



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION I
2100 RENAISSANCE BLVD.
KING OF PRUSSIA, PA 19406-2713

November 14, 2016

Mr. John Dent
Site Vice President
Entergy Nuclear Operations, Inc.
600 Rocky Hill Road
Plymouth, MA 02360-5508

SUBJECT: PILGRIM NUCLEAR POWER STATION – INTEGRATED INSPECTION
REPORT 05000293/2016003

Dear Mr. Dent:

On September 30, 2016, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Pilgrim Nuclear Power Station (PNPS). On October 20, 2016, the NRC inspectors discussed the results of this inspection with you and other members of your staff. The results of this inspection are documented in the enclosed report.

NRC inspectors documented four findings of very low safety significance (Green) in this report. All four of these findings involved violations of NRC requirements. The NRC is treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2.a of the Enforcement Policy.

If you contest the violations or significance of these NCVs, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement; and the NRC Resident Inspector at PNPS. In addition, if you disagree with a cross-cutting aspect assignment, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the U. S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC, 20555-0001; with copies to the Regional Administrator, Region I, and the NRC Resident Inspector at PNPS.

J. Dent

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This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at <http://www.nrc.gov/reading-rm/adams.html> and the NRC Public Document Room in accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

/RA/

Arthur L. Burritt, Chief
Reactor Projects Branch 5
Division of Reactor Projects

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

Enclosure:
Inspection Report 05000293/2016003
w/Attachment: Supplementary Information

cc w/encl: Distribution via ListServ

J. Dent

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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No. 50-293

License No. DPR-35

Report No. 05000293/2016003

Licensee: Entergy Nuclear Operations, Inc (Entergy)

Facility: Pilgrim Nuclear Power Station (PNPS)

Location: 600 Rocky Hill Road
Plymouth, MA 02360

Dates: July 1, 2016 through September 30, 2016

Inspectors: E. Carfang, Senior Resident Inspector
B. Pinson, Resident Inspector
S. Rich, Resident Inspector
J. Pfingsten, Resident Inspector (Acting)
B. Fuller, Senior License Examiner
J. Brand, Reactor Inspector
E. Burket, Reactor Inspector
M. Modes, Senior Reactor Inspector
L. Dumont, Reactor Inspector
T. Dunn, Operations Engineer
D. Werkheiser, Senior Resident Inspector
M. Fannon, Resident Inspector

Approved By: Arthur L. Burritt, Chief
Reactor Projects Branch 5
Division of Reactor Projects

Enclosure

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SUMMARY

IR 05000293/2016003; 07/01/2016 – 09/30/2016; PNPS; Maintenance Effectiveness, Operability Determinations and Functionality Assessments, and Problem Identification and Resolution.

This report covered a three-month period of inspection by resident inspectors and announced baseline inspections performed by regional inspectors. The inspectors identified four non-cited violations (NCVs), all of which were of very low safety significance (Green and/or Severity Level IV). The significance of most findings is indicated by their color (i.e., greater than Green, or Green, White, Yellow, Red) and determined using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process," dated April 29, 2015. Cross-cutting aspects are determined using IMC 0310, "Aspects Within Cross-Cutting Areas," dated December 4, 2014. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy, dated February 4, 2015. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 6.

Cornerstone: Mitigating Systems

- Green. The inspectors identified a Green NCV of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," in that Entergy did not perform an adequate operability evaluation in accordance with EN-OP-104, "Operability Determination Process," Revision 10. Specifically, during an instrumented run of emergency diesel generator (EDG) 'B', the cabinet door was opened, resulting in a non-seismically qualified configuration of protective relays for EDG 'B'. Inspectors determined that Entergy did not adequately assess the operability of EDG 'B' as required by EN-OP-104, "Operability Determination Process." Specifically, Entergy did not evaluate the operability of EDG 'B' when opening a cabinet door containing relays that serve a safety function. Entergy entered this issue into the corrective action program (CAP) as condition report (CR)-2016-5779 and CR-2016-7877. Entergy has issued a standing order to assess operability of equipment tested with cabinet doors open prior to performing work or declare the equipment being tested inoperable.

This is a performance deficiency that was within Entergy's ability to foresee and correct. This finding is more than minor because it is associated with the protection against external factors attribute of the Mitigating Systems cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, relays were no longer in a configuration known to operate as required during a seismic event with the cabinet door open. In accordance with IMC 0609.04, "initial Characterization of Findings," and Exhibit 2 of IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," issued June 19, 2013, the inspectors determined that this finding is of very low safety significance (Green) because the performance was not a design or qualification deficiency, did not involve an actual loss of safety function, and did not represent actual loss of safety function of a single train for greater than its technical specification (TS) allowed outage time. This finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Operating Experience, in that the organization did not systematically and effectively collect, evaluate, and implement relevant internal and external operating experience in a timely manner. Specifically, Entergy did not evaluate industry operating experience on control of cabinet doors containing safety-related equipment, which led to operability concerns. [P.5] (Section 1R15)

Cornerstone: Barrier Integrity

- Green. The inspectors identified a Green NCV of Technical Specification (TS) 5.4.1, "Procedures," because Entergy did not implement procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. Entergy did not implement preventive maintenance procedural requirements to periodically replace six high critical, normally energized Agastat EGP relays every 10 years. Entergy's immediate corrective actions included replacing all six relays and performing an equipment apparent cause evaluation. Entergy entered this issue into their CAP as CR-2016-04243.

The performance deficiency was more than minor because it was associated with the structures, systems, and components (SSCs) and barrier performance attribute of the Barrier Integrity cornerstone and adversely affected the cornerstone objective of providing reasonable assurance that physical design barriers (containment) protect the public from radionuclide releases caused by accidents or events. The failure to replace the relays in accordance with preventative maintenance requirements increased the likelihood of failure for safety systems that relied on these relays for operation. The inspectors determined that this finding is of very low safety significance (Green) in accordance with IMC 0609.04, "Initial Characterization of Findings," and Exhibit 3 of IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," issued June 19, 2013, because the performance deficiency did not result in an actual open pathway in the physical integrity of reactor containment and did not involve an actual reduction in function of hydrogen igniters in the reactor containment. The inspectors determined that this finding had no cross-cutting aspect because the most significant causal factor, the failure to include the relays in the preventative maintenance program database, did not reflect current licensee performance. There was no indication that this specific performance deficiency occurred in the last three years. (Section 4OA2)

- Green. The inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," because Entergy did not perform an immediate operability determination and adequately evaluate the operability of primary containment isolation valves (PCIVs) in accordance with procedure EN-OP-104, "Operability Determinations/Functionality Assessments," Revision 10. Entergy's immediate corrective actions included electrically deactivating two relays, 16A-K17X11 and 16AK18X11. Subsequently, two PCIVs, CV-5065-91 and CV-5065-92, were closed until all six relays were replaced. Entergy entered this issue into the CAP as CR-2016-04753.

The inspectors determined that the performance deficiency was more than minor because it was associated with the Human Performance attribute of the Barrier Integrity cornerstone and adversely affected the objective of providing reasonable assurance that physical design barriers protect the public from postulated radionuclide releases caused by accidents or events. Specifically, Entergy did not perform a timely and adequate operability determination as required by procedure. It took Entergy 74 days and four different operability determinations upon discovery of the degraded relays to finally conclude that PCIVs CV-5065-91 and CV-5065-92 were operable. The inspectors determined that this finding is of very low safety significance (Green) in accordance with IMC 0609.04, "initial Characterization of Findings," and Exhibit 3 of IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," issued June 19, 2013, because it did not result in an actual open pathway in the physical integrity of reactor containment and did not involve an actual reduction in function of hydrogen igniters in the reactor containment.

The inspectors determined that this finding had a cross-cutting aspect in the area of Human Performance, Procedure Adherence, because Entergy did not initially evaluate the operability of the Agastat relays thoroughly as prescribed in EN-OP-104. Furthermore, Entergy failed to adequately evaluate the effect of the aging Agastat relays pertaining to the PCIV's operability. [H.8] (Section 4OA2)

Cornerstone: Public Radiation Safety

- Green. Inspectors identified a Green NCV of 10 CFR 50.65 (a)(2), because Entergy did not adequately demonstrate that the performance of the process radiation monitors (PRMs) was effectively controlled through performance of appropriate preventive maintenance. Specifically, Entergy did not identify and properly account for functional failures of four PRM subsystems in July 2014 and February, April, and July 2015; and did not recognize that the subsystems had exceeded their performance criteria and required a Maintenance Rule (a)(1) evaluation. Entergy entered the issue into the CAP under CR-2016-05564. Entergy performed the Maintenance Rule (a)(1) evaluation, and placed them into (a)(1) where they will be monitored against specific goals.

The finding is more than minor because it is associated with the Plant Facilities/Equipment and Instrumentation attribute of the Public Radiation Safety cornerstone and affects the cornerstone objective of ensuring the adequate protection of public health and safety from exposure to radioactive materials released into the public domain as a result of routine civilian nuclear reactor operation. Specifically, following the failures of the Main Stack Normal Range subsystem in July 2014, the Reactor Building Closed Cooling Water (RBCCW) subsystem in February 2015, the Shared Components subsystem in April 2015, and the Torus Containment High Radiation Monitoring System (CHRMS) subsystem in July 2015, Entergy did not identify the failures as functional failures, and consequently, did not establish goals and monitoring criteria in accordance with 10 CFR 50.65(a)(1). The inspectors determined that the failures demonstrated that the performance of the subsystems was not being effectively controlled through appropriate preventive maintenance, because the incorrect screenings resulted in exceedance of the subsystem's performance criteria and placement in (a)(1) status. The inspectors evaluated the significance of this finding using IMC 0609, Appendix D, "Public Radiation Safety Significance Determination Process." The finding is of very low safety significance (Green) because the finding was in the Effluent Release Program, but did not result in a failure to implement the Effluent Release Program, and did not result in dose to the public in excess of 10 CFR 50, Appendix I criterion or 10 CFR 20.1301(e) limits. The inspectors determined that the finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Evaluation, in that the organization did not thoroughly evaluate issues to ensure that resolution addressed causes and extent of conditions commensurate with their safety significance. Specifically, Entergy identified all of the failures of the PRM subsystems, however, Entergy did not thoroughly evaluate the failures as maintenance rule functional failures. [P.2] (Section 1R12)

REPORT DETAILS

Summary of Plant Status

On August 3, 2016, the unit downpowered to 90 percent due to rising intake temperatures. The unit returned to 100 percent power on August 4, 2016, after intake bay temperatures dropped. On August 15, 2016, the unit downpowered to 60 percent due to rising intake temperatures and remained there until August 16, 2016, when the unit was downpowered to 40 percent for a thermal backwash and main steam isolation valve (MSIV) testing. The same day, the unit raised power to 73 percent power, the power restriction with a closed MSIV, after the 1C MSIV did not meet stroke time surveillance testing requirements. The unit entered a maintenance outage for repair of the 1C MSIV on August 20, 2016, and returned to 100 percent on August 25, 2016. On September 6, 2016, operators manually scrammed the unit for high reactor water level due to a feedwater regulating valve failure. The unit initiated a start up on September 12, 2016, and reached 9 percent power. On September 13, 2016, the unit initiated a controlled shutdown from 9 percent power to repair the main turbine turning gear. The unit returned to 100 percent power on September 18, 2016, and remained at or near 100 percent power for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01 – 1 sample)

External Flooding

a. Inspection Scope

During the week of August 15, 2016, the inspectors performed an inspection of the external flood protection measures for PNPS. The inspectors reviewed TSs, procedures, design documents, and the Final Safety Analysis Report (FSAR), which depicted the design flood levels and protection areas containing safety-related equipment to identify areas that may be affected by external flooding. The inspectors conducted a walkdown of the RBCCW rooms and neutralizing sump area to ensure that Entergy's flood protection measures were in accordance with design specifications. Where applicable, the inspectors determined installed flood seal service life and verified that adequate procedures existed for inspecting the installed seals. Inspectors confirmed that, overall, Entergy had established adequate measures to protect against external flooding events.

b. Findings

No findings were identified.

1R04 Equipment Alignment

.1 Partial System Walkdowns (71111.04 – 4 samples)

a. Inspection Scope

The inspectors performed partial walkdowns of the following systems:

- Standby liquid control (SLC) alignment following system maintenance on July 1, 2016
- Standby gas treatment (SBGT) 'B' walkdown with SBGT 'A' out of service (OOS) on July 26, 2016
- Reactor building floor drain system on August 4, 2016
- Reactor core isolation cooling (RCIC) system alignment while high pressure coolant injection (HPCI) was OOS on August 11, 2016

The inspectors selected these systems based on their risk-significance relative to the reactor safety cornerstones at the time they were inspected. The inspectors reviewed applicable operating procedures, system diagrams, the FSAR, TSs, work orders (WOs), CRs, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have impacted the system's performance of its intended safety functions. The inspectors also performed field walkdowns of accessible portions of the systems to verify system components and support equipment were aligned correctly and were operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no deficiencies. The inspectors also reviewed whether Entergy staff had properly identified equipment issues and entered them into the CAP for resolution with the appropriate significance characterization.

b. Findings

No findings were identified.

.2 Full System Walkdown (71111.04S – 1 sample)

a. Inspection Scope

From August 16 through August 25, 2016, the inspectors performed a complete walkdown of accessible portions of the RBCCW system, to verify the existing equipment lineup was correct. The inspectors reviewed operating procedures, surveillance tests, drawings, TSs, and the FSAR to verify the system was aligned to perform its required safety functions. The inspectors also reviewed electrical power availability, component lubrication, last quarterly system health report, equipment cooling, hanger and support functionality, and operability of support systems. The inspectors performed field walkdowns of accessible portions of the systems including equipment inside the containment drywell to verify as-built system configuration matched plant documentation, and that system components and support equipment remained operable. The inspectors confirmed that systems and components were aligned correctly, free from interference from temporary services or isolation boundaries, environmentally qualified, and protected from external threats. The inspectors also examined the material condition of the components for degradation and observed operating parameters of equipment to verify that there were no deficiencies. For identified degradation, the

inspectors confirmed the degradation was appropriately managed by the applicable aging management program. Additionally, the inspectors reviewed a sample of related CRs and WOs to ensure that Entergy appropriately evaluated and resolved any deficiencies.

b. Findings

No findings were identified.

1R05 Fire Protection

Resident Inspector Quarterly Walkdowns (71111.05Q – 5 samples)

a. Inspection Scope

The inspectors conducted tours of the areas listed below to assess the material condition and operational status of fire protection features. The inspectors verified that Entergy controlled combustible materials and ignition sources in accordance with administrative procedures. The inspectors verified that fire protection and suppression equipment was available for use as specified in the area's pre-fire plan, and passive fire barriers were maintained in good material condition. The inspectors also verified that station personnel implemented compensatory measures for OOS, degraded, or inoperable fire protection equipment, as applicable, in accordance with procedures.

- Control rod drive hydraulic control units west side on August 5, 2016
- Reactor water cleanup area on August 5, 2016
- Salt service water (SSW) pump room and lower level on September 2, 2016
- HPCI pump and turbine room on September 23, 2016
- RCIC pump and turbine room on September 28, 2016

b. Findings

No findings were identified.

1R07 Heat Sink Performance (71111.07T – 3 samples)

Triennial Sample: Review of Normal Heat Sink, High Pressure Coolant Injection Pump Area Cooling Coils, and Salt Water Service Water Intake Structure and Associated Systems

a. Inspection Scope

The inspectors reviewed the condition and operation of HPCI pump area cooling coil VAC-201A and HPCI area cooling coil VAC-201B to determine if the condition and operation was consistent with design assumptions.

The inspectors noted these heat exchangers are isolated from the closed loop reactor building component cooling water system by flexible hoses, making the impact of downstream water hammer very unlikely. The inspectors verified whether adequate controls and operational limits were in place to prevent heat exchanger degradation due to excessive flow induced vibration during operation. The inspectors verified whether chemical treatment programs for corrosion control were consistent with industry standards and were controlled, tested, and evaluated. The inspectors reviewed the

results of periodic flow testing to determine whether results were properly evaluated and whether acceptance criteria were met. The inspectors evaluated the number of plugged tubes and verified that the exchanger heat transfer function was maintained or actions were taken to address it (including replacement). The inspectors walked down the HPCI pump room and examined the room coolers in which the cooling coils are contained. The inspectors also walked down the residual heat removal (RHR) pump room coolers. At both locations the inspectors noted the condition of the cooling coil pressure piping, piping fins, inlet and outlet piping, and supports.

The inspectors performed a review of the normal and ultimate heat sinks. The SSW system from the ultimate heat sink to the common discharge header were inspected. The inspectors reviewed the adequacy of Entergy controls to prevent clogging due to macrofouling and verified whether macrofouling was adequately monitored, trended, and controlled, consistent with Entergy's maintenance program frequencies and assumptions. The inspectors walked down the SSW intake structure, noting the condition of the intake structure, traveling screens, pumps, piping, supports, and the biocide treatment injection system. The inspectors noted the structural integrity of component mounts. The inspectors discussed silting of the intake bay and seaweed intrusion with the system engineer. The inspectors reviewed performance tests for a sample of pumps and valves in the SSW system. Proper functioning of traveling screens and strainers, including strainer backwash function, were reviewed. The inspectors further reviewed the results of visual inspections to determine whether structural integrity of the piping was maintained.

The inspectors reviewed the threshold at which Entergy entered heat exchanger/sink performance problems in the CAP. Using Inspection Procedure 71152, "Problem Identification and Resolution," as guidance, the inspectors verified whether Entergy's corrective actions were appropriate.

b. Findings

No findings were identified.

1R11 Licensed Operator Regualification Program and Licensed Operator Performance
(71111.11Q – 2 samples)

.1 Quarterly Review of Licensed Operator Regualification Testing and Training

a. Inspection Scope

The inspectors observed two licensed operator simulator training scenarios on July 27, 2016, which included an uncomplicated failure to scram event and a failure to scram event coincident with a loss of drywell cooling. The inspectors evaluated operator performance during the simulated events and verified completion of risk significant operator actions, including the use of abnormal and emergency operating procedures. The inspectors assessed the clarity and effectiveness of communications, implementation of actions in response to alarms and degrading plant conditions, and the oversight and direction provided by the control room supervisor. The inspectors verified the accuracy and timeliness of the emergency classification made by the shift manager. Additionally, the inspectors assessed the ability of the crew and training staff to identify and document crew performance problems.

b. Findings

No findings were identified.

.2 Quarterly Review of Licensed Operator Performance in the Main Control Room

a. Inspection Scope

The inspectors observed operator performance during reduced reactor power for planned thermal backwashing of the main condenser on August 16, 2016. On August 20, 2016, inspectors observed the planned shutdown of the unit to repair the 1C MSIV. The inspectors observed pre-shift briefings and reactivity control briefings to verify that the briefings met the criteria specified in Entergy's procedure EN-OP-115, "Conduct of Operations," Revision 16. Additionally, the inspectors observed operator performance to verify that procedure use, crew communications, and coordination of activities between work groups similarly met established expectations and standards.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12Q – 3 samples)

a. Inspection Scope

The inspectors reviewed the samples listed below to assess the effectiveness of maintenance activities on SSC performance and reliability. The inspectors reviewed system health reports, CAP documents, maintenance WOs, and maintenance rule basis documents to ensure that Entergy was identifying and properly evaluating performance problems within the scope of the maintenance rule. For each sample selected, the inspectors verified that the SSC was properly scoped into the maintenance rule in accordance with 10 CFR 50.65 and verified that the (a)(2) performance criteria established by Entergy staff was reasonable. As applicable, for SSCs classified as (a)(1), the inspectors assessed the adequacy of goals and corrective actions to return these SSCs to (a)(2). Additionally, the inspectors ensured that Entergy staff was identifying and addressing common cause failures that occurred within and across maintenance rule system boundaries.

- PRMs during the week of July 5, 2016
- EDGs during the week of September 12, 2016
- Instrument and service air system on September 27, 2016

b. Findings

Introduction. Inspectors identified a Green NCV of 10 CFR 50.65 (a)(2), because Entergy did not adequately demonstrate that the performance of the PRMs was effectively controlled through performance of appropriate preventive maintenance. Specifically, Entergy did not identify and properly account for functional failures of four PRM subsystems in July 2014 and February, April, and July 2015, and did not recognize that the subsystems had exceeded their performance criteria and therefore required a Maintenance Rule (a)(1) evaluation.

Description. Inspectors reviewed data for the previous two years and identified fifteen functional failures in four PRM subsystems in (a)(2) status that were not previously identified by Entergy. The subsystems exceeding the maintenance rule functional failure threshold include the Torus CHRMS, RBCCW, Main Stack Normal Range, and Shared Components (PRMs shared across multiple systems). The PRM subsystems are used to monitor radiation levels in various systems throughout the plant. The performance criteria for each subsystem is two functional failures per train per 2 years. The failure to classify the identified issues as functional failures resulted in the performance criteria being unknowingly exceeded for the four noted subsystems. Exceedance of the performance criteria threshold invalidated the (a)(2) performance demonstration, and required the subsystems to be evaluated for placement in (a)(1) and monitored against established goals. The following examples describe the maintenance rule functional failure that exceeded the performance criterion threshold. Each equipment failure listed represents a non-compliance with 10 CFR 50.65(a)(2).

- On July 10, 2014, it was identified that the Main Stack Radiation Monitor recorder RR-1705-19 did not respond to a technician's input during calibration. Entergy corrected the condition and entered the issue into the CAP as CR-2014-3280.
- On February 26, 2015, it was identified that there was no flow through the RBCCW sample flow restricting orifice. The system strainer was cleaned, restoring the monitor to service, and Entergy entered the issue into the CAP as CR-2015-1475.
- On April 28, 2015, it was identified that recorder RR-1705-20 for the SGBT System Discharge Radiation High was stuck and not reading accurately. The recorder was reset and Entergy entered the issue into the CAP as CR-2015-3848.
- On July 25, 2015, it was identified that instrument RIT-1001-607A of the Torus CHRMS subsystem was experiencing periodic pulses, and was not considered a functional failure. Entergy entered the issue into the CAP as CR-2015-6742. The issue was later considered to be a functional failure.

EN-DC-205, "Maintenance Rule Monitoring," Revision 4, requires that monitoring be performed in a manner to support a timely (a)(1) evaluation. It requires that the number of functional failures be compared to the established performance criteria, and if performance criteria has been exceeded, initiate a CR and evaluate the affected SSC for (a)(1) classification. Additionally, EN-DC-204, "Maintenance Rule Scope and Basis," Revision 3, clarifies that Functional Failures are used in lieu of Maintenance Preventable Functional Failures when determining appropriate performance criteria for systems in the scope of the Maintenance Rule. On August 3, 2016, based on inspectors' questions, Entergy initiated CR-2016-5564, identifying missed functional failures from 2014 to 2016 and the failure to perform an (a)(1) evaluation based on the PRM subsystem functional failures which exceeded the designated performance criteria.

Analysis. The inspectors determined that Entergy's failure to identify the July 10, 2014, February 26, 2015, April 28, 2015, and July 25, 2015, PRM subsystem failures as functional failures, and as a result, failure to perform an evaluation of the system under 50.65(a)(1) to specify goals, corrective actions, and monitoring, was a performance deficiency within Entergy's ability to foresee and correct and should have been prevented. The finding is more than minor because it is associated with the Plant Facilities/Equipment and Instrumentation attribute of the Public Radiation Safety cornerstone and affects the cornerstone objective of ensuring the adequate protection of public health and safety from exposure to radioactive materials released into the public domain as a result of routine civilian nuclear reactor operation. Specifically, following the failures of the Main Stack Normal Range subsystem in July 2014, the RBCCW

subsystem in February 2015, the Shared Components subsystem in April 2015, and the Torus CHRMS subsystem in July 2015, Entergy did not identify the failures as functional failures, and consequently, did not establish goals and monitoring criteria in accordance with 10 CFR 50.65(a)(1). The inspectors determined that the failures demonstrated that the performance of the subsystems was not being effectively controlled through appropriate preventive maintenance, because the incorrect screenings resulted in exceedance of the subsystem's performance criteria and placement in (a)(1) status. The inspectors evaluated the significance of this finding using IMC 0609, Appendix D, "Public Radiation Safety Significance Determination Process." The finding is of very low safety significance (Green) because the finding was in the Effluent Release Program, but did not result in a failure to implement the Effluent Release Program, and did not result in dose to the public in excess of 10 CFR 50, Appendix I criterion or 10 CFR 20.1301(e) limits.

The inspectors determined that the finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Evaluation, in that the organization did not thoroughly evaluate issues to ensure that resolution addressed causes and extent of conditions commensurate with their safety significance. Specifically, Entergy identified all of the failures of the PRM subsystems, however, Entergy did not thoroughly evaluate the failures as maintenance rule functional failures. [P.2]

Enforcement. 10 CFR 50.65(a)(1), requires, in part, that each holder of an operating license shall monitor the performance or condition of SSCs, against licensee-established goals, in a manner sufficient to provide reasonable assurance that these SSCs, as defined in 10 CFR 50.65(b), are capable of fulfilling their intended functions. 10 CFR 50.65(a)(2) states, in part, that monitoring as specified in 10 CFR 50.65(a)(1) is not required where it has been demonstrated that the performance or condition of an SSC is being effectively controlled through the performance of appropriate preventive maintenance, such that the SSC remains capable of performing its intended function.

Contrary to the above, as of August 1, 2016, Entergy personnel did not monitor the performance or condition of the Main Stack Normal Range, Shared Components, RBCCW, and Torus CHRMS subsystems against licensee-established goals, in a manner sufficient to provide reasonable assurance that the subsystems were capable of fulfilling their intended functions. Entergy did not identify and properly account for maintenance rule functional failures of the subsystems on July 10, 2014, February 26, 2015, April 28, 2015, and July 25, 2015, which demonstrated that the performance of the four specified PRM subsystems was not being effectively controlled through the performance of appropriate preventative maintenance and, as a result, that goal setting and monitoring was required. Entergy has subsequently performed an (a)(1) evaluation for the subsystems, and placed them into (a)(1) where they will be monitored against specific goals. Because this violation was of very low safety significance (Green) and has been entered into Entergy's CAP (CR-2016-5564), this violation is being treated as an NCV, consistent with Section 2.3.2.a of the NRC Enforcement Policy.

(NCV 05000293/2016003-01: Process Radiation Monitor Subsystems 10 CFR 50.65(a)(2) Not Met)

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 – 6 samples)

a. Inspection Scope

The inspectors reviewed station evaluation and management of plant risk for the maintenance and emergent work activities listed below to verify that Entergy performed the appropriate risk assessments prior to removing equipment for work. The inspectors selected these activities based on potential risk significance relative to the reactor safety cornerstones. As applicable for each activity, the inspectors verified that Entergy personnel performed risk assessments as required by 10 CFR 50.65(a)(4) and that the assessments were accurate and complete. When Entergy performed emergent work, the inspectors verified that operations personnel promptly assessed and managed plant risk. The inspectors reviewed the scope of maintenance work and discussed the results of the assessment with the station's probabilistic risk analyst to verify plant conditions were consistent with the risk assessment. The inspectors also reviewed the TS requirements and inspected portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met.

- Planned diesel fuel oil day tank level instrumentation functional test requiring a designated operator on July 11, 2016
- Planned elevated risk with HPCI OOS on August 11, 2016
- Planned logic system functional testing of EDG 'B' on August 15, 2016
- Planned testing of 'B' low pressure core injection (LPCI), drywell cooling, and torus cooling on August 18, 2016
- Planned maintenance on HPCI valves on September 20, 2016
- Planned maintenance on RCIC system and diesel fire pump on September 26, 2016

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15 – 6 samples)

a. Inspection Scope

The inspectors reviewed operability determinations for the following degraded or non-conforming conditions based on the risk significance of the associated components and systems:

- RBCCW 'F' pump overload relay incorrectly set on July 12, 2016
- RHR 'B' heat exchanger leak on August 4, 2016
- HPCI pump vibration increased to alert range on August 11, 2016
- Main control room not at positive pressure on August 15, 2016
- EDG 'B' relay cabinet door open for instrumented surveillance test on August 16, 2016
- High temperature readings on SSW 'B' pump overload heater relay assembly on September 2, 2016

The inspectors evaluated the technical adequacy of the operability determinations to assess whether TS operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the TSs and FSAR to Entergy's evaluations to determine whether the components or

systems were operable. The inspectors confirmed, where appropriate, compliance with bounding limitations associated with the evaluations. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled by Entergy.

b. Findings

Introduction. The inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," in that Entergy did not perform an adequate operability evaluation in accordance with EN-OP-104, "Operability Determination Process," Revision 10. Specifically, during an instrumented run of EDG 'B', the cabinet door was opened, resulting in a non-seismically qualified configuration of protective relays for EDG 'B'.

Description. On August 10, 2016, Entergy opened the EDG 'B' relay cabinet door to connect instrumentation to monitor the non-conforming governor on EDG 'B' during the monthly surveillance run. Numerous cables were installed into the cabinet to accomplish the instrument monitoring during the surveillance test. During the surveillance test, inspectors questioned the seismic qualification of the relays located on the cabinet door that remained opened and unrestrained during the testing. No information was available to support the seismic qualification of the relays or the impact of installing the connections in the configuration found by the inspectors.

Inspectors determined that Entergy did not properly evaluate the impact of installing equipment in the EDG 'B' relay cabinet and maintaining the door open for an extended period time. Inspectors were concerned that the safety-related relays installed on the open door could impact relay performance during a seismic event, impacting the reliability of EDG 'B' at a time when it would be required to perform its safety function. Specifically, the overvoltage relays (159-609/1 and 159-609/2), directional power relay (132-609), field relay (140-609), and ground protection relay (164F-609) are located on the cabinet door and provide safety functions for the EDG. The relays provide an alarm in the EDG room, which then alarms in the control room. The field relay indicates a low electric field or loss of electric field condition, which could impact the function of safety-related equipment. The overvoltage relays provide a permissive required to close the EDG output breaker. Inspectors spoke with licensed operators and they were unaware of any challenges to operability with the cabinet door open.

Initially, Entergy entered this issue into the CAP as CR-2016-5779, and determined there were no operability concerns. Inspectors determined that the doors were opened for a period of approximately 5 hours without evaluation or additional actions by operations. Entergy entered this issue into the CAP as CR-2016-7877 and issued a standing order to assess operability of equipment tested with cabinet doors open prior to performing work or declare the equipment being tested inoperable. Additionally, there is industry operating experience on the opening of cabinet doors containing relays, which Entergy had not incorporated into their processes. CR-HQN-2015-1187 dispositioned the operating experience and determined that changes to operator rounds would be required, however, at the close of this inspection period, no corrective actions had been implemented from CR-HQN-1187. Based on corrective actions taken by PNPS, there is not an immediate safety concern.

Analysis. Inspectors determined that Entergy did not adequately assess the operability of EDG 'B' as required by EN-OP-104, "Operability Determination Process." Specifically, Entergy did not evaluate the operability of EDG 'B' when opening a cabinet door containing relays that serve a safety function. This is a performance deficiency that was within Entergy's ability to foresee and correct. This finding is more than minor because it is associated with the protection against external factors attribute of the Mitigating Systems cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, relays were no longer in a configuration known to operate as required during a seismic event with the cabinet door open.

In accordance with IMC 0609.04, "initial Characterization of Findings," and Exhibit 2 of IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," issued June 19, 2013, the inspectors determined that this finding is of very low safety significance (Green) because the performance was not a design or qualification deficiency, did not involve an actual loss of safety function, and did not represent actual loss of safety function of a single train for greater than its TS allowed outage time.

This finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Operating Experience, in that the organization did not systematically and effectively collect, evaluate, and implement relevant internal and external operating experience in a timely manner. Specifically, Entergy did not evaluate industry operating experience on control of cabinet doors containing safety-related equipment, which led to operability concerns. [P.5]

Enforcement. 10 CFR 50, Appendix B, Criterion V, "instructions, Procedures, and Drawings," states, in part, that "activities affecting quality shall be prescribed by documented instructions, procedures, or drawings of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings." Procedure EN-OP-104, "Operability Determination Process," Revision 10, states, in part, that "whenever a support SSC may affect the ability of the TS SSC to perform its Specified Safety Function, then an Operability Determination shall be performed for the TS SSC."

Contrary to the above, on August 10, 2016, Entergy opened the EDG 'B' cabinet door containing safety-related relays for several hours, placing the support SSC in an untested configuration, and did not perform an operability evaluation. Because this finding is of very low safety significance (Green) and has been entered into Entergy's CAP as CR-2016-5779, this violation is being treated as an NCV, consistent with Sections 2.3.2.a of the NRC Enforcement Policy. **(NCV 05000293/2016003-02, Inadequate Operability Assessment on EDG 'B')**

1R18 Plant Modifications (71111.18 – 1 sample)

Permanent Modifications

a. Inspection Scope

The inspectors evaluated Engineering Change 64762. The engineering change incorporated calculations that determined the acceptable void sizes and the time limits to preclude exceeding the acceptable void sizes. These limits were 20 minutes for RHR and 60 minutes for core spray. The procedure was revised to include these time limits and a 10 CFR 50.59 evaluation was conducted. The inspectors verified that the design

bases, licensing bases, and performance capability of the affected systems were not degraded by the modification. In addition, the inspectors reviewed modification documents associated with the design change.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19 – 8 samples)

a. Inspection Scope

The inspectors reviewed the post-maintenance tests for the maintenance activities listed below to verify that procedures and test activities adequately tested the safety functions that may have been affected by the maintenance activity, that the acceptance criteria in the procedure were consistent with the information in the applicable licensing basis and/or design basis documents, and that the test results were properly reviewed and accepted and problems were appropriately documented. The inspectors also walked down the affected job site, confirmed work site cleanliness was maintained, and witnessed the test or reviewed test data to verify quality control hold points were performed and checked, and that results adequately demonstrated restoration of the affected safety functions.

- Replacement of containment isolation valve agastat relays on July 1, 2016
- Containment torus pressure indicator replacement on July 22, 2016
- RBCCW 'A' pump mechanical seal replacement due to leakage on July 28, 2016
- Temporary modification on startup transformer deluge system on August 4, 2016
- HPCI turbine steam supply valve stem lubrication on August 11, 2016
- Jumper installation on 23 kV line switch F-18 failed neutral wire on August 13, 2016
- MSIV 1D stem lubrication and roller adjustment on August 23, 2016
- MSIV 1C air pack 4-way valves and solenoid valves replacement on August 25, 2016

b. Findings

No findings were identified.

1R20 Refueling and Other Outage Activities (71111.20 – 2 samples)

.1 Maintenance Outage for MSIV Stroke Time Outside Limits

a. Inspection Scope

The inspectors reviewed the outage schedule and shutdown risk assessments for a maintenance outage performed from August 20 through August 25, 2016. The outage was performed in response to a closure of the 1C inboard MSIV being outside TS surveillance limits. During this outage, the inspectors observed plant shutdown and startup, as well as the outage activities listed below:

- Cold and hot shutdown temperature control
- Shutdown risk assessment and risk management
- Implementation of TSs
- Outage control center activities
- Licensee identification and resolution of problems

b. Findings

No findings were identified.

.2 Feedwater Regulating Valve Failure Results in Manual Scram

a. Inspection Scope

The inspectors reviewed the outage schedule and shutdown risk assessments for a forced outage performed from September 6 through September 17, 2016. The outage was performed following a reactor scram in response to a malfunction of the 'A' feedwater regulating valve. During this outage, the inspectors observed plant shutdown and startup, as well as the outage activities listed below:

- Cold and hot shutdown temperature control
- Shutdown risk assessment and risk management
- Implementation of TSs
- Outage control center activities
- Licensee identification and resolution of problems.

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22 – 6 samples)

a. Inspection Scope

The inspectors observed performance of surveillance tests and/or reviewed test data of selected risk-significant SSCs to assess whether test results satisfied TSs, the FSAR, and Entergy procedure requirements. The inspectors verified that test acceptance criteria were clear, tests demonstrated operational readiness and were consistent with design documentation, test instrumentation had current calibrations and the range and accuracy for the application, tests were performed as written, and applicable test prerequisites were satisfied. Upon test completion, the inspectors considered whether the test results supported that equipment was capable of performing the required safety functions. The inspectors reviewed the following surveillance tests:

- RCIC system quarterly surveillance test on June 28, 2016 (in-service test)
- SLC 'B' pump biennial comprehensive test on June 29 and June 30, 2016
- Logic system functional test of 'A' SBTG initiation, reactor building isolation and inboard drywell isolation valves (atmospheric control valves) on July 27, 2016
- LPCI and containment cooling motor-operated valve operability test on August 4, 2016
- HPCI quarterly surveillance test on September 21, 2016
- Reactor protection system electrical protection assembly surveillance test on September 22, 2016

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation (71114.06 – 2 samples)

Emergency Preparedness Drill Observation

a. Inspection Scope

The inspectors evaluated the conduct of routine Entergy emergency drills on July 20, 2016, and August 31, 2016, to identify any weaknesses and deficiencies in the classification, notification, and protective action recommendation development activities. The inspectors observed emergency response operations in the simulator and emergency operations facility to determine whether the event classification, notifications, and protective action recommendations were performed in accordance with procedures. The inspectors also attended the station drill critique to compare inspector observations with those identified by Entergy staff in order to evaluate Entergy's critique and to verify whether the Entergy staff was properly identifying weaknesses and entering them into the CAP.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

Mitigating Systems Performance Index (3 samples)

a. Inspection Scope

The inspectors reviewed Entergy's submittal of the Mitigating System Performance Index (MSPI) for the period of July 1, 2015, through June 30, 2016:

- High pressure injection system (HPCI)
- Heat removal system (RCIC)
- Residual heat removal system (RHR)

To determine the accuracy of the performance indicator data reported during those periods, the inspectors used definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7. The inspectors also reviewed Entergy's operator narrative logs, CRs, MSPI derivation reports, event reports, and NRC integrated inspection reports to validate the accuracy of the submittals.

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution (71152 – 3 samples)

.1 Routine Review of Problem Identification and Resolution Activities

a. Inspection Scope

As required by Inspection Procedure 71152, “Problem Identification and Resolution,” the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify Entergy entered issues into the CAP at an appropriate threshold, gave adequate attention to timely corrective actions, and identified and addressed adverse trends. In order to assist with the identification of repetitive equipment failures and specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the CAP and periodically attended CR screening meetings. The inspectors also confirmed, on a sampling basis, that, as applicable, for identified defects and non-conformances, Entergy performed an evaluation in accordance with 10 CFR Part 21.

b. Findings

No findings were identified.

.2 Annual Sample: Preventive Maintenance Frequencies for Agastat Relays in Safety-Related Systems

a. Inspection Scope

The inspectors performed an in-depth review of Entergy’s corrective actions associated with CRs 2013-8207, 2013-8234, 2014-4569, 2015-0998, and 2016-0389, which involve service life and performance concerns associated with Agastat relays. The NRC’s assessment considered Entergy’s maintenance practices, industry operating experience, vendor and industry maintenance, and testing recommendations related to Agastat relays as well as comparable components. The inspection was selected based on previous resident inspector questions about agastat relay performance, including replacement frequency, of an agastat relay failure in April 2015 that impacted the operability of the LPCI injection valves (CRs 2015-3454, 2015-9580, and 2015-9762).

The inspectors compared the actions taken to the requirements of Entergy’s CAP and Criterion XVI of 10 CFR 50, Appendix B. Specifically, the inspectors assessed Entergy’s problem identification threshold, compensatory actions, and the prioritization and timeliness of corrective actions to determine whether Entergy was appropriately identifying, characterizing, and correcting problems associated with these issues. The inspectors also assessed Entergy’s corrective actions to prevent recurrence. In addition, the inspectors reviewed documentation associated with Agastat relays, assessed Entergy’s engineering change program, and interviewed Entergy’s engineering personnel at Pilgrim in order to evaluate the effectiveness of the planned and implemented corrective actions.

b. Findings

1. Introduction. The inspectors identified a Green NCV of TS 5.4.1, "Procedures," because Entergy did not implement procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. Specifically, Entergy did not implement preventive maintenance procedural requirements to periodically replace six high critical, normally energized Agastat EGP relays every 10 years.

Description. On June 16, 2016, Entergy generated CR 2016-04243, which identified six high critical, normally energized Agastat EGP relays, 16A-K17X1, 16A-K17X11, 16A-K17X1A, 16A-K18X1, 16A-K18X11, and 16A-K18X1B, without an established service life replacement interval. Entergy's discovery of this condition and initiating of CR 2016-04243 resulted from NRC's questions and Entergy's preparation for this problem identification and resolution sample inspection. Prompting by the NRC resident inspectors, who had completed preliminary reviews of the agastat relay replacement frequency issues in 2015 and scheduling of a problem identification and resolution sample in June 2016, resulted in Entergy's performance of an emergent self-assessment (LO-PNPLO-2016-0025) in May 2016. The self-assessment indicated the absence of established replacement preventive maintenance on six relays without additional evaluation. Entergy identified that five of the six relays had been in service for 31 years and relay 16A-K17X11 had been in service for 17 years based on its last replacement date. PMBD-114, "Preventive Maintenance Program," Revision 2, required normally energized high critical Agastat relays to be replaced on an interval of 10 years. In addition, the vendor's maintenance schedule recommends normally energized EGP relays to be replaced ten years from the date of manufacture or before, because EGP relays have a qualified service life of ten years.

These six relays input into the primary containment isolation system logic to isolate potential containment leak paths. These relays de-energize on Reactor Low Level or High Drywell Pressure, which in turn provide automatic isolation to a group of containment isolation valves. A failure of these relays could lead to PCIVs becoming inoperable. TS Limiting Condition for Operation (LCO) 3.7.A.2.b states: "In the event any automatic Primary Containment Isolation Valve becomes inoperable, at least one containment isolation valve in each line having an inoperable valve shall be deactivated in the isolated condition."

A review of the past history for this issued identified that on December 20, 1996, Entergy had performed an engineering evaluation to address safety concerns related to the as-found condition of numerous Agastat power relays. As a result of this evaluation, a problem report closure sheet, PR96.946, was generated with corrective actions that directed the Pilgrim staff to add all Agastat power relays including these six relays to their Preventative Maintenance program database with a specified replacement frequency not to exceed 10 years. During preparations for this problem identification and resolution inspection, Entergy staff performed an inventory of all of their Agastat relays to ensure that all Agastat relays were in the Preventative Maintenance program database. It was during this inventory that Entergy identified that the six normally energized relays identified in CR-2016-04243 were never placed into Pilgrim's Preventative Maintenance program database as directed by the corrective action assigned in PR96.946. As an immediate corrective action for this issue, Entergy replaced all of the relays and added all six relays to the maintenance database.

Analysis. The inspectors determined that the failure to ensure that safety-related normally energized Agastat EGP relays were replaced within their recommended service life was a performance deficiency reasonably within Entergy's ability to foresee and correct and should have been prevented. Specifically, Entergy staff at Pilgrim failed to follow Pilgrim's Agastat relay replacement procedural requirements. The performance deficiency was more than minor because it was associated with the SSCs and barrier performance attribute of the Barrier Integrity cornerstone and adversely affected the cornerstone objective of providing reasonable assurance that physical design barriers (containment) protect the public from radionuclide releases caused by accidents or events. The failure to replace the relays in accordance with preventative maintenance requirements increased the likelihood of failure for safety systems that relied on these relays for operation. The Inspectors evaluated the finding in accordance with IMC 0609.04, "Initial Characterization of Findings," dated June 19, 2012, and Exhibit 3 of IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," dated June 19, 2012, and determined it is of very low safety significance (Green) because the performance deficiency did not result in an actual open pathway in the physical integrity of reactor containment and did not involve an actual reduction in function of hydrogen igniters in the reactor containment.

The inspectors determined that this finding had no cross-cutting aspect because the most significant causal factor, which is the failure to include the relays in the Preventative Maintenance program database, did not reflect current licensee performance. There was no indication that this specific performance deficiency occurred in the last three years.

Enforcement. TS 5.4.1, "Procedures," states: "Written procedures shall be established, implemented, and maintained covering the activities recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978." Regulatory Guide 1.33, Appendix A, Section 9.b states, in part, that preventive maintenance schedules should be developed to specify replacement of parts that have a specific lifetime.

Contrary to the above, written procedures were not implemented covering the activities recommended in Regulatory Guide 1.33. Since December 20, 1996, Entergy did not implement preventative maintenance schedules developed to specify replacement for six normally energized Agastat EGP control relays, which had a qualified life of 10 years, and were in service for as long as 31 years without any technical evaluation. Entergy's immediate corrective actions included replacing all six relays. Additionally, Entergy also entered the condition into the CAP as CR-2016-4243. Because this finding was of very low safety significance (Green), and has been entered into the CAP (CR-2016-04243), this violation is being treated as an NCV, consistent with Section 2.3.2.a of the NRC's Enforcement Policy.

(NCV 05000293/2016003-03, Failure to Properly Implement Agastat Control Relays Preventive Maintenance Procedure in accordance with TS 5.4.1)

2. Introduction. The inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," because Entergy did not perform an immediate operability determination and adequately evaluate the operability of PCIVs in accordance with procedure EN-OP-104, "Operability Determinations/Functionality Assessments," Revision 10.

Description. On June 16, 2016, Entergy generated CR 2016-04243, which identified six normally energized Agastat EGP relays that did not have a replacement preventive maintenance activity as required by the site's preventative maintenance program. One of those relays was in service for 17 years; the other five relays was in service for 31 years. PMBD-114, "Preventive Maintenance Program," Revision 2, required normally energized and high critical Agastat relays to be replaced on a 10 year frequency.

On June 20, 2016, the inspectors questioned Entergy about the operability of the six normally energized Agastat EGP relays, because there was no operability input included in CR 2016-04243 even though an operability determination was required by the process. EN-OP-104, Revision 10, states: "operability should be determined immediately upon discovery (i.e., Immediate Determination) without delay and in a controlled manner using the best information available." In response to this concern, Entergy staff performed an immediate operability determination and declared all six relays operable.

On June 21, 2016, the inspectors questioned the adequacy of Entergy's immediate operability basis because it stated that no degraded or nonconforming condition existed per EN-OP-104. The inspectors determined that because the relays were installed beyond their recommended service life they were considered "aging equipment" and in accordance with EN-OP-104 "aging equipment" was degraded. In response to this concern, Entergy re-evaluated the operability determination and concluded that the relays were operable-degraded or nonconforming. Then, on June 30, 2016, after additional evaluation by engineering, Entergy declared both PCIVs, CV-5065-91 and CV-5065-92 for drywell penetration X-32A, inoperable and issued event notification (EN) 52056, "Both Primarily Containment Isolation Valves for a Penetration Potentially Inoperable." As a result of this determination to satisfy TS LCO 3.7.A.2.b action statement, Entergy electrically deactivated the two relays, 16A-K17X11 and 16A-K18X11, and closed the affected PCIVs, CV-5065-91 and CV-5065-92. On July 1, 2016, Entergy replaced all six relays and exited the LCO.

Subsequent laboratory testing of the removed relays demonstrated that 16A-K17X11 and 16AK18X11, associated with PCIVs CV-5065-91 and CV-5065-92, remained operable before they were replaced on July 1. As a result, on August 29, 2016, Entergy retracted EN 52056 stating that, based on the test results, despite the relays being installed beyond their recommended service life, no loss of primary containment isolation system function occurred while the relays were physically installed and operating.

Analysis. The inspectors determined that the failure to adequately evaluate the operability of the PCIVs was a performance deficiency reasonably within Entergy's ability to foresee and correct, and therefore should have been prevented. Specifically, Entergy staff at Pilgrim did not perform an immediate operability determination and did not adequately evaluate the operability of SSCs and support functions for compliance with TS when they discovered that six normally energized Agastat EGP relays were installed beyond their recommended service life. The inspectors determined that the performance deficiency was more than minor because it was associated with the Human Performance attribute of the Barrier Integrity cornerstone and adversely affected the objective of providing reasonable assurance that physical design barriers protect the public from postulated radionuclide releases caused by accidents or events. Specifically, Entergy did not perform a timely and adequate operability determination as required by procedure, when provided information that suggested the affected safety-

related equipment could have been degraded. Specifically, the finding was similar to examples 4.j, in Appendix E of IMC 0612, given that the discovery that six normally energized Agastat EGP relays were installed beyond their recommended service life resulted in reasonable doubt on the operability of two containment isolation valves.

The Inspectors evaluated the finding in accordance with IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," Exhibit 3, for barrier integrity and determined it is of very low safety significance (Green) because the performance deficiency did not result in an actual open pathway in the physical integrity of reactor containment and did not involve an actual reduction in function of hydrogen igniters in the reactor containment.

The inspectors determined that this finding had a cross-cutting aspect in the area of Human Performance, Procedure Adherence, because Entergy did not initially evaluate the operability of the Agastat relays thoroughly as prescribed in EN-OP-104. Furthermore, Entergy failed to adequately evaluate the effect of the aging Agastat relays pertaining to the PCIV's operability. [H.8]

Enforcement. 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," states: "Activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions." EN-OP-104, Revision 10, states: "Operability should be determined immediately upon discovery (i.e., Immediate Determination) without delay and in a controlled manner using the best information available."

Contrary to the above, on June 16, 2016, Entergy staff did not determine the operability of PCIVs immediately upon discovery, without delay, and in a controlled manner using the best information available. Specifically, Entergy did not perform a timely and adequate operability determination as required by procedure. It took Entergy 74 days and four different operability determinations upon discovery of the degraded relays to finally conclude that PCIVs, CV-5065-91 and CV-5065-92, were operable. On June 30, Entergy performed an operability evaluation and declared all six relays inoperable. Entergy's immediate corrective actions included electrically deactivating two relays, 16A-K17X11 and 16AK18X11. Subsequently, both PCIVs, CV-5065-91 and CV-5065-92, were closed until all six relays were replaced. Two months later, on August 29, 2016, Entergy retracted EN 52056 and declared that both relays, 16A-K17X11 and 16AK18X11, were operable based on post-replacement test results. Because this finding was of very low safety significance (Green), and has been entered into the CAP (CR 2016-04753), this violation is being treated as an NCV, consistent with Section 2.3.2.a of the NRC's Enforcement Policy. **(NCV 05000293/2016003-04, Failure to Adequately Evaluate the Effect of Degraded Normally Energized Agastat Relays on PCIVs Operability)**

.3 Annual Follow-up: Condenser Bay Flooding Evaluation and Mitigating Actions

a. Inspection Scope

The inspectors reviewed Entergy's identification, evaluation, and corrective actions associated with an NRC-identified NCV issued in 2011. The NCV identified an inadequate evaluation of the impact of an internal flooding scenario in the condenser bay. Specifically, Entergy did not correctly evaluate a failure of seawater system piping or equipment that could challenge the doors separating the turbine building from the

reactor building auxiliary bay, which would require timely operator identification and action to secure the seawater pumps to prevent the common mode failure of redundant safety-related components. See Section 1.2.2.3 of NRC Inspection Report 05000293/2011007 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML113220117) for additional information.

The inspectors assessed Entergy's planned and implemented corrective actions to evaluate whether Entergy appropriately identified, characterized, prioritized, and corrected issues associated with the NCV. The inspectors compared the actions taken to the requirements of Entergy's CAP and 10 CFR 50, Appendix B. The inspectors interviewed engineering personnel to gain an understanding of the planned and implemented modifications associated with this issue. The inspectors also interviewed licensed operators to assess their knowledge of the condenser bay internal flooding scenario including indications available to them and required actions to mitigate the event. The inspectors performed a walk down of the accessible areas of the postulated flood path to independently assess the capability of the installed and planned modifications to prevent seawater from impacting the operation of safety-related equipment. Additionally, the inspectors performed a walk down of the main control room and the radwaste control room to assess the availability of indicators to alert operators of a flooding event.

b. Findings and Observations

No findings were identified.

On January 23, 2012, Entergy completed an apparent cause evaluation, as documented in CR-2011-4503, for the inadequate condenser bay flooding evaluation, which identified an apparent cause, a contributing cause, and several proposed corrective actions to address the causes. Entergy determined that the apparent cause of the inadequate evaluation was attributed to insufficient documentation available at the time the evaluation was initially conducted in 1972. The contributing cause was determined to be that there were missed opportunities to update the flooding analysis because the preparation of the flooding design basis document had not been given a high priority.

In procedure EN-LI-202, "Corrective Action Program," Entergy established a target completion for corrective actions of six months. Section 5.6[1](d) of the CAP procedure described the conditions required for designating corrective actions as long term corrective actions (LTCA). Specifically, if the corrective actions could not be completed within six months of initiation and met specific criteria such as development and implementation of a modification or work requiring a refueling outage, then the corrective action could be designation as an LTCA.

Section 5.6[3] of Entergy's CAP procedure described the requirements for requesting an extension of a corrective action, including a LTCA, due date using a process called Due Date Extension (DDE). Per Entergy's DDE process, the request must include a basis for why the extension is acceptable and necessary, and the risk of extending the action. Additionally, Attachment 9.4 of EN-LI-102 assigned approval authority for DDEs to the Responsible Manager of the corrective action or his/her designee.

The inspectors determined Entergy staff developed an LTCA with a due date of December 1, 2012, to reconstitute the design basis, prepare a flooding design basis document, and initiate required modifications. Entergy staff initiated and approved a DDE for this LTCA to February 21, 2013. The inspectors verified that Entergy staff followed their CAP process for extending corrective action due dates. The inspectors

noted that Entergy's CAP did not have a limit on the number of times a corrective action can be extended by the DDE process. At the time of the inspection, six additional DDEs had been requested and approved for this specific LTCA, and it had a final action due date of August 3, 2017.

The inspectors reviewed the status of the planned and implemented modifications. Several alarm response procedures were updated in February 2012 to alert operators to consider condenser bay flooding as the cause for the associated annunciator or alarm. The first of the planned physical plant modifications, including a new level transmitter and three watertight flood doors, were installed during the 2015 refueling outage. The level transmitter and circuitry provided control room operators with condenser bay level indication during a postulated flooding condition. The remaining modifications were scheduled to be implemented during the 2017 refueling outage.

The inspectors reviewed the operability evaluation currently in effect in accordance with procedure EN-OP-104, "Operability Determination Process," to independently assess Entergy's conclusion of an "operable but degraded or nonconforming condition." The inspectors concluded that with the indications available as a result of the completed modification, and the subsequent actions required per the alarm response procedures, that completed corrective actions were sufficient to provide for an operator to respond to a postulated condenser bay internal flooding condition within the 30 minutes determined necessary by the operability evaluation.

.4 Annual Sample: Review of Selected Additional Interim Actions Associated with Column 4 Entry

a. Inspection Scope

The inspectors performed an in-depth review of additional interim actions Entergy has implemented this year associated with entry into the Repetitive Degraded Cornerstone Column (Column 4) of the Reactor Oversight Process Action Matrix. Entergy developed interim actions, as documented in Pilgrim Station 2016/2017 Recovery Plan, Appendix D – Interim 95003 Actions, dated February 2016, to address the declining performance at PNPS, until the station completes development and implementation of a formal comprehensive recovery plan. The initial interim actions targeted five areas: Human Performance, CAP, Equipment Reliability, Nuclear Safety Culture, and Procedure Quality. Entergy implemented additional interim actions based on information identified by the site recovery team brought on site to help prepare for the final phase of the Inspection Procedure 95003 inspection. The inspectors reviewed a sample of these additional actions: operability determinations/functionality assessments (ODFAs), abnormal operating procedure quality, and recovery measure metrics. The inspectors reviewed self-assessments, observed ODFA challenge meetings, performed field observations of operations and maintenance personnel, and interviewed station personnel to determine if the implementation of the selected interim actions was providing the desired performance improvement.

b. Findings and Observations

No findings were identified.

Initial interim actions were identified by November 2015 and implemented by late January 2016. Entergy implemented additional interim actions in April 2016 through July 2016 based on site recovery team feedback while preparing for the Inspection Procedure 95003 inspection. In general, the inspectors concluded that sampled interim actions were performed as directed and plant performance recovery indicators were monitored.

Operability Determinations/Functionality Assessments

An action plan was implemented (CR-2016-01340) to address ODFAs performance (i.e. not always meeting the procedure requirements of Entergy's operability determination process, EN-OP-104). Causes that resulted in inadequate or incomplete ODFAs included senior operators, at times, exhibiting less than adequate task knowledge and skill; shift complement workload; and insufficient management oversight of the ODFA process. Entergy established a contract mentor to the operations department who is an industry subject matter expert on ODFAs to provide one-on-one coaching to shift senior operators. The ODFA mentor reviews daily logs and CRs and provides individual and crew/shift feedback on a daily, weekly, and monthly basis regarding documented ODFAs. The feedback was documented, based on established criteria consistent with industry best practices, and shared with PNPS management. A review of documented feedback indicated effective implementation of ODFA mentoring program. Observed ODFA challenge board meetings were intrusive and critical. Mentor and challenge board meetings identified issues were appropriately entered into the CAP. In addition, an ODFA template for CAP and an operator aid (Operator Aid 16-06) to the operability determination procedure was developed to assist senior operators to evaluate and document applicable conditions more effectively. These aids provide a thorough example and visual road-map of the ODFA process. Entergy ODFA actions focused on improvements in implementing and mentoring the existing process once an issue is recognized, however, the inspectors noted that actions to help operators recognize conditions requiring ODFA evaluations were not apparent. The observation was communicated to the site recovery manager. A recent snap-shot assessment (CR-2016-01340, CA12; August 2016) of the ODFA performance improvement plan determined performance is improving, Phase I interim actions satisfactory, but not all objectives have been met (ODFA quality below goal, 93% vs. 99%); operations management considers the action plan in progress.

Abnormal Operating Procedure Quality

The procedure quality action plan is documented in CR-2016-2058. Entergy completed reviewing 64 procedures that are entered based on an event or system loss. A team comprised of operations, procedure, and training staff developed a screening checklist and evaluated each procedure against six attributes. The attributes screened against understanding downstream effects and losses, use of alternate equipment and instrumentation, clarity of conditional decision steps, and consistency of name/nomenclature conventions. Of the 64 procedures reviewed, 46 were revised. Though PNPS modified the procedures in accordance with their procedure writer's guide, actions are in progress to update it to current industry standards (PPA AP-907-005, Procedure Writer's Manual). Inspectors reviewed updated procedures and compared the updates to the writer's guide. Updates generally included the attributes from the screening checklist. Other actions in progress are to develop procedure reviewer qualification training with third-party certification, implement gap training to managers and supervisors, and implement a qualification program for procedure reviewers. These actions are currently scheduled for completion in November 2016.

Recovery Measure Metrics/Performance Indicators

Inspectors reviewed the station's monthly recovery measures progress reports that documents the performance indicators and criteria since January 2016. Based on transitioning from interim actions to full Inspection Procedure 95003 recovery actions, the monthly recovery measures progress report was retired in August 2016 and embedded into the 95003 recovery metric performance indicators. Inspector review of the two performance indicator tables (previous Recovery Measures vs. current 95003 Recovery Metrics) indicates a nearly one-for-one transition of performance monitoring with appropriate basis and performance goals established. Actions were still in progress to transition the performance indicators and effectiveness assessment at the time of inspector review, but actions to adjust select performance goals (e.g. change ODFA goal from 99% to 96%) were made based on Entergy's effectiveness assessment. In general, the performance indicators and assessments verified actions were being performed as required.

4OA3 Follow-Up of Events and Notices of Enforcement Discretion (71153 – 1 sample)

(Closed) Licensee Event Report (LER) 05000293/2016-001-00: Both Emergency Diesel Generators Inoperable

On April 11, 2016, Entergy discovered a leak on the EDG 'A' jacket water pressure indicating line while EDG 'B' was OOS for scheduled maintenance. The leak was caused by stress corrosion cracking of the bulkhead pipe fitting. As a result, both 'A' and 'B' EDGS were inoperable at the same time, resulting in a safety system function failure and TS 24-hour LCO. The cracked fitting was replaced and EDG 'A' was tested and returned to service. Inspectors reviewed the LER and did not identify any findings or violations of NRC requirements. This LER is closed.

4OA5 Other Activities

Repetitive Degraded Cornerstone (Column 4) Follow-Up Activities

Background

As described in the Mid-cycle Assessment letter, dated September 1, 2016 (ADAMS Accession No. ML15243A259), PNPS remains in the Repetitive Degraded Cornerstone Column (Column 4).

Completed Activities

Regional management conducted multiple site visits to Pilgrim to meet with senior Pilgrim management, as well as provide oversight for various inspections conducted during the third quarter. Additionally, the NRC Deputy Executive Director for Reactor and Preparedness Programs conducted a site visit on September 13, 2016.

In addition, the resident inspector staff conducted an annual problem identification and resolution inspection sample on Entergy's interim recovery actions. The results of this inspection are documented in Section 4OA2 of this inspection report.

Scheduled Activities

On September 2, 2016, Entergy declared readiness for the 95003 Phase 'C' inspection. On October 13, 2016, the NRC notified Entergy of the inspection dates – November 28, 2016 through December 9, 2016, and January 9, 2017 through January 13, 2017 (ADAMS Accession No. ML16286A592).

The objectives of Inspection Procedure 95003 are to: 1) provide the NRC with timely additional information to be used in deciding whether the continued operation of the facility is acceptable and whether additional regulatory actions are necessary to arrest declining licensee/plant performance; 2) provide an independent assessment of the extent of risk-significant issues to aid in the determination of whether an unacceptable margin of safety or security exists; 3) independently assess the adequacy of the programs and processes used by the licensee to identify, evaluate, and correct performance issues; 4) independently evaluate the adequacy of programs and processes in the affected strategic performance areas; 5) provide insight into the overall root and contributing causes of identified performance deficiencies; and 6) evaluate the licensee's third-party safety culture assessment and conduct a graded assessment of the licensee's safety culture based on the results of the evaluation.

4OA6 Meetings, Including Exit

On October 20, 2016, the inspectors presented the inspection results to Mr. John Dent, Site Vice President, and other members of the PNPS staff. The inspectors verified that no proprietary information was retained by the inspectors or documented in this report.

ATTACHMENT: SUPPLEMENTARY INFORMATION

SUPPLEMENTARY INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

J. Dent, Site Vice President
J. MacDonald, General Plant Manager
B. Chenard, Director of Engineering
M. Romeo, Director of Performance Improvement
D. Noyes, Director of Recovery
S. Asplin, System Engineer
R. Blagbrough, Senior Engineer
H. Bouska, Procedure Writer
B. Byrne, Regulatory Assurance
S. Burke, Senior Design Engineer
W. Carroll, Senior Engineer
F. Clifford, Operations Support
R. Coolidge, Supervisor Control Room
M. Dagnello, Maintenance Supervisor
J. Edelhauser, Work Week Manager
J. Falconieri, Sr. Lead Engineer/FIN
G. Flynn, Operations Manager
P. Gallant, Ops Shift Manager
J. Gerety, Engineering System Manager
K. Goodall, Shift Manager
M. Green, Motor Operated Valves Engineer
P. Harizi, Lead Mechanical Engineer
M. Hettwer, Shift Manager
K. Kampschneider, System Engineer
J. Keene, Electrical Design Supervisor
K. Kee, Code Program Supervisor
R. Kiley, Operations Support
J. Jacobs, Manager NIOS
D. Kazyaka, Senior Staff Engineer
J. Kalb, Lead C/S/M Engineer
C. Littleton, Senior Lead Engineer PRA
M. Lynch, Engineering Supervisor
A. Maderias, NSSS Supervisor System Engineer
M. Mantenfel, System Engineer Supervisor Electrical and I&C
M. McClellan, EQ Program Engineer
J. McDonough, Control Room Supervisor
C. McMorrow, Fire Marshall
R. Metthe, Civil Structural FIN
P. Minor, Regulatory Assurance
P. Mone, Senior Engineer
R. Morris, EDG System Engineer
A. Niederberger, System Engineer
L. Pepple, Radiation Protection Superintendent
E. Perkins, Manager Regulatory Assurance

D. Peyvan, Air Operated Valves Engineer
 H. Quinones, Electrical Design Engineer
 B. Rancourt, I&C Lead Engineer
 P. Smith, Operations Assistant Manager
 R. Tesslier, Operability Determination/Functional Assessment Mentor - Contractor
 J. Tucker, Mechanical Design Supervisor
 G. Von Der Esch, 95003 Recovery Manager
 J. Whalley, Shift Manager
 K. Woods, BOP Supervisor System Engineer
 M. Williams, Licensing Specialist
 S. Woods, Asst. Director Engineering

LIST OF ITEMS OPENED, CLOSED, DISCUSSED, AND UPDATED

Opened/Closed

05000293/2016003-01	NCV	Process Radiation Monitor Subsystems 10 CFR 50.65(a)(2) Not Met (Section 1R12)
05000293/2016003-02	NCV	Inadequate Operability Assessment on EDG 'B' (Section 1R15)
05000293/2016003-03	NCV	Failure to Properly Implement Agastat Control Relays Preventive Maintenance Procedure in Accordance with TS 5.4.1 (Section 4OA2)
05000293/2016003-04	NCV	Failure to Adequately Evaluate the Effect of Degraded Normally Energized Agastat relays on PCIVs Operability (Section 4OA2)

Closed

05000293/2016-001-00	LER	Both Emergency Diesel Generators Inoperable (Section 4OA3)
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LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Miscellaneous

32-9226914, PNPS Flooding Hazard Re-Evaluation, Revision 0, dated 3/9/15
 SDBD-30A, Design Basis Document for Reactor Building Closed Cooling Water (RBCCW) System, dated 11/20/07
 Temporary Modification EC 43716, Remove Cover from Pull Box J2300, Revision 0

Section 1R04: Equipment Alignment

Procedures

2.2.22, Reactor Core Isolation Cooling System (RCIC), Revision 80
 2.2.24, Standby Liquid Control System, Revision 47
 2.2.50, Standby Gas Treatment, Revision 72
 2.5.2.71, Radwaste Collection System, Revision 38
 3.M.4-14.3, RBCCW Pump Maintenance, Revision 17, performed 6/6/16
 3.M.4-53, Check Valve Disassembly and Inspection, Revision 6, performed 8/23/10
 8.5.3.1, Reactor Building Closed cooling Water System Quarterly and Biennial Comprehensive Operability, Revision 61
 EN-MA-133, Control of Scaffolding, Revision 12
 SEP-PNPS-IST-001, In-service Pump and Valve Testing Program, Revision 5

Condition Reports

2013-1784	2013-2163	2013-6973	2014-2500	2016-4577	2016-4586
2016-4587	2016-4903	2016-6052	2016-6265	2016-6266	

Maintenance Orders/Work Orders

00270021	00345964	52221068	52224054	52506364	52507755
52517284	52570079	52685399			

Miscellaneous

32-9226914, PNPS Flooding Hazard Re-Evaluation, Revision 0, dated 3/9/15
 8.5.3.1, P-202A, Quarterly and Biennial Comprehensive In-service Pump Test, Revision 61, performed 5/2/16
 8.5.3.8, RBCCW PMPS Alternate Shutdown Panel Test, performed 10/8/15
 Apparent Cause Evaluation Report, Buried Neutralizing Sump Discharge Line Failure, CR-PNP-2013-2163, Revision 1, dated 4/10/14
 E347, Electrical Raceway Design, Procurement, Installation, Revision 15
 PMBD-239, Reactor Building Closed Cooling Water Pumps (RBCCW) Preventive Maintenance Basis Document
 RBCCW System Health Report-Second Quarter 2016
 RBCCW P-202A, Vibration Trends
 RBCCW EQ Data Sheets, Revision 11
 SDBD-30A, Design Basis Document for Reactor Building Closed Cooling Water (RBCCW) System, dated 11/20/07
 Temporary Modification EC 43716, Remove Cover from Pull Box J2300, Revision 0

Surveillance and Modification Acceptance Tests

8.5.3.1, P-202A, Quarterly and Biennial Comprehensive In-service Pump Test, Revision 61, performed 5/2/16
 8.5.3.8, RBCCW PMPS Alternate Shutdown Panel Test, performed 10/8/15

Drawings

6498-616, Isometric Diagram RBCCW Pumps P-202 A, B, and C Suction and HX-E-209 A, Both Sides, Revision EO
 6498-618, Sheets 1, 2, and 3, Isometric Diagram RBCCW Pumps P-202 D, E & F Discharge, Revision EO
 6498-620, Isometric Diagram RBCCW HX E-209A Suction from RHR HX-E-209 A Discharge, Revision EO

6498-621, Isometric Diagram RBCCW Pumps P-202 D, E & F Discharge to RHR HX, Revision EO
 6498-622, Isometric Diagram RBCCW from HX-E-207 B, Discharge, Revision EO
 6498-623, Isometric Diagram RBCCW Fuel Pool HX-E-206A, Suction, Revision EO
 6498-624, Isometric Diagram RBCCW Suction from Fuel Pool HX-E-206A, E-11 A & B, Revision EO
 6498-626, Isometric Diagram RBCCW from Surge Tank T-201A to Pumps P202A, P202B & P202C Suction Header, Revision EI
 6498-627, Isometric Diagram RBCCW Loops from Tank T-201B, Revision EO
 6498-635-1, Isometric Diagram RBCCW from Reactor Drywell to Reactor Cooling Water Loop B, Revision EO
 6498-635-2, Isometric Diagram RBCCW from Cleanup Recirc. Pumps Seal Coolers E-206B and E-216B, Revision EO
 M215, Sheets 1, P&ID Reactor Building Cooling Water System, Revision 52
 M215, Sheets 2, P&ID Reactor Building Cooling Water System, Revision 46
 M215, Sheets 3, P&ID Reactor Building Cooling Water System, Revision 41
 M215, Sheets 4, P&ID Reactor Building Cooling Water System, Revision 46
 M232, P&ID Radwaste Collection System, Revision 38
 M241, Sheets 2, P&ID Residual Heat Removal System, Revision 49

Section 1R05: Fire Protection

Procedures

89XM-1-ER-Q, Updated Fire Hazard Analysis, Revision 16
 5.5.2, Special Fire Procedure, Revision 55
 5.5.2, Special Fire Procedure, Revision 56
 EN-DC-161, Control of Combustibles, Revision 14
 EN-DC-161, Control of Combustibles, Revision 15
 Fire Area 5.1, Fire Zone 5.1, "A" Train Service Water Pumps Room, Revision 16
 Fire Area 5.2, Fire Zone 5.2, "B" Train Service Water Pumps Room, Revision 16
 Fire Area 5.3, Fire Zone 5.3, "C" Service Water Pump Room, Revision 16
 Fire Hazard Analysis

Condition Reports

2016-6587 2016-7532

Miscellaneous

89XM-1-ER-Q, Updated Fire Hazard Analysis, Revision 16
 PNPS Report 89XM-1-ER-Q, Updated Fire Hazards Analysis

Section 1R07: Heat Sink Performance

Procedures

8.5.3.2.1, Salt Service Water Pump Quarterly and Biennial (Comprehensive) Operability and Valve Operability Tests, Revision 28; Surveillance Date: 8/13/14
 EN-OP-104, Operability Determination Process, Revision 10

Condition Reports

2015-01462 2016-00210 2016-02473 2016-03683 2016-03688 2016-03831
 2016-03896

Maintenance Orders/Work Orders

52402797 52439222 52452281 52452952 52595164

Miscellaneous

PMRQ 50076292-01, 3.M.4-120 Lube Hinge Pin 29-CK-3990A

PMRQ 50076292-02, {5A} 3.M.4-14.2 ATT 10 Replace 29-CD-3880A, Inspect, & Rebuild
System Health Report, PNPS | Unit 1 | C0 – RBCCW, Period: Q2-2016System Walk Down Inspection Checklist Attachment 9.2, HPCI Room/ADP/Vacuum Bkr
Valves/5 Valve/ D8&9, 6/27/16System Walk Down Inspection Checklist Attachment 9.2, HPCI Room/ADP/Vacuum Bkr
Valves/5 Valve/ D8&9, 5/26/16Specification Number M591, Revision E7, SSW & RBCCW Safety Related Piping and Heat
Exchanger Inspection, Maintenance, and Test Requirements in Response to Generic
Letter 89-13, January 24, 2005Drawings

M212 SH 1, PI&D Service Water System, Revision 96

M215 SH 1, Rev 52, PI&D Cooling Water System Reactor Building, Revision 52

M215 SH 2, PI&D Cooling Water System Reactor Building, Revision 50

M215 SH 3, PI&D Cooling Water System Reactor Building, Revision 41

M215 SH 4, PI&D Cooling Water System Reactor Building, Revision 46

M215 SH 5, Composite PI&D Cooling Water System Reactor Building, Revision E8

M241 SH 1, PI&D Residual Heat Removal System, Revision 88

M241 SH 2, PI&D Residual Heat Removal System, Revision 49

Section 1R11: Licensed Operator Regualification ProgramProcedures

2.2.94.5, Main Condenser Backwash, Revision 15

2.4.36, Decreasing Condenser Vacuum, Revision 35

Miscellaneous

Simulator Scenarios O-RQ-06-02-144 and O-RQ-06-02-145

Section 1R12: Maintenance EffectivenessProcedures

EN-DC-205, Maintenance Rule Monitoring, Revision 5

EN-DC-206, Maintenance Rule (a)(1) Process, Revision 3

Condition Reports

2014-5641	2014-5787	2014-5837	2014-6672	2015-0481	2015-1613
2015-7042	2015-7934	2015-8001	2016-3129	2016-3143	2016-3510
2016-4285	2016-7115	2016-7260			

Miscellaneous

Instrument Air System Health Reports

Instrument and Service Air Maintenance Rule Basis Document

Instrument Air System Performance Data

Drawings

M220, P&ID Compressed Air System, Revision 77

Section 1R13: Maintenance Risk Assessments and Emergent Work ControlProcedures

1.5.22, Risk Assessment Process, Revision 26

2.2.21, High Pressure Coolant Injection (HPCI), Revision 85

8.F.38, Emergency Diesel Fuel Oil Day Tank Level Instrumentation Functional and Calibration Test- Critical Maintenance, Revision 14

8.M.2-2.10.3-2, RHR LPCI Containment Spray Subsystem B Logic Test, Revision 38

8.M.2-2.10.8-6, Diesel Generator 'B' Initiation By Loss Of Offsite Power Logic – Critical Maintenance, Revision 51

EN-OP-119, Protected Equipment Postings, Revision 8

EN-WM-104, On Line Risk Assessment, Revision 12

EN-WM-104, Online Risk Assessment, Revision 13

Condition Reports

2016-4899 2016-4901 2016-6098 2016-7156 2016-7171

Maintenance Orders/Work Orders

52606810

Miscellaneous

EOOS risk evaluation work week 1633, dated 8/10/2016

ESOMS Narrative Log

Online Risk Assessment for the week of 7/10/16

Online T-Week Report

Procedure Control Form for EWN 16-00023, Emergency Diesel Generator Fuel Oil Day Tank Level Functional, dated 7/11/2016

Protected Equipment List

Section 1R15: Operability Determinations and Functionality AssessmentsProcedures

2.2.46, Control Room, Cable Spreading Room, and Computer Room Heating, Ventilation, and Air Conditioning System, Revision 58

3.M.3-60, Infrared Thermography, Revision 11

3.M.3-60, Infrared Thermography, Revision 12

3.M.4-17.4, Lubrication Sampling and Change Procedure, Revision 44

CEP-NDE-0902, VT-2 Examination, Revision 7

EN-DC-134, Control Room Habitability Radiological Reassessment for DBA LOCA, Revision 0

EN-LI-102, Corrective Action Program, Revision 26

EN-LI-102, Corrective Action Program, Revision 27

Condition Reports

2007-1277 2011-4285 2015-5378 2016-1473 2016-1546 2016-3308

2016-4245 2016-4897 2016-5724 2016-5766 2016-5785 2016-5856

2016-5884 2016-6031 2016-6048 2016-6122

Maintenance Orders/Work Orders

51533968 52471390 52563936 52693933 52693937

Miscellaneous

Certificate of Conformance, NTS Job No. PR050238, approved on August 1, 2016
 Data from Past Operability Test, NTS Procedure PR050238-TP-16
 Engineering Change 34580, 46796
 ECR 5000046010, RY – Engineering to Provide Information for Leak Injection of E-207B Lower Flange Bolting
 ECR 11034, [RFO18-PO38] Evaluate Reinjection of Upper Flange
 Equipment Apparent Cause Evaluation, CR-PNP-2016-1546, Hot spots discovered on OL heater for 52M-1544, Revision 0
 HPCI Pump P-205, Vibration Data Trends
 HPCI System Health Report-Second Quarter 2016
 LER 05000293/2016-004-00
 Memorandum, Dated 6/29/88, Response to NRC Bulletin 88-04, Potential Safety-Related Pump Loss
 Memorandum, Dated 3/3/92, Response to NRC Bulletin 88-04, Potential Safety-Related Pump Loss
 MR 07105865, B RHR HX: Identified under CR-2007-1277 is the lower head shell to head flange leak. Leakage is through an injection port and seepage on a number of adjacent studs. Completed 05/07/2007
 NC-6242, 21 Centrifugal Charging Pump (CCP) Performance Data, dated 9/7/12
 SDBD-61, Design Basis Document for Emergency Diesel Generators, Revision 2

Calculations, Analysis, and Evaluations

EN-DC-134, Control Room Habitability Radiological Reassessment for DBA LOCA, `Revision 0

Surveillance and Modification Acceptance Tests

8.5.4.1, High Pressure Coolant Injection (HPCI) System Pump and Valve Quarterly and Biennial Comprehensive Operability, Revision 119, performed 8/19/16
 8.5.4.1, High Pressure Coolant Injection (HPCI) System Pump and Valve Quarterly and Biennial Comprehensive Operability, Revision 119, performed 8/11/16

Drawings

M286, Heating Ventilation & Air Conditioning Temperature Control Diagram for Control Room, Cable Spreading and Computer Room, Revision 19
 M287, Plant Ventilation Diagram, Revision 41
 M292, Heating Ventilation & Air Conditioning Temperature Control Diagram for Control Room, Cable Spreading & Computer Room, Revision 19
 SE155, Station Electrical Single Line Composite Diagram 4.16KV & 480V AC Systems, Sheet 2, Revision 75
 E119, Main Control Room Board C3 Annunciator Inputs, Revision 34
 E40, 4160V System Breakers 152-509 and 152-609, Revision 26

Section 1R18: Plant Modifications

Procedures

ARP-C903L, Alarm Response Procedure, Revision 15
 ARP-C903R, Alarm Response Procedure, Revision 24

Miscellaneous

EC 64762, Revision 0

50.59 Evaluation SE 3408 Revision 0

Calculation IN1-13, "Torus Water level," Revision 1

Calculation M1412, "Determine Time Limit to Start Core Spray Pumps after Loss of Keepfill System," Revision 0

Calculation A15153-C-001, "Core Spray Refill Transients," Revision 0

Calculation A16206-C-001, "RHR System Void Refill Transients," Revision 0.

Section 1R19: Post-Maintenance TestingProcedures

2.2.11, 120 AC Instrument Power System (41), Revision 62

2.2.14, 125 VdC System, Revision 70

3.M.2-7.2, Calibration of Miscellaneous Plant Instrumentation, Revision 23

3.M.3-24.15, Valve Stem Lubrication, Revision 10

3.M.3-51, Electrical Termination Procedure, Revision 31

3.M.4-14.3, Reactor Building Closed Cooling Water Pump Maintenance – Critical Maintenance, Revision 17

8.7.4.4, Main Steam Isolation Valve Operability 60% Power, Revision 27

8.B.6.4, Startup Transformer Deluge Water Spun, System Functional Test, Revision 15

8.I.11.21, Main Steam Isolation Valve Cold Shutdown Operability, Revision 2

EN-WM-107, Post-Maintenance Testing, Revision 5

Condition Reports

2016-2903 2016-4243 2016-4683 2016-5216 2016-5987 2016-6220

Maintenance Orders/Work Orders

00447099 00447157 00448916 00448917 00448918 00448919

00448920 00448921 00452093 00452805 00454151 00454230

51525596 52629098 52643922 52696573

Miscellaneous

Engineering Changes 64173, 65903

IN2010-003, Failures of Motor-Operated Valves due to Degraded System Lubricant dated February 3, 2010

M&TE calibration report for PNP-STO066 dated May 17, 2016

V-0383, Industrial Control Relays and Switches, Revision 21

Drawings

E550, Sheet 27, Instrument Loop Drywall Torus Differential Pressure, Revision 4

Section 1R20: Refueling and Other Outage ActivitiesProcedures

2.1.8.7, ASME Code Visual Examinations of Primary Containment, Revision 9

EN-EP-S.012-P, Pilgrim IWE Augmented Examination, Revision 3

SEP-CISI-PNPS-001, ASME Code Visual Examination of Primary Containment, Revision 1

Condition Reports

2016-6031 2016-6188 2016-6190 2016-6192 2016-6242 2016-6315
2016-6316

Maintenance Orders/Work Orders

00345964 52570021

Miscellaneous

Regulatory Guide 1.33, Quality Assurance Program Requirements (Operation), Revision 2
Memorandum, Dated 11/21/2008, Pilgrim Nuclear Power Station-Issuance of Amended Re:
Adoption of TSTF-448, Revision 3, Control Room Envelope Habitability (TAC No.
MD7497)

Surveillance and Modification Acceptance Tests

ENN-EP-S-S-001, Visual examination of IWE Surfaces (VT-3), General Visual Walkdown
(Drywell & Torus), RFO-18-IWE, performed 5/6/11
ENN-EP-S-S-001, Visual examination of IWE Surfaces (VT-3), General Visual Walkdown
(Drywell & Torus), RFO-20-IWE, performed 5/8/15

Section 1R22: Surveillance TestingProcedures

1.3.34, Operations Administrative Policies and Processes, Revision 141
2.2.50, Standby Gas Treatment, Revision 72
5.3.35, Operations Management Emergency and Transient Response Expectations for
Operating Crews, Revision 20
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2016-6534	2016-6543	2016-6544	2016-6546	2016-6547	2016-6548
2016-6569	2016-6570	2016-6571	2016-6576	2016-6577	2016-6579
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2014-4569	2015-0998	2016-0389	2016-1340	2016-2052	2016-2058
2016-3928	2016-4244	2016-4253	2016-4417	2016-4437	2016-4440
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O-RQ-04-01-146, Licensed Operator Requalification, 2010-2012 PSU Cycle 7, Revision 0

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EC-64253, SEE524 Substitution Equivalency Evaluation, Revision 1

PS163, Setpoint Calculation for Degraded Voltage Relays for Bus B6, Revision 0

PS164, Setpoint Calculation for Anti-Cycling Relays, Revision 0

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8.M.2-1.5.9, Primary Containment Isolation Valve Testing, Completed 5/08/2013

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8.9.1, Emergency Diesel Generator and Associated Emergency Bus Surveillance, Revision 132

2.1.12.1, Emergency Diesel Surveillance, Revision 82

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16-0229-TR-001, Emergency Diesel Generator Bulkhead Fitting Failure Analysis, Revision 0

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SDBD-61, Design Basis Document for Emergency Diesel Generators, Revision 2

LIST OF ACRONYMS

10 CFR	Title 10 of the <i>Code of Federal Regulations</i>
ADAMS	Agencywide Documents Access and Management System
CAP	corrective action program
CHRMS	Containment High Radiation Monitoring System
CR	condition report
DDE	due date extension
EDG	emergency diesel generator
EN	Event Notification
FSAR	Final Safety Analysis Report
HPCI	high pressure coolant injection
IMC	Inspection Manual Chapter
LER	licensee event report
LCO	limiting conditions for operation
LPCI	low pressure core injection
LTCA	long term corrective action
MSIV	main steam isolation valve
MSPI	mitigating system performance index
NCV	non-cited violation
NRC	Nuclear Regulatory Commission
ODFA	Operability Determination/Functionality Assessment
OOS	out of service
PCIV	primary containment isolation valve
PNPS	Pilgrim Nuclear Power Station
PRM	process radiation monitor
RBCCW	reactor building closed-cooling water
RCIC	reactor core isolation cooling
RHR	residual heat removal
SBGT	standby gas treatment
SLC	standby liquid control
SSC	structure, system, and component
SSW	salt service water
TS	technical specification
WO	work order