UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PA 19406-1415

November 9, 2010

Mr. Kevin Bronson
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 EVALUATION OF CHANGES, TESTS, AND EXPERIMENTS AND PERMANENT MODIFICATIONS TEAM INSPECTION REPORT 05000293/2010006

Dear Mr. Bronson:

On September 30, 2010, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at the Pilgrim Nuclear Power Station (PNPS). The enclosed inspection report documents the inspection results, which were discussed on September 30, 2010, with Mr. R. Smith, General Manager Pilgrim Operations, and other 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. In conducting the inspection, the team reviewed selected procedures, calculations and records, observed activities, and interviewed station personnel.

Based on the results of this inspection, no findings were identified.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Docket Room or from the Publicly Available Records (PARS) component of 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,

Lawrence T. Doerflein, Chief
Engineering Branch 2
Division of Reactor Safety

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

Enclosure: Inspection Report No. 05000293/2010006
w/ Attachment: Supplemental Information

cc w/encl: Distribution via ListServ

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/RA/

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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No.:	50-293
License No.:	DPR-35
Report No.:	05000293/2010006
Licensee:	Entergy Nuclear Operations, Inc.
Facility:	Pilgrim Nuclear Power Station (PNPS)
Location:	600 Rocky Hill Road Plymouth, MA 02360
Inspection Period:	September 13 - 30, 2010
Inspectors:	P. McKenna, Reactor Inspector, Division of Reactor Safety (DRS), Team Leader J. Rady, Reactor Inspector, DRS J. Schoppy, Senior Reactor Inspector, DRS
Approved By:	Lawrence T. Doerflein, Chief Engineering Branch 2 Division of Reactor Safety

SUMMARY OF FINDINGS

IR 05000293/2010006; 09/13/2010 – 09/30/2010; Pilgrim Nuclear Power Station; Engineering Specialist Plant Modifications Inspection.

The report covers a two week on-site inspection of the evaluations of changes, tests, or experiments and permanent plant modifications. The inspection was conducted by three region based engineering inspectors. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

No findings were identified.

REPORT DETAILS

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R17 Evaluations of Changes, Tests, or Experiments and Permanent Plant Modifications (IP 71111.17)

.1 Evaluations of Changes, Tests, or Experiments (29 samples)

a. Inspection Scope

The team reviewed one safety evaluation to determine whether the change to the facility or procedures, as described in the Updated Final Safety Analysis Report (UFSAR), had been reviewed and documented in accordance with 10 CFR 50.59 requirements. In addition, the team evaluated whether Entergy had been required to obtain NRC approval prior to implementing the change. The team interviewed plant staff and reviewed supporting information including calculations, analyses, design change documentation, procedures, the UFSAR, the Technical Specifications (TSs), and plant drawings to assess the adequacy of the safety evaluation. The team compared the safety evaluation and supporting documents to the guidance and methods provided in Nuclear Energy Institute (NEI) 96-07, "Guidelines for 10 CFR 50.59 Evaluations," as endorsed by NRC Regulatory Guide 1.187, "Guidance for Implementation of 10 CFR 50.59, Changes, Tests, and Experiments," to determine the adequacy of the safety evaluation.

The team also reviewed a sample of twenty eight 10 CFR 50.59 screenings and applicability determinations for which Entergy had concluded that no safety evaluation was required. These reviews were performed to assess whether Entergy's threshold for performing safety evaluations was consistent with 10 CFR 50.59. The sample included design changes, calculations, procedure changes, and setpoint changes.

The team reviewed the one safety evaluation that Entergy had performed during the time period covered by this inspection (i.e. since the last modifications inspection). The screenings and applicability determinations were selected based on the safety significance, risk significance, and complexity of the change to the facility.

In addition, the team compared Entergy's administrative procedures used to control the screening, preparation, review, and approval of safety evaluations to the guidance in NEI 96-07 to determine whether those procedures adequately implemented the requirements of 10 CFR 50.59. The reviewed safety evaluation, screenings, and applicability determinations are listed in the attachment.

b. Findings

No findings were identified.

.2 Permanent Plant Modifications (12 samples)

.2.1 Eliminate Mechanical Speed Switch on the 'A' Emergency Diesel Generator

a. Inspection Scope

The team reviewed a modification (Engineering Change (EC) 05592) that formally abandoned the unused mechanical speed switch on the 'A' emergency diesel generator (EDG). The mechanical speed switch, in addition to a switching tachometer pack, was designed to provide a closure permissive signal to the EDG output breaker. Replacement parts for the inoperable mechanical speed switch were obsolete. The PNPS EDGs include redundant overspeed trips. Entergy concluded that the mechanical speed switch was redundant for the EDG overspeed trip function and therefore not required.

The team assessed the modification to verify that the design bases and performance capability of the EDG had not been adversely impacted by removing the mechanical speed switch function. The team also discussed the impact of the modification on the EDG operation with responsible engineers and reviewed the status of this change for the remaining EDG. The team confirmed that the other EDG had received the same modification under a similar design change package. The team performed a field inspection of accessible portions of the switch to assess the quality of the modification work and the overall material condition of the equipment. The adequacy of the post-modification testing was verified and affected design documents were reviewed to ensure they had been properly updated. Additionally, the team reviewed the 10 CFR 50.59 screen associated with this modification as described in section 1R17.1 of this report. The documents reviewed are listed in the attachment.

b. Findings

No findings were identified.

.2.2 Emergency Diesel Generator Air Start Motor Upgrade

a. Inspection Scope

The team reviewed a modification (EC 12969) that upgraded the air start system on the 'B' EDG. Specifically, the modification replaced the original vane-type air start motors with upgraded twin turbine-type air start motors. The new turbine-type motors were more readily available, do not require air supply oil lubrication, require less maintenance, and provide equivalent or better engine start times with the same air supply. In addition, the modification replaced the associated pressure regulating valves, solenoid valves, and manual isolation valves with larger capacity valves to improve the air flow characteristics and to obtain maximum horsepower output of the air start motors. Entergy had previously implemented the modification on the 'A' EDG to improve air start system performance and EDG reliability.

The team reviewed the modification to verify that the design bases, licensing bases, and performance capability of the EDG and its air start support system had not been degraded by the modification. The team interviewed engineering staff and reviewed technical evaluations associated with the modification to determine if the EDG start air system would function in accordance with the design assumptions. The team performed several walkdowns of the start air system on both EDGs to independently assess Entergy's configuration control, the material condition of start air system piping and supports, and the validity of Entergy's design process inputs. The team reviewed the associated post modification test (PMT) results and EDG surveillance trend data to verify that the EDG start air system functioned as designed following the modification. In addition, the team reviewed relevant portions of the vendor manual to verify that Entergy installed and maintained the new air start motors as recommended. The team also reviewed corrective action condition reports (CRs) to determine if there were reliability or performance issues that may have resulted from the modification. Additionally, the team reviewed the 10 CFR 50.59 screen and engineering evaluation associated with this modification as described in section 1R17.1 of this report. The documents reviewed are listed in the attachment.

b. Findings

No findings were identified.

2.3 'B' EDG Voltage Balance Relay Replacement

a. Inspection Scope

The team reviewed a modification (EC 20346) that replaced the existing 'B' EDG GE type CFVB11A voltage balance relay (160-609) with an ABB circuit shield type 60 voltage balance relay. The ABB circuit shield type 60 voltage balance relay provides fast differential voltage detection for three-phase systems. It is used to detect a blown fuse in the 'B' EDG potential transformer circuit and to prevent improper tripping of the 'B' EDG voltage restrained overcurrent relay. The modification was performed because the existing voltage balance relay had a mechanical drift on one of its stationary contacts and it could not be relied upon for long term use. An ABB circuit shield type 60 voltage balance relay was installed because the existing GE model relay could not be obtained.

The review was performed to verify that the design bases, licensing bases, and performance capability of the 'B' EDG had not been degraded by the modification. The team reviewed technical evaluations to assess whether the modification was consistent with design assumptions. Power requirements were reviewed to verify that the new voltage balance relay did not adversely affect other support systems. Design assumptions were reviewed to evaluate whether they were technically appropriate and consistent with the UFSAR. The team also verified selected drawings, instrument calibration sheets, and procedures were properly updated based on the new component configuration. The team reviewed the PMT and surveillance testing to verify proper operation of the equipment. The team also reviewed CRs associated with the equipment to determine if there were reliability or performance issues that may have resulted from

the modification. The team performed a walkdown of the accessible components of the equipment to identify any abnormal conditions and to verify proper operation of the equipment while in-service. Additionally, the team conducted interviews with engineering staff to determine if the EDG would function in accordance with the design assumptions. Finally, the 10 CFR 50.59 screening determination associated with this modification was reviewed as described in section 1R17.1 of this report. The documents reviewed are listed in the attachment.

b. Findings

No findings were identified.

.2.4 Change Condensate Storage Tank High Pressure Coolant Injection Low Level Transfer Setpoint

a. Inspection Scope

The team reviewed a modification (EC 12609) that increased the setpoint for the condensate storage tank (CST) low water level high pressure coolant injection (HPCI) system suction transfer. This setpoint was increased to protect the critical submergence level of the HPCI suction supply. This modification was initiated in response to a NRC-identified condition that Entergy had used a non-conservative calculation method to determine the critical CST water level which would preclude vortex formation at the suction of the HPCI pump. (NCV 05000293/2006006-01, NRC Integrated Inspection Report 50-293/2006-06, Section 1R21.2.1.1: Condensate Storage Tanks (T-105A&B)).

The team reviewed the calculations that were revised to determine the new setpoint. The team assessed the validation method of vortex formation to ensure vortex formation did not occur in the CST during transfer. The team verified that the CST automatic transfer process setpoint was above the calculated level required to maintain adequate pump suction conditions. Design assumptions, methodologies, and inputs into the calculation were reviewed to evaluate whether they were technically appropriate, conservative, and consistent with the UFSAR. The team reviewed the work order and the associated post-modification testing to verify proper operation of the setpoint. The team also reviewed condition reports associated with the CST automatic transfer process setpoint to determine if there were reliability or performance issues that may have resulted from this modification. Additionally, the team discussed the modification and design basis with design engineers to assess the adequacy of the modification. Finally, the team reviewed the 10 CFR 50.59 screen associated with this modification as described in section 1R17.1 of this report. The documents reviewed are listed in the attachment.

b. Findings

No findings were identified.

.2.5 Torus Cooling/Spray Block Valve Disc Replacement

a. Inspection Scope

The team reviewed a modification (EC 4355) that replaced the disc on the 'B' torus cooling/spray block valve (MO-1001-34B). The valve is a safety-related motor-operated valve (MOV) in the 'B' residual heat removal (RHR) system that has an active safety function to open/close for torus spray or cooling and to close for containment isolation. Entergy implemented the modification to improve the thrust margin without challenging the valve's weak link thrust limits. Diagnostic tests had indicated that the thrust margin at torque switch trip had been decreasing over time and torque switch setting increases were limited as the resulting opening and closing thrusts approached the valve's weak link thrust limits. Entergy's weak link analysis for MO-1001-34B indicated that the disc was the weak link in both the opening and closing directions. The modified disc design improved the weak link thrust limits and resulted in increased thrust margin.

The team reviewed the modification to verify that the design bases, licensing bases, and performance capability of the RHR system and the valve's containment isolation function had not been degraded by the modification. The team reviewed calculations and technical evaluations to verify that the valve would function in accordance with design assumptions. The team reviewed the associated PMTs (including diagnostic, stroke time, and leak rate testing) to verify that test results appropriately supported system operability. The team walked down the valve to verify that Entergy had adequately restored the valve and its support systems, maintained configuration control, and had not impacted the operation of other safety-related structures, systems, and components (SSCs) located in the vicinity. The team conducted interviews with MOV design engineers to determine if the valve would function in accordance with technical and design assumptions. Additionally, the team reviewed the 10 CFR 50.59 screen and engineering evaluation associated with this modification as described in section 1R17.1 of this report. The documents reviewed are listed in the attachment.

b. Findings

No findings were identified.

.2.6 Augmented Offgas System Recorder Replacement

a. Inspection Scope

The team reviewed a modification (EC 10304) that replaced the existing Westronics paper strip chart recorder with a Thermo SV100 digital paperless chart recorder in the same location as the existing recorder. The augmented offgas system includes two separate and independent hydrogen analyzers. Each analyzer continuously monitors the percentage of hydrogen gas in the sample withdrawn from the offgas process line during its sample cycle. The modification was performed because the control room augmented offgas system recorder (AR-R603) had become a source of increased maintenance as it aged and the parts needed to repair the existing Westronics strip chart recorder were

difficult to obtain. The modification included terminating the signal output wiring from the two hydrogen analyzers to the new digital paperless recorder (AR-R603) on control room panel CP600.

The review was performed to verify that the design bases, licensing bases, and performance capability of the augmented offgas system recorder had not been degraded by the modification. The team reviewed power requirements to verify that the new digital paperless recorder met the manufacturer's specifications. Design assumptions were reviewed to evaluate whether they were technically appropriate and consistent with the UFSAR. Instrumentation alarm setpoints were reviewed to ensure design limits were not exceeded. The team also verified selected drawings, configuration data sheets, calibration data sheets, and procedures were properly updated based on the new system configuration. The team reviewed the PMT to verify the system would function in accordance with design requirements. The team also reviewed CRs associated with the equipment to determine if there were reliability or performance issues that may have resulted from this modification. The team performed a walkdown of the accessible components of the system to identify any abnormal conditions and to verify proper operation of the system while in-service. Additionally, the team conducted interviews with engineering personnel to determine if the augmented offgas system would function in accordance with the design assumptions. Finally, the 10 CFR 50.59 screening associated with this modification was reviewed as described in section 1R17.1 of this report. The documents reviewed are listed in the attachment.

b. Findings

No findings were identified.

.2.7 Install Isolation Switch and Reconfigure Solenoid Light Circuits for Reactor Head Vent Valves

a. Inspection Scope

The team reviewed a modification (EC 14506) that rewired the four control room indicating lights for the reactor head vent valves and installed a remote disconnect switch for control power to vent valve AO-220-46. The modification was performed to ensure that at least one (AO-220-46) of the two series-connected air operated globe valves satisfied the 10 CFR 50 Appendix R (Fire Protection System) requirement to remain closed during a fire in any area of the plant. This modification was necessary to ensure that fires would not create a circuit path to spuriously open SV220-46, the normally de-energized air control valve for AO-220-46.

The team reviewed the modification to ensure it was consistent with the design and licensing bases, including the 10 CFR 50, Appendix R fire safe shutdown analysis. The team reviewed the work order and PMT results to verify proper operation of the indicating lights and the disconnect switch. The team performed a walkdown to assess the system material condition and the installed configuration of the remote disconnect switch. The team also reviewed affected plant procedures and drawings to verify they were

appropriately updated. Additionally, the team conducted interviews with engineering staff to determine if the disconnect switch and vent valves would function in accordance with technical and design assumptions. Finally, the team reviewed the 10 CFR 50.59 screen associated with this modification as described in section 1R17.1 of this report. The documents reviewed are listed in the attachment.

b. Findings

No findings were identified.

.2.8 High Pressure Coolant Injection System Control Cables Replacement

a. Inspection Scope

The team reviewed a modification (EC 11460) that replaced HPCI control power cables SBNS11F and SBNS11I. These instrument cables are environmentally qualified components in the safety-related HPCI system. Portions of these cables are exposed to elevated temperatures in the condenser bay. Based on cable testing, Entergy determined that the cables were approaching their qualified end-of-life and initiated corrective actions to replace the cables during the May 2009 refueling outage.

The team reviewed the modification to verify that the design bases, licensing bases, and performance capability of the HPCI system had not been degraded by the cable replacement. The team reviewed the post modification test plan, the updated environmental qualification (EQ) file for the cables, Entergy's electrical cable specification, and the cable and electrical raceway schedule to assess Entergy's design control. The team reviewed post-outage HPCI surveillance tests to verify proper operation of the HPCI system. The team also reviewed corrective action CRs to determine if there were reliability or performance issues that may have resulted from the modification. The team performed a walkdown of the accessible portions of the conduit run, the control room instrument panel, and the HPCI system and controls to independently assess Entergy's configuration control and the material condition of the HPCI system. Additionally, the team reviewed the 10 CFR 50.59 screen and engineering evaluation associated with this modification as described in section 1R17.1 of this report. The documents reviewed are listed in the attachment.

b. Findings

No findings were identified.

.2.9 Replacement of the Reactor Manual Control System Automatic Sequence Timer Switch

a. Inspection Scope

The team reviewed a modification (EC 04523) that replaced the existing reactor manual control system (RMCS) automatic sequence timer switch (3A-S4) with a programmable logic controller (PLC). The RMCS transmits the necessary electrical signals to the

control rod drive hydraulic control unit directional control valves and prevents their opening during potential unsafe conditions. The modification was performed because the existing mechanically driven control timer switch was experiencing a loss of accuracy and reliability due to age and mechanical wear. Also, the existing timer was obsolete and no longer readily replaceable or serviceable. The modification included installing the new PLC in the same control panel as the existing mechanically driven timer switch.

The review was performed to verify that the design bases, licensing bases, and performance capability of the RMCS had not been degraded by the modification. The team reviewed electrical loading calculations to assess whether the modification was consistent with design assumptions. Power requirements were reviewed to verify that the new PLC installation did not adversely affect other support systems. Design assumptions were reviewed to evaluate whether they were technically appropriate and consistent with the UFSAR. The team also verified selected drawings, software, and procedures were properly updated based on the new system configuration. The team reviewed the PMT and surveillance testing to verify proper operation of the system. The team also reviewed CRs associated with the equipment to determine if there were reliability or performance issues that may have resulted from the modification. Additionally, the team conducted interviews with engineering staff and a walkdown of the system to determine if the RMCS would function in accordance with the design assumptions. Finally, the 10 CFR 50.59 screening associated with this modification was reviewed as described in section 1R17.1 of this report. The documents reviewed are listed in the attachment.

b. Findings

No findings were identified.

.2.10 Modify Main Steam Isolation Valve Leakage Pathway

a. The team reviewed a modification (EC 70945) that changed the main steam line drain piping configuration to establish an engineered steam leakage pathway for routing steam leakage from the main steam isolation valves (MSIV) to the main condenser. This modification replaced the valve and motor operator of MO-220-4 and MO-S-1, provided Class 1E reliable power to these valves, installed a new air-operated valve (AOV) AO-3086 in the MO-220-4 bypass line, and installed a new manual valve 1-HO-207 upstream of MO-220-4. This modification did not fully establish the steam leakage pathway to the main condenser. A second engineering change package will be issued to complete the pathway.

The team performed the review to verify that the design bases, licensing bases, and performance capability of the main steam system had not been degraded by the modification. The team reviewed Entergy's installation work order, including the adequacy of the post-modification testing results. The team interviewed engineering staff to determine if the performance of the main steam system was acceptable and in accordance with design assumptions. The team also reviewed affected plant procedures and drawings to verify they were appropriately updated. Additionally, the team reviewed

the 10 CFR 50.59 screen associated with this modification as described in section 1R17.1 of this report. The documents reviewed are listed in the attachment.

b. Findings

No findings were identified.

.2.11 Emergency Diesel Generator Building Roof Replacement

a. Inspection Scope

The team reviewed a modification (EC 8530) that removed and replaced the EDG building roof. Entergy determined that the EDG building roof had exceeded its design life and had deteriorated to the point that leaks had the potential to adversely impact the safety-related SSCs located below if not addressed.

The team reviewed the modification to verify that the design bases, licensing bases, and structural integrity of the EDG building had not been degraded by the modification. The team reviewed the installation work order, structural impact evaluation, and post-modification inspection results to verify that Entergy maintained appropriate configuration and design control. The team conducted several internal walkdowns of the EDG building to look for evidence (water staining and/or dripping) of potential roof leakage. The team also conducted a detailed external inspection of the EDG building roof following a prolonged rainfall to verify drain system functionality, to assess the material condition of the installed roof, and to ensure that no water pooling existed. The team also reviewed CRs to determine if there were any performance issues that may have resulted from the modification or any documented evidence of post-modification roof leakage. Additionally, the team reviewed the 10 CFR 50.59 screen and engineering evaluation associated with this modification. The documents reviewed are listed in the attachment.

b. Findings

No findings were identified.

.2.12 Reactor Pressure Boundary Leak Detection System Replacement

a. Inspection Scope

The team reviewed a modification (EC 03088) that replaced the existing reactor pressure boundary leak detection system (C-19B) with a General Atomics particulate and gaseous detection unit. The reactor pressure boundary leak detection system provides continuous air monitoring of the particulate and noble gas activity within the drywell. The modification was performed because the existing unit had high rates of component failures, was near the end of its useful life, and replacement parts were no longer available.

The review was performed to verify that the design bases, licensing bases, and performance capability of the new reactor pressure boundary leak detection system had not been degraded by the modification. The team reviewed technical evaluations to assess whether the modification was consistent with design assumptions. Power requirements were reviewed to verify that the system met the manufacturer's specifications. The team also verified selected drawings, instrument calibration sheets, and procedures were properly updated based on the new equipment installation. The team reviewed the PMT to verify proper operation of the new equipment. The team also reviewed CRs associated with the equipment to determine if there were reliability or performance issues that may have resulted from the modification. Additionally, the team conducted interviews with engineering staff and performed a walkdown of the accessible components of the equipment to verify whether the affected system functioned in accordance with the design assumptions. Finally, the 10 CFR 50.59 screening associated with this modification was reviewed as described in section 1R17.1 of this report. The documents reviewed are listed in the attachment.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA2 Identification and Resolution of Problems (IP 71152)

The team reviewed a sample of CRs associated with 10 CFR 50.59 and plant modification issues to determine whether Entergy was appropriately identifying, characterizing, and correcting problems associated with these areas, and whether the planned or completed corrective actions were appropriate. In addition, the team reviewed CRs written on issues identified during the inspection to verify adequate problem identification and incorporation of the problem into the corrective action system. The CRs reviewed are listed in the attachment.

b. Findings

No findings were identified.

4OA6 Meetings, Including Exit

The team presented the inspection results to Mr. R. Smith, General Manager Plant Operations, and other members of Entergy's staff at an exit meeting on September 30, 2010. The team returned the proprietary information reviewed during the inspection to the licensee and verified that this report does not contain proprietary information.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Entergy Personnel
S. Bethay, Director, Nuclear Safety Assurance
J. Bonner, Design Engineer
K. Bronson, Site Vice President
B. Byrne, Licensing Engineer
B. Chenard, System Engineering Manager
S. Das, Design Engineer
N. Eisenmann, Supervisor, Design Engineer
J. Falconieri, Senior Design Engineer
V. Fallacara, Engineering Director
J. Kalb, Design Engineer
J. Lynch, Licensing Manager
M. McClellan, MOV Design Engineer
R. Morris, System Engineer (EDGs)
G. Perry, Design Engineer
B. Rancourt, Senior Design Engineer
R. Smith, General Manager Pilgrim Operations
J. Turner, Design Engineer
T. White, Design Engineering Manager
M. Williams, Senior Operations Specialist

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

None

LIST OF DOCUMENTS REVIEWED

10 CFR 50.59 Evaluations
Evaluation # 3404, PNPS 2.2.21.5 HPCI Injection and Pressure Control, dated 4/6/10

10 CFR 50.59 Screened-out Evaluations
EC 3088, Replacement of C-19B Panel Drywell Leak Detection System, Rev. 0
EC 4355, Replacement Disc for MO-1001-34B, Process Applicability Determination, Rev. 0
EC 4523, Replacement of Existing Reactor Manual Control System (RMCS) Automatic Sequence Eagle Timer Switch (3A-S4), Rev. 0
EC 5592, Eliminate Mechanical Speed Switch on EDG A, Rev. 0
EC 8530, Remove and Replace the Emergency Diesel Generator (EDG) Building Roof, Process Applicability Determination, Rev. 0
EC 10304, Replacement of Augmented Offgas Hydrogen Recorder AR-R603 on Panel CP600, Rev. 0
EC 11460, High Pressure Coolant Injection System Control Cables Replacement, Process Applicability Determination, Rev. 0
EC 12609, Condensate Storage Tank HPCI Low Level Transfer Setpoint, Rev. 0

EC 12969, Emergency Diesel Generator Air Start Motor Upgrade, Process Applicability Determination, Rev. 0
EC 14506, Install Isolation Switch and Reconfigure Solenoid Light Circuits for Reactor Head Vent Valves to Improve Appendix R Analysis, Rev. 0
EC 19073, Replacement of DC MCC Overload Relays and Heaters for HPCI System MCC Units D814, D831, D864, D921, D944, D951, D964, D971, Rev. 0
EC 20346, Replacement of Voltage Balance Relay 160-609 for X-107B with New ABB Relay, Rev. 0
EC 70945, MSIV Leakage Pathway to the Condenser, Rev. 0
EP-IP100, Emergency Classification and Notification, Process Applicability Determination, dated 3/23/10
EP-PP-01, PNPS Emergency Plan, Process Applicability Determination, dated 7/27/10
Procedure 2.1.35, Control Room Readings, Process Applicability Determination, dated 11/9/09
Procedure 2.2.8, Standby AC Power System (Diesel Generators), Process Applicability Determination, dated 11/28/07
Procedure 2.2.16, 120/240V AC Vital Services Instrument Power Supply, dated 9/26/07
Procedure 3.M.4-6, Removal, Installation, Test, Disassembly, Inspection, and Reassembly of MSRVs, dated 4/4/08
Procedure 7.4.17, Drywell Continuous Atmospheric Monitoring System, dated 4/1/10
Procedure 8.7.1.6, Local Leak Rate Testing of the MSIVs, dated 12/11/07
Procedure 3.M.1-10.13, Pressure Measuring Test Equipment Calibration, dated 9/30/09
Procedure 3.M.4-92, Bolting and Torquing Guidelines, Process Applicability Determination, dated 10/18/07
Procedure 8.9.1 Emergency Diesel Generator and Associated Emergency Bus Surveillance, Process Applicability Determination, dated 10/30/08
Procedure 8.9.8.6, 'A' 24VDC Battery Acceptance or Performance Test, dated 11/23/09
Procedure 8.M.2-2.5.3, HPCI Steam Line High Temperature, dated 11/19/08
Retire Procedure 1.5.15, Seismic Evaluation and Administrative Control of Scaffolding, Process Applicability Determination, dated 12/17/08
TP08-041 Admin. Control for SDIV Solenoid Replacement SV-302-21D, Process Applicability Determination, dated 12/15/08

Audits and Self-Assessments

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M501, Minimum CST Level for Transfer of HPCI Pump Suction to Torus, Rev. 1
M578, Time to Drain HPCI Suction Piping, Rev. 0
M581, Stroke Time Requirements for MO-2301-6, MO-2301-35, and MO-2301-36, Rev. 1
M600, MOV Pressure Locking and Thermal Binding Evaluation, Rev. 6
M636, MOV Weak Link Summary, Rev. 4
M670, RCIC System Hydraulic Analysis, Rev. 2
M998, Design Basis for CST Reserve Capacity for HPCI/RCIC, Rev. 0
M1295, Minimum Submergence Water Level in CST for RCIC Suction, Rev. 1
S&SA-70, Condensate Makeup Requirements, Rev. 0

Completed Surveillance & Functional Test Procedures
2.1.31, Rod Worth Minimizer Operability, Rev. 11, performed 4/17/09
3.F.38.1, Diesel Generator Instrumentation and Function Test, performed 9/22/09
3.M.3-24.16, Quiklook Operations Procedure, performed 4/24/09
3.M.3-51, Electrical Termination Procedure, performed 9/24/09
3.M.3-61.2, Starting Air Bank Capacity Test for Two Consecutive Starts 'B' Emergency Diesel Generator, performed 9/26/09
3.M.3-61.5, Emergency Diesel Generator Two-Year Overhaul Preventive Maintenance, performed 6/18/08, 9/23/09, and 6/21/10
3.M.5-1, Roof and Exhaust Fan Inspection and Maintenance Program, performed 6/1/09 and 7/8/10
7.4.21, AOG Recombiner Hydrogen Analyzer Monthly Functional Check, performed 6/2/10, 6/28/10, 7/6/10, 8/3/10, 8/12/10, and 8/26/10
7.4.21, AOG Recombiner Hydrogen Analyzer Calibration Checklist, performed 10/6/09, 12/8/09, 3/4/10, 3/18/10, 4/17/10, 4/22/10, 5/10/10, 5/27/10, 6/7/10, 7/12/10, 8/20/10, 8/22/10, and 8/26/10
8.1.32, Determination of Limiting Stroke Time Acceptance Criteria for Inservice Testing and Appendix B Test Programs Power-Operated Valves, performed 4/28/09
8.5.2.3, LPCI and Containment Cooling Motor-Operated Valve Operability Test, performed 4/27/09
8.5.4.1, HPCI System Pump and Valve Quarterly and Biennial Comprehensive Operability, performed 11/18/08 and 5/22/09
8.5.4.3, HPCI Operability Demonstration and Flow Rate Test at 150 PSIG, performed 5/8/07 and 5/18/09
8.7.1.2.3, Seat Leakage Testing of Containment Isolation Valves on the RHR Test Return Lines, performed 4/20/07
8.7.1.5 Attachment 59, Local Leak Rate Testing MO-1001-34B, performed 4/25/09

8.9.1, Emergency Diesel Generator and Associated Emergency Bus Surveillance, performed 9/26/09, 8/16/10, 9/8/10, and 9/24/10
8.F.26, Condensate and Demineralized Water Storage and Transfer System Functional and Calibration Test, performed 11/6/09
8.M.2-2.10.4.2, HPCI Initiation Logic/High Water Level Trip Reset Test, performed 11/18/08
8.M.2-2.10.4.3, HPCI Simulated Automatic Actuation (Outboard), performed 11/17/08
8.M.2-2.10.4.4, HPCI Simulated Automatic Actuation (Inboard), performed 11/18/08
8.Q.3-8.2, Limitorque Type HBC, SB/SMB-0 Through SB/SMB-3 Valve Operator Maintenance, performed 4/21/09
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SDBD-10, Pilgrim Nuclear Power Station Design Basis Document for Residual Heat Removal (RHR) System, Rev. 2
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Drawings

C338, Miscellaneous Structures Condensate Tank T-105A, T-105B, & T-212 Details, Rev. E3
E27SH1, Schematic Diagram Diesel Generator 'A' X107A, Rev. 25
E33, PNPS Schematic Diagram 4160V System Diesel Generator Lockout Relay, Rev. 3
E224, Connection Diagram Junction Box J218, Sh. 51, Rev. E3
M1D16-3, Functional Control Diagram Control Rod Drive Hydraulic System, Sh. 4, Rev. 5
M1D19-2, Functional Control Diagram Control Rod Drive Hydraulic System, Sh. 4, Rev. 2
M1V8-5, Elementary Diagram Reactor Manual Control System, Sh. 3, Rev. 11
M1V9-8, Elementary Diagram Reactor Manual Control System, Sh. 4, Rev. 14
M1V11-7, Elementary Diagram Reactor Manual Control System, Sh. 6, Rev. 4
M1V15-7, Elementary Diagram Reactor Manual Control System, Sh. 10, Rev. 6
M6-21-11SH1, Wiring Diagram Diesel Generator 'A' ALCO Alternator, Rev. 17
M6-102-2, Field Installation Mechanical Driven Tachometer Speed Switch, Rev. 27
M203, P&ID Main Steam System, Sh. 1, Rev. 48
M209, P&ID Condensate, Demineralized Water Storage & Transfer Systems, Rev. 67
M220, P&ID Compressed Air System Essential Instrument Air, Sh. 3, Rev. 76
M243, P&ID HPCI System, Rev. 51
M252, Reactor Head Vent, Sh. 2, Rev. 65
M6-137-1, EDG X-107A/B Air Start Motor Arrangement TDI Turbo-Twin Motor Installation Details, Rev. 0
M100-234-3, Residual Heat Removal System 'B' RHR Loop Return Line to Torus, Rev. E3
M219, P&ID Diesel Generator Air Start System, Rev. 24
M223, P&ID Diesel Oil Storage & Transfer System, Rev. 32
M243, P&ID HPCI System, Rev. 52
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M244 SH 2, HPCI System Turbine Lube Oil and Control Oil Subsystem, Rev. 9

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PNPS-ME-08-00001, Evaluation of Safety Related and MQCI Pumps for the Adequacy of Protection from Air Ingestion Due to Low Submergence, Rev. 0
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E345, Raceway Schedule, dated 9/29/10
E346, Cable Schedule, dated 9/29/10
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EC 4355 Post Modification Test Plan, dated 6/3/08
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IEEE 242-2001, Recommended Practice for Protection and Coordination of Industrial and Commercial Power Systems, 1/1/01
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EC 3088, Replacement of C-19B Panel Drywell Leak Detection System, Rev. 0
EC 4523, Replacement of Existing Reactor Manual Control System (RMCS) Automatic Sequence Eagle Timer Switch (3A-S4), Rev. 0
EC 4355, Replacement Disc for MO-1001-34B, Rev. 0
EC 5592, Eliminate Mechanical Speed Switch on EDG A, Rev. 1
EC 8530, Remove and Replace the Emergency Diesel Generator (EDG) Building Roof, Rev. 0

EC 10304, Replacement of Augmented Offgas Hydrogen Recorder AR-R603 on Panel CP600, Rev. 0
EC 11460, High Pressure Coolant Injection System Control Cables Replacement, Rev. 0
EC 12609, Condensate Storage Tank HPCI Low Level Transfer Setpoint, Rev. 0
EC 12969, Emergency Diesel Generator Air Start Motor Upgrade, Rev. 0
EC 14506, Install Isolation Switch and Reconfigure Solenoid Light Circuits for Reactor Head Vent Valves to Improve Appendix R Analysis, Rev. 0
EC 20346, Replacement of Voltage Balance Relay 160-609 for X-107B with New ABB Relay, Rev.0
EC 70945, MSIV Leakage Pathway to the Condenser, Rev. 0

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LO-NOE-2009-00326, PNPS Response to NRC Information Notice 2009-14, dated 10/22/09
NRC Information Notice 91-46: Degradation of Emergency Diesel Generator Fuel Oil Delivery Systems, dated 7/18/91
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NRC Information Notice 2009-14: Painting Activities and Cleaning Agents Render Emergency Diesel Generators and Other Plant Equipment Inoperable, dated 8/17/09

Procedures

1.5.15, Seismic Evaluation and Administrative Control of Scaffolding, Rev. 18
2.1.1, Startup from Shutdown, Rev. 170
2.1.3, Hot Standby Maneuvers Startup with MSIVs Closed Reactor Pressure Less Than 600 PSIG, Rev. 48
2.1.5, Controlled Shutdown from Power, Rev. 111
2.1.35, Control Room Readings, Rev. 51
2.2.8, Standby AC Power System (Diesel Generators), Rev. 96
2.2.16, 120/240V AC Vital Services Instrument Power Supply (Y2), Rev. 55
2.2.21.5, HPCI Injection and Pressure Control, Rev. 17
2.2.108, Diesel Generator Cooling and Ventilation System, Rev. 43
3.M.1-10.13, Pressure Measuring Test Equipment Calibration, Rev. 2
3.M.2-37, Temporary Modification Procedure for Fuel Pool Cooling During RFO, Rev. 6
3.M.3-1, A5/A6 Buses 4KV Protective Relay Calibration/Functional Test and Annunciator Verification, Rev. 123
3.M.3-61.5, Emergency Diesel Generator Two-Year Overhaul Preventive Maintenance, Rev. 41
3.M.4-92, Bolting and Torquing Guidelines, Rev. 17
3.M.5-1, Roof and Exhaust Fan Inspection and Maintenance Program, Rev. 9
8.E.8, Offgas Instrumentation Calibration, Rev. 47
8.M.2-2.5.3, HPCI Steam Line High Temperature, Rev. 35
5.3.24, Alternate Methods for Venting and Depressurizing the RPV under Emergency Conditions, Rev. 19
7.4.17, Drywell Continuous Atmospheric Monitoring System, Rev. 35
8.7.1.5, Local Leak Rate Testing of Primary Containment Penetrations, Isolation Valves, and Inspection of Containment Structure, Rev. 53
8.9.1, Emergency Diesel Generator and Associated Emergency Bus Surveillance, Rev. 116

8.9.1.1, Diesel Oil Transfer System Skid-Mounted Valve Operability and Supplemental Pump Testing, Rev. 16
8.9.8.6, 'A' +/- 24VDC Battery Acceptance or Performance Test, Rev. 7
ARP-C104A, Diesel Engine A Control Panel, Rev. 14
ARP-C104B, Diesel Engine B Control Panel, Rev. 13
EN-DC-115, Engineering Change Process, Rev. 10
EN-DC-117, Post Modification Testing and Special Instructions, Rev. 3
EN-IT-104, Software Quality Assurance Program, Rev. 5
EN-LI-100, Process Applicability Determination, Rev. 9
EN-LI-101, 10 CFR 50.59 Evaluations, Rev. 6
EN-MA-133, Control of Scaffolding, Rev. 6
EP-IP-100, Emergency Classification and Notification, Rev. 32
Plant-Specific Technical Guidelines & Severe Accident Technical Guidelines, Rev. 6
TP08-041, Administrative Controls for SDIV Solenoid Replacement SV-302-21D, Rev. 0

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EDG-B Start Time Trend Data, dated 9/26/09 - 9/21/10

Vendor Technical Documents
V-0453, Raychem, Rev. 5
V-0454, Emergency Diesel Generators, Rev. 67
V1097, ABB Circuit Shield Type 60 Voltage Balance Relay, Rev. 14
51-9117255-000, Areva NP Inc. Pilgrim CST Suction Test Report, Rev. 0

LIST OF ACRONYMS

ADAMS	Agency-Wide Documents Access and Management System
AOV	Air Operated Valve
CAP	Corrective Action Program
CFR	Code of Federal Regulations
CR	Condition Report
CST	Condensate Storage Tank
DRS	Division of Reactor Safety
EC	Engineering Change
EDG	Emergency Diesel Generator
EOP	Emergency Operating Procedure
EQ	Environmental Qualification
HPCI	High Pressure Coolant Injection
LOCA	Loss-of-Coolant Accident
LOOP	Loss-of-Offsite Power
MOV	Motor Operated Valve
MSIV	Main Steam Isolation Valve
NEI	Nuclear Energy Institute
NCV	Non-Cited Violation
NRC	Nuclear Regulatory Commission
PAD	Process Applicability Determination
P&ID	Piping and Instrument Diagram
PARS	Publicly Available Records
PMT	Post Maintenance Test
PNPS	Pilgrim Nuclear Power Station
PLC	Programmable Logic Controller
RCIC	Reactor Core Isolation Cooling
RHR	Residual Heat Removal
RMCS	Reactor Manual Control System
SDIV	Scram Discharge Instrument Volume
SSC	Structure, System, and Component
TS	Technical Specifications
UFSAR	Updated Final Safety Analysis Report