensee initiated depleted zinc injection in the past followed by hydrogen injection. The licensee has plans to initiate noble metals chemical addition during the next refueling outage in Spring 2007. The near-term spent fuel pool radioactive waste clean-up project is one of the exposure challenges for 2006. The inspector determined the plant's current 3-year rolling average collective exposure for 2002 through 2004 and assessed the effect of the collective exposure result for 2005 on this 3-year rolling average. The inspector reviewed the site specific trends in collective exposures and source-term. The inspector confirmed that the average contact dose rates with reactor coolant piping had not changed significantly over the last several refueling outages.

The inspector reviewed the site specific procedures associated with maintaining occupational exposures ALARA (i.e., procedures 6.1-031 and 6.10-020 through -023). The inspector reviewed the processes used to estimate and track work activity specific exposures. These processes included those described in the previously-cited procedures, as well as two dose reports and a radiological engineering spreadsheet used to track work activity specific exposures, as listed in the List of Documents Reviewed section.

Verification of Dose Estimates and Exposure Tracking Systems (02.03.a)

The inspector reviewed the assumptions and basis for the current annual collective exposure estimate. The current annual collective exposure estimate for 2006 included routine work dose based on historical experience and six dose estimates for projects. The inspector confirmed that the dose estimates for the projects were reasonable with respect to both the dose rate and man-hour estimates.

b. Findings

No findings of significance were identified.

2OS3 Radiation Monitoring Instrumentation and Protective Equipment (71121.03)

a. Inspection Scope (2 samples)

The inspector reviewed the program for health physics instrumentation to determine the accuracy and operability of the instrumentation. During the tours of the reactor building, the turbine building, and the radioactive waste areas conducted during this inspection week, the inspector examined the calibration status and operability of selected radiation protection equipment in use in the plant. Also, the inspector performed a selective examination of documents (as listed in the List of Documents Reviewed section) for

regulatory compliance and adequacy in this area. The review was against criteria contained in 10 CFR 20.1501, 10 CFR 20 Subpart H, Technical Specifications, and licensee procedures. This inspection activity represents the completion of two samples relative to this inspection area (i.e., inspection procedure sections 02.01 and 02.02) in partial fulfillment of the biennial inspection requirements.

#### Inspection Planning (02.01)

During this inspection, the inspector reviewed the site's Updated Final Safety Analysis Report (UFSAR) to identify applicable radiation monitors associated with transient high and very high radiation areas including those used in remote emergency assessment. This review included area radiation monitors associated with the feed water heaters, the radiological waste sump area, the transverse in-core probe room, and the condensate demineralizer regeneration room. Emergency assessment instrumentation included the main steam line monitors, the main stack high range monitors, and the drywell atmospheric high range radiation monitoring system. The inspector also reviewed the type of instrumentation available for continuous air monitoring and for portable alarming area radiation monitors that are used to identify changing radiological conditions such that actions to prevent an overexposure may be taken.

#### Identify Additional Radiation Monitoring Instrumentation (02.02)

During this inspection, the inspector identified the types of portable radiation detection and sampling instrumentation used for job coverage of high radiation area work. The inspector reviewed the radiation protection procedure listing for radiological instrumentation, discussed instrumentation issues with cognizant radiation protection personnel, and observed portable radiation detection and sampling instrumentation which was being used and/or was available for use in the radiologically controlled area. The inspector also identified the types of radiation detection instruments utilized for personnel release from the radiologically controlled area and for whole body counting.

#### b. Findings

No findings of significance were identified.

#### 4. OTHER ACTIVITIES [OA]

##### 4OA1 Performance Indicator Verification (71151)

#### c. Inspection Scope (3 samples)

The initiating event cornerstone performance indicator (PI) data for unplanned scrams per 7,000 critical hours; unplanned scrams with loss of normal heat removal; and unplanned power changes per 7,000 critical hours were reviewed to assess the completeness and accuracy of the reported information. Specifically, PI data for the years 2004 and 2005 was reviewed and compared to information contained in NRC inspection reports, Licensee Event Reports, and operator logs. This inspection activity represented three samples.

Enclosure



d. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)Reactor Safety Cornerstone.1 Daily Review of Corrective Action Program Issuesa. Inspection Scope

As required by Inspection Procedure 71152, "Identification and Resolution of Problems", the inspector performed a screening of each item entered into the licensee's corrective action program. This review was accomplished by reviewing printouts of each condition report, attending daily screening meetings and/or accessing the licensee's database. The purpose of this review was to identify conditions such as repetitive equipment failures or human performance issues that might warrant additional follow-up.

b. Findings

No findings of significance were identified.

.2 Problem Identification and Resolution In-Depth Sample(s)

Emergency Diesel Generators Inoperable due to High Ambient Temperatures

a. Inspection Scope (1 PI&R sample)

The licensee declared both emergency diesel generators (EDGs) inoperable for brief periods during the summer of 2005 when ambient air temperatures went above the procedure limits of 95 degrees F and 93 degrees F for the A EDG and B EDG, respectively (reference Event Notification EN 41799). The licensee retracted EN 41799 on August 12, 2005, based on an interim operability determination. The EDG issues were documented in Condition Report 200503151 and in NRC Inspection Report 2005-04. During this inspection, the inspector reviewed the licensee long term corrective actions and final engineering evaluations for the EDGs.

The inspector reviewed the evaluations documented in Engineering Request ER 05116734, "EDG X-107A/B Design Basis Thermal Operating Limits," issued on 10/27/05, that were completed to establish the current design basis for the EDG thermal limits of operation. The inspector reviewed the emergency diesel licensing and design bases, including Calculation M1276 which provided a new model and heat balance calculation for the diesel engine. The inspector reviewed the Operability Determination completed on October 27, 2005, which provided the analytical bases for the conclusion that the EDGs remained operable for the site extreme maximum temperatures as described in FSAR Section 2.3. The inspector reviewed test data for EDG operating parameters and ambient

conditions during monthly tests conducted from 1999 to 2005. The inspector reviewed procedures affected by the engineering evaluation, including 2.1.12.1, 2.2.8, 8.9.1, 7.8.1, 2.1.35 and 2.2.108. The references used in this review are listed in the attachment to this report.

b. Findings and Observations

No findings of significance were identified. The licensee developed appropriate corrective actions to address the adverse condition and completed a thorough engineering evaluation to demonstrate the EDGs remained operable for the site extreme maximum temperatures described in FSAR Section 2.3. These actions restored the licensing design basis in FSAR Section 2.3. The ER which established the current design basis for the EDG thermal limits of operation was supported by calculations which included the results of past analyses and modifications and was appropriately benchmarked with actual test data. The ER provided appropriate justification that no operability limits were exceeded with ambient temperatures up to at least 105 degrees F. Procedures were changed to reflect the new design limits and operating parameters. The corrective actions were appropriate to address the root and contributing causes.

Radiation Safety Cornerstone

.3 Occupational Radiation Safety

a. Inspection Scope (71121)

The inspector selected six issues/condition reports (CRs) identified in the CAP for detailed review (i.e., 2004-01824 and 2005-04635, -05066, -05085, -05200, and -05264). The issues were associated with the following: dose of record exceeding electronic dosimeter dose; evaluation of a highly radioactive object; unplanned dose due to human performance; movement of a contaminated area boundary; missing LHRA keys; and noncompliance with a HRA RWP; respectively. The documented reports for the issues were reviewed to determine whether the full extent of the issues were identified, appropriate evaluations were performed, and appropriate corrective actions were specified and prioritized.

b. Findings

No findings of significance were identified.

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

Section 1R14 of this report describes a cross-cutting aspect in the area of problem identification and resolution involving failure to thoroughly evaluate a degraded condition.

#### 4OA6 Meetings, Including Exit

##### Exit Meeting Summary

On April 6, 2006, the inspectors presented the inspection results to members of Entergy management led by Mr. Pete Dietrich. The inspectors confirmed that there was no information that Entergy considered proprietary included in this report.

#### 4OA7 Licensee-Identified Violations

The following violation of very low safety significance (Green) was identified by Entergy and is a violation of NRC requirements which meets the criteria of Section VI of the NRC Enforcement Policy for being dispositioned as a Non-cited Violation.

- .1 Technical Specification 5.4.1, "Procedures," requires written procedures be established, implemented, and maintained covering the activities in Regulatory Guide (RG) 1.33. Procedures for Maintenance and Tagging Controls are required per Appendix A to RG-1.33. Entergy procedure 8.B.14 provides for the completion of hot work when appropriate compensatory measures are established, which was conducted per MR 02104136 in the B Reactor Building Closed Cooling Water (RBCCW) room on January 11, 2006. Fire detection for C222 Zone 2B was disabled during the hot work per tagout 33-0010-E122B. Contrary to the above, plant operators failed to restore fire detection to C222 Zone 2B when compensatory measures were relaxed following the completion of hot work in the B RBCCW room on January 13, 2006. The B RBCCW room was without its primary means of fire detection for about 2 weeks until the fire zone protection was restored on January 31, 2006. The licensee corrective actions included a review to determine that other fire zones were adequately protected or compensatory measures were in place. The licensee also conducted a review to identify the cause of the human error and additional corrective actions. The licensee addressed this matter, along with actions to prevent recurrence, in Condition Report 200600415.

ATTACHMENT: SUPPLEMENTAL INFORMATION

**SUPPLEMENTAL INFORMATION**

KEY POINTS OF CONTACT

Licensee personnel:

P. Dietrich	General Manager Plant Operations
D. Noyes	Assistant Operations Manager
E. Olson	Operations Manager
V. Fallacara	Training Manager
T. Trask	System Engineering Manager
B. Ford	Licensing Manager
B. Grieves	Quality Assurance Manager
W. Coady	ALARA Specialist
L. Foreaker	Radiological Support Supervisor
J. Gaedtke	System Engineer
P. Harizi	Design Engineer
J. Kalb	Design Engineer
K. Lane	Component Engineer
P. Leavitt	Chemistry
W. Lobo	Licensing Specialist
W. Mauro	ALARA Supervisor
J. McClellan	Quality Specialist-Quality Assessment
B. McDonald	Radiation Protection Specialist (Support)
P. McNulty	Radiation Protection Manager
F. Mulcahy	System Engineer
A. Niederburger	System Engineer
K. Sejkora	Effluent Engineer
D. Selig	Programs and Components Supervisor
P. Smalley	Chemistry Specialist
D. Smith	Mechanical Maintenance
D. Sukanek	Waste Control Specialist
J. Taormina	Work Control Supervisor
T. Tetzlaff	Radiological Operations Supervisor
G. Zavaski	Radiation Protection Specialist (Projects)

Other:

M. Hooper Senior Nuclear Engineer, WMG, Inc.

NRC personnel:

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

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Open and Closed

NCV 0500293/2006002-001, Failure to evaluate failed AOG bypass valve contributes to manual reactor scram.

LIST OF DOCUMENTS REVIEWED

**References for Section 1R01**

Procedure 8.C.40, Cold Weather Surveillance, Revision 16  
Condition Report 200505229  
Maintenance request MR 04113887  
Engineering Request ER 05116734, EDG X-107A/B Design Basis Thermal Operating Limits Calculation M1276, EDG X-107A/B Design Basis Thermal Operating Limits  
Procedure 2.1.42, Operation During Severe Weather, Rev 4  
Procedure 2.1.37, Coastal Storm-Preparations and Actions

**References for Section 1R04**

Procedure 2.2.22, Reactor Core Isolation Cooling System (RCIC) Rev 63  
Procedure 2.2.19, Residual Heat Removal (RHR) Rev 90  
Procedure 8.C.34, Operations Technical Specifications Requirements for Inoperable Equipment  
RHR System Health Report fourth quarter 2005  
CR-2005-04805, 02304, 05142, 03978, 03973  
P&ID Drawings : RHR - M241; RCIC - M245; HVAC -M286, M287, and M646.  
Procedure 2.2.134, TSC - HVAC System Normal and Post Accident Operation  
Procedure EP-AD-302, Facilities and Equipment Surveilamces  
Procedure EP-IP-220, TSC Activation and Response  
Procedure EP-IP-229, TSC/OSC Equipment Operation  
Procedure 2.3.1, General Action For Alarm Response and Annunciator Control  
Procedure 1.3.34.4, Compensatory Measures  
CR 200600842, 200601275,

**References for Section 1R05**

Specification M570, Fire Barrier and Secondary Containment Penetration Seal Systems  
5.5.2, Special Fire Procedure, Attachment 14, Cable Spreading Room, Computer Room, Vital MG Set EI 23'  
89XM-1-ER-Q-E5, Fire Hazards Analysis, (Fire Zone 3.2)  
Fire Watch Sheet 06-020, Cable Spreading Room

**References for Section 1R07**

DRN 05-06837, sheet 1 of 6, Hydrographic Survey of Intake Channel, rev 4  
C1314, 05 Soundings Pilgrim Station Intake Channel of 11/21/05, rev 5, 1/06  
C1315, Cross Sections Pilgrim Station Intake Channel, rev 5, 1/06  
C1316 sh 1, Cross Sections Pilgrim Station Intake Structure, rev 5, 1/06  
C1314, 03 Soundings Pilgrim Station Intake Channel of 10/8/03, rev E3, 11/03  
C1315, Cross Sections Pilgrim Station Intake Channel, rev E3, 1/03

C1316 sh 1, Cross Sections Pilgrim Station Intake Structure, rev E3, 1/03  
 C1314, 02 Soundings Pilgrim Station Intake Channel of 6/10/02, rev E2, 8/02  
 C1315, Cross Sections Pilgrim Station Intake Channel, rev E2, 8/02  
 C1316 sh 1, Cross Sections Pilgrim Station Intake Structure, rev E2, 8/02  
 C1314, 99 Soundings Pilgrim Station Intake Channel of 12/12/99, rev E1, 5/00  
 C1315, Cross Sections Pilgrim Station Intake Channel, rev E1, 5/00  
 C1316 sh 1, Cross Sections Pilgrim Station Intake Structure, rev E1, 5/00  
 C1314, 97 Soundings Pilgrim I Station Intake Channel of 8/27/97, rev E0, 5/98  
 C1315, Cross Sections Pilgrim I Station Intake Channel, rev E0, 5/98  
 C1316, Cross Sections Pilgrim Station Intake Channel Sh 2, rev E0, 5/98  
 1455-19, Plan showing Existing Conditions after Dredging Intake Waterway, rev 0, 12/13/82  
 C-417, Waterfront Development General Plan Alternate "8", rev 5  
 M11-26-2 sh 2, RBCCW E-209A Tube Layout as of April 2003, rev E8  
 M11-26-x sh 3, RBCCW E-209B Tube Layout, rev E8  
 M212 Sh 1, P&ID Service Water System, rev E87, 5/05  
 M215 Sh 5, Composite P&ID Cooling Water System Reactor Building, rev E8, 9/03  
 EN LI-102, Corrective Action Process, rev 4, 12/8/05  
 Procedure No. 2.2.32, Salt Service Water System (SSW), rev 73, Attachment 7  
 Procedure No. 2.2.32 Att 7, Sys 30 RBCCW HX Fouling Eval, rev 73  
 Procedure No. 3.M.4-114, Preventive Maintenance Program for the Heating, Ventilation, and Air Condition Systems (HVAC), rev 10  
 Procedure No. 7.8.1, Chemistry Sample and Analysis Program, rev 40, Attachments 14 and 18  
 NOP02E1, Service Water Inspections, Maintenance, and Testing in Response to Generic Letter 89-13, rev 1, 3/04  
 Procedure No. 2.2.47, High Pressure Coolant Injection Room Area Coolers, rev 16  
 Procedure No. 2.2.48, Reactor Building Quadrants Cooling and Ventilation System, rev 14  
 Procedure No. 8.C.30, Reactor Building Ventilation Monthly, rev 20, performed on 12/29/05  
 Procedure No. 8.C.30, Reactor Building Ventilation Monthly, rev 20, performed on 5/25/05  
 Procedure No. 8.C.30, Reactor Building Ventilation Monthly, rev 20, performed on 1/8/05  
 BECo 90-047, Response to NRC Generic Letter 89-13 Service Water System Problems Affecting Safety-Related Equipment, 4/2/90  
 BECo Ltr 96-090, Thirty Day Response to Generic Letter 96-06, Assurance of Equipment Operability and Integrity During Design-Basis Accident Conditions, 10/29/96  
 BECo Ltr 97-006, 120 Day Response to Generic Letter 96-06, Assurance of Equipment Operability and Integrity During Design-Basis Accident Conditions, undated copy  
 BECo Ltr 97-095, Update of GL 89-13 Response, 9/18/97  
 BECo Ltr 2.98.123, Response to Request for Additional Information Dated July 14, 1998 For Resolution of Generic Letter 96-06 Issues at Pilgrim Nuclear Power Station, Unit 1, 10/1/98  
 LO-2003-00056, Biofouling Monitoring & Control Program Assessment, 3/2/04  
 System Health Report, 29-Salt Service Water System, Fourth Quarter 2005  
 System Health Report, 30-Reactor Building Closed Cooling Water System, Fourth Quarter 2005  
 SDBD-29, System Design Basis Document for the Salt Service Water (SSW) System, rev E1, 10/5/05  
 SDBD-30A, System Design Basis Document for the Reactor Building Closed Cooling Water (RBCCW) System, rev E0, 4/24/01  
 Procedure No. 8.5.3.14.1, RBCCW Heat Exchanger Thermal Performance Test, rev 4, performed on "B" HX E-209B on 4/20/03

PD04690.01, Record of Eddy Current Inspection of Reactor Building Component Cooling Water Heat Exchanger E-209B, April 05  
V-0306, American Air Filter Air Handling Units, Filters and Unit Heaters, rev 12  
V-0375, [Buffalo Forge] Axial and Propeller Fans, Roof Ventilators, and Cabinets, rev 5, 4/20/04  
V-1041, Engineering & Fabricators, Inc. Heat Exchangers, rev 11, 7/28/04  
CDCN 05-158, SSW & RBCCW Safety-related Piping & Heat Exchanger Inspection, Maintenance, and Test Requirements in Response to Generic Letter 89-13, rev E7  
MR03117440, VAC-202B (RCIC Area Cooler) Slight Vibration on fan belts, rev 0  
MR06101439, While Performing 8.C.30 found VAC-202B belts loose and squealing

**References for Section 1R12**

ENN-DC-171, Maintenance Rule Monitoring  
ENN-DC-121, Maintenance Rule  
Maintenance Rule System Structure Component (SSC) Basis Document - NE16.03, Pilgrim Nuclear Power Station Maintenance Rule HVAC Belt Driven Fans (a)(1) Action Plan  
Pilgrim Nuclear Power Station System Health Report 4<sup>th</sup> Quarter 2005  
Top Ten Action Plan - HVAC System Backlogs, Update 1/12/2006  
HVAC system 24 Condition Reports January 2001- February 2006  
HVAC system 24 Work Requests/Maintenance Records January 2001 - February 2006  
P&ID Drawings: HVAC -M286, M287, and M646.  
Procedure 3.M.4-114, Preventive Maintenance Program for the Heating, Ventilation, and Air Conditioning System (HVAC)  
Procedure 3.M.4-71, TSC HVAC System Maintenance

**References for Section 1R13**

Procedure 1.3.34.15, Protected Area Postings  
Procedure 1.5.22, Risk Assessment Process  
MR 06101532, Cable Spreading Room Fire Barrier Repair  
Specification M570, Fire Barrier and Secondary Containment Penetration Seal Systems  
8.B.14 Hourly Fire Watch Sheet 06-020, Cable Spreading Room  
Maintenance Inspection Report 06-0013  
Condition Reports 20060562, 200600415  
MR 02104136  
Procedure 8.B.14, Fire Protection Technical Requirements  
Tagout 33-0010-E122B Hot Work

**References for Section 1R14**

Power maneuvering plan MAN.C16-18R1  
Procedure 2.1.14, Station Power Changes  
Procedure 2.2.135, TSC Uninterruptible Power Supply System Operation  
Procedure 2.4.A.23, Loss of 23KV Line  
Procedures 2.1.10, Computer Data and Alarms  
Condition Reports 20060241, 20060242 and 20060243  
Drawing ESK-TSC-1, TSC Electrical System One Line Diagram, Rev 0

**References for Section 1R23**

TA-06-1-07, Provide Power to EPIC Modules from Y2 Breakers 5 and 15



ER 06101373 Technical Evaluation for TA 06-1-07  
Drawings E14, E203, and M226A3  
Procedure 2.2.16, 120/240 AC Vital Services Instrument Power Supply (Y2)  
Procedure 2.2.10, Augmented Off-Gas Building and Recombiner Room Heating Cooling Air Conditioning

**References for Section 1EP4**

Pilgrim Nuclear Power Station Emergency Plan, Rev. 30 & 31  
EP-IP-100, Emergency Classification and Notification, Rev. 25  
EP-IP-100.1, Emergency Action Levels (EALs), Rev. 2

**References for Section 20S1**

Procedure No. ENN-RP-106, Rev. 1, Radiological survey documentation  
Procedure No. EN-RP-141, Rev. 0, Job coverage  
Procedure No. 1.3.114, Rev. 25, Conduct of operations  
Procedure No. 1.16.1, Rev. 8, Spent fuel pool non-SNM inventory control  
Procedure No. 5.4.3, Rev. 18, Refueling floor high radiation  
Procedure No. 6.1-009, Rev. 11, Radiological controls for handling highly radioactive objects and refuel floor activities  
Procedure No. 6.1-014, Rev. 18, High radiation area control  
Procedure No. 6.1-031, Rev. 20, Radiation work permits  
Procedure No. 6.3-061, Rev. 17, Radiological survey techniques  
Pilgrim Station daily dose reports for January 30 and 31 and for February 1 and 2  
RWP No. 06-0020, Rev. 00, Set up, transfer, cap, weigh, survey, store, and prep for shipment of resin  
RWP No. 06-0061, Rev. 01, Visual, eddy current, and ultrasonic testing for failed fuel examination  
Status board list of current locations posted as VHRAs, LHRAs, and HRAs  
Pilgrim fuel pool clean out project - preliminary schedule as of January 14, 2006

**References for Section 20S2**

Procedure No. 6.1-031, Rev. 20, Radiation work permits  
Procedure No. 6.10-020, Rev. 10, ALARA work reviews  
Procedure No. 6.10-021, Rev. 6, Station ALARA performance  
Procedure No. 6.10-022, Rev. 8, ALARA engineering controls  
Procedure No. 6.10-023, Rev. 4, ALARA planning assessments  
Post-job ALARA review for review no. 05-013 (RWP No. 05-0110) for reactor water clean up piping work  
Pilgrim Station 2006 dose goals by project  
2006 Station Dose goals  
ALARA five-year plan (2006 - 2010), as of February 1, 2006  
RWP daily exposure between 04/18/2005 and 05/12/2005  
BWR Radiation level Assessment and Control (BRAC) survey data for RFO 15  
Dose reports and spreadsheet utilized to track work activity specific exposures

- Specific RWP dose by date report (listing RWP/task-description, actual hours to date by RWP, and actual dose to date by RWP),
- Daily dose report for an RFO (listing work activity description, actual dose



to date by work activity, total estimated dose for completion by work activity, and percent of estimate), and

- Radiological engineering spreadsheet for an RFO (listing component, description, RWP, maintenance request, location, zone, total estimated hours for completion by RWP, total estimated rem for completion by RWP, and engineering controls).

Oversight observation checklist O2C-PNPS-2006-0125, January 12, 2006, ALARA/radiation worker practices

**References for Section 20S3**

10 CFR Part 61 Semi-annual review for October 2005 composite sample dated December 15, 2005

**References for Section 40A2**

Condition Report 200503151  
 ER 05116734 "EDG X-107A/B Design Basis Thermal Operating Limits  
 Procedures 2.1.12.1, 2.2.8, 2.2.108, 2.1.35 and 7.8.1  
 licensee event reports LERs 97-21, 98-18, 99-06  
 Event Notification EN 41799  
 Calculation M1276  
 FSAR Section 2.3

LIST OF ACRONYMS

ADAMS	Agencywide Documents Access and Management System
ALARA	As Low As Reasonable Achievable
AOG	Augmented Off-Gas
ASME	American Society of Mechanical Engineers
CAP	Corrective Action Program
CCWS	Closed Cooling Water System
CDCN	Controlled Document Change Notice
CFR	Code of Federal Regulations
CR	Condition Report
DBD	Design Basis Document
EALs	Emergency Action Levels
EDG	Emergency Diesel Generator
FF	Functional Failure
FSAR	Final Safety Analysis Report
GL	Generic Letter
HDR	High Dose Rate
HPCI	High Pressure Coolant Injection
HRA	High Radiation Area
HVAC	Heating, Ventilation, and Air Conditioning
HX	Heat Exchanger
IR	Inspection Report

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LHRA	Locked High Radiation Area
MPFF	Maintenance Preventable
MR	Maintenance Request
NCV	Non-Cited Violation
NOP	Nuclear Organization Procedure
NRC	Nuclear Regulatory Commission
OA	Other Activities
OS	Occupational Radiation Safety
PARS	Publicly Available Records
PI	Performance Indicator
PI&R	Problem Identification and Resolution
PNPS	Pilgrim Nuclear Power Station
QASR	Quality Assurance Surveillance Report
RBCCW	Reactor Building Component Cooling Water
RCIC	Reactor Core Isolation Cooling
RG	Regulatory Guide
RHR	Residual Heat Removal
RMPFF	Repetitive Maintenance Preventable
RPM	Radiation Protection Manager
RWP	Radiation Work Permit
SDP	Significant Determination Process
SSC	System, Structure, and Component(s)
SSW	Salt Service Water
TBCCW	Turbine Building Component Cooling Water
VAC	Volts Alternating Current
UFSAR	Updated Final Safety Analysis Report
UAT	Unit Auxiliary Transformer
VHRA	Very High Radiation Area
WRT	Work Request Tag