



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION I
2100 RENAISSANCE BLVD., SUITE 100
KING OF PRUSSIA, PA 19406-2713

May 15, 2017

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 05000293/2017001**

Dear Mr. Dent:

On March 31, 2017, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Pilgrim Nuclear Power Station (PNPS). On April 20, 2017, 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 two findings of very low safety significance (Green) in this report. Two of these findings involved violations of NRC requirements. Additionally, NRC inspectors documented one Severity Level IV violation with no associated finding. 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 or a finding not associated with a regulatory requirement in this report, 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.

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

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REPORT 05000293/2017001 DATED MAY 15, 2017

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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No. 50-293

License No. DPR-35

Report No. 05000293/2017001

Licensee: Entergy Nuclear Operations, Inc. (Entergy)

Facility: Pilgrim Nuclear Power Station (PNPS)

Location: 600 Rocky Hill Road
Plymouth, MA 02360

Dates: January 1, 2017 through March 31, 2017

Inspectors: E. Carfang, Senior Resident Inspector
B. Pinson, Resident Inspector
L. Brandt, Acting Resident Inspector
J. Vasquez, Project Engineer
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Approved By: Arthur L. Burritt, Chief
Reactor Projects Branch 5
Division of Reactor Projects

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SUMMARY

IR 05000293/2017001; 01/01/2017 – 03/31/2017; PNPS; Post-Maintenance Testing, Problem Identification and Resolution, Follow-up of Events and Notices of Enforcement Discretion.

This report covered a three-month period of inspection by resident inspectors and announced baseline inspections performed by regional inspectors. The inspectors identified three 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 October 28, 2016. 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 November 1, 2016. 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 TS 5.4.1 "Procedures," when Entergy did not follow the site procedures for limiting condition for operation (LCO) entries, Technical Specification (TS) usage, and procedure adherence. Specifically, on March 1, 2017, Entergy did not implement procedure 1.3.6, "Technical Specifications-Adherence and Clarifications," and perform the procedural required preparation steps to commence a controlled and orderly shutdown when required by TS LCOs. Additionally, Entergy did not properly exit a TS LCO, based on procedure 1.3.34.2, "Limiting Conditions for Operation Log," requirements. Entergy entered the issue into the corrective action program (CAP) as condition report (CR) 2017-3724.

The performance deficiency is more than minor because if left uncorrected, would have the potential to lead to a more significant safety concern. Specifically, the Entergy operations staff exited the LPCI LCO without personal observation by the senior reactor operator (SRO) signing off the work order (WO) that the maintenance postwork testing was complete and failed to implement the procedural required preparation steps to perform a controlled and orderly shutdown when required by TS LCOs. Inspectors evaluated this finding using IMC 0609.04, "Initial Characterization of Findings," and IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," issued June 19, 2012, and determined that the finding was of very low safety significance (Green), because the finding was not a design or qualification deficiency, did not represent a loss of safety system function, and did not screen as potentially risk significant due to external initiating events. The inspectors determined that this finding had a cross-cutting aspect in the area of Human Performance, Procedure Adherence, in that individuals follow processes, procedures, and work instructions. Specifically, Entergy did not use procedural guidance explicitly put in place to provide operators clear direction on how to prepare and perform an orderly shutdown upon entering a TS LCO with shutdown requirements. [H.8] (Section 1R19)

Cornerstone: Barrier Integrity

- Green. The inspectors identified a Green NCV of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Actions," when Entergy did not take timely corrective action to correct a condition adverse to quality. Specifically, when BADGER testing results revealed gaps in

neutron absorber material that exceeded spent fuel storage design feature assumptions and therefore did not ensure compliance with TSs, the station did not establish corrective actions to ensure configurations and limitations would meet subcriticality analysis beyond September 2017. Entergy entered this into the CAP as CR 2017-1650 and is performing a root cause evaluation to evaluate options and establish corrective actions to ensure compliance is met beyond this timeframe.

The performance deficiency was more than minor because it was associated with the Barrier Integrity cornerstone attribute of configuration control (reactivity control) and adversely affected the cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. 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," the inspectors determined that this finding is of very low safety significance (Green) because the finding did not adversely affect any of the barrier integrity screening questions. The inspectors determined this finding had a cross-cutting aspect in Problem Identification and Resolution, Evaluation, because the organization did not thoroughly evaluate issues to ensure that resolutions address causes and extent of conditions commensurate with their safety significance. Specifically, the casual evaluation written to address the boraflex degradation was focused on restoring compliance and correcting immediate condition, and did not include longer term corrective actions to mitigate the likelihood of recurrence. [P.2] (Section 4OA2.2)

- Severity Level IV. The inspectors identified a Severity Level IV NCV of 10 CFR 50.72, "Immediate Notification Requirements for Operating Nuclear Power Reactors," because a TS required shutdown was not reported to the NRC within four hours of the occurrence, as required by 10 CFR 50.72(b)(2)(i). Specifically, on December 16, 2016, PNPS initiated a shutdown, as required by TS, as a result of the discovery of leakage associated with main steam isolation valves (MSIVs) 2C and 2D, leading to the required isolation of the 'C' and 'D' main steam lines. Entergy entered the issue into the CAP as CR 2017-3723.

Inspectors determined the issue had the potential to affect the NRC's ability to perform its regulatory function, therefore, the inspectors evaluated this performance deficiency in accordance with the traditional enforcement process. Using example 6.9.d.9 from the NRC Enforcement Policy (the failure of a licensee to make a report as required by 10 CFR 50.72 or 10 CFR 50.73), the inspectors determined that the violation was a Severity Level IV violation. Because this violation involves the traditional enforcement process and does not have an underlying technical violation, inspectors did not assign a cross-cutting aspect to this violation in accordance with IMC 0612, Appendix B. (Section 4OA3.1)

REPORT DETAILS

Summary of Plant Status

The unit began the inspection period at 100 percent power. On February 6, 2017, operators reduced power to 45 percent power, and continued to reduce power to 30 percent on February 7, 2017, for condenser tube repairs. On February 9, 2017, operators commenced shutdown from 30 percent power for blizzard conditions. On February 12, 2017, following condenser tube repairs, operators commenced a reactor startup. The operators paused the power ascension at 39 percent power on February 13, 2017, to repair a feedwater instrument line. Following repairs, they increased power to 89 percent on February 14, 2017, then they performed a rapid downpower to 40 percent due to degraded condenser vacuum. After condenser backwash was completed due to seaweed buildup, operators returned the unit to 100 percent power on February 14, 2017. On March 14, 2017, due to 345kV grid stability concerns, the operators rapidly reduced power to 75 percent. The operators returned to full power on March 15, 2017. On March 28, 2017, operators reduced power to 95 percent due to condenser fouling. Operators raised power to 97 percent on March 28, 2017, and remained at 97 percent power for the remainder of the inspection period. Documents reviewed for each section of this inspection report are listed in the Attachment.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01 – 3 samples)

Readiness for Impending Adverse Weather Conditions

a. Inspection Scope

The inspectors reviewed Entergy's preparations for the onset of blizzard conditions on January 7 and February 9, 2017, as well as the onset of severe winter weather conditions on March 14, 2017. The inspectors reviewed the implementation of adverse weather preparation procedures before the onset of and during this adverse weather condition. The inspectors walked down the emergency diesel generators (EDGs), station blackout diesel generator (SBODG), and switchyard to ensure system availability. The inspectors verified that operator actions defined in Entergy's adverse weather procedure maintained the readiness of essential systems. The inspectors discussed readiness and staff availability for adverse weather response with operations and work control personnel.

b. Findings

No findings were identified.

1R04 Equipment Alignment

Partial System Walkdowns (71111.04 – 3 samples)

a. Inspection Scope

The inspectors performed partial walkdowns of the following systems:

- EDG 'A' with residual heat removal (RHR) 'B' out of service (OOS) on March 13, 2017
- Restoration lineup of control room high efficiency air filtration system train 'B' following maintenance on March 15, 2017
- High pressure coolant injection (HPCI) system with reactor core isolation cooling OOS for planned maintenance on March 27, 2017

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 Final Safety Analysis Report (FSAR), TSs, 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.

1R05 Fire Protection

.1 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 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.

- Traversing incore probe system room on January 9, 2017
- Main condenser bay on February 7, 2017
- Fuel pool cooling pumps and heat exchanger area on March 3, 2017

- Cable spreading room and 'B' switchgear and load center room on March 6, 2017
- Instrument air compressor room on March 10, 2017

b. Findings

No findings were identified.

.2 Fire Protection – Drill Observation (71111.05A – 1 sample)

a. Inspection Scope

The inspectors observed an unannounced fire brigade drill scenario conducted on March 10, 2017, that involved a fire in the lube oil storage area. The inspectors evaluated the readiness of the plant fire brigade to fight fires. The inspectors verified that Entergy personnel identified deficiencies, openly discussed them in a self-critical manner at the debrief, and took appropriate corrective actions as required. The inspectors evaluated the following specific attributes of the drill:

- Proper wearing of turnout gear and self-contained breathing apparatus
- Proper use and layout of fire hoses
- Employment of appropriate fire-fighting techniques
- Sufficient fire-fighting equipment brought to the scene
- Effectiveness of command and control
- Search for victims and propagation of the fire into other plant areas
- Smoke removal operations
- Utilization of pre-planned strategies
- Adherence to the pre-planned drill scenario
- Drill objectives met

The inspectors also evaluated the fire brigade's actions to determine whether these actions were in accordance with Entergy's fire-fighting strategies.

b. Findings

No findings were identified.

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

.1 Quarterly Review of Licensed Operator Requalification Testing and Training

a. Inspection Scope

The inspectors observed licensed operator simulator training on February 14, 2017, which included a reactor coolant system (RCS) leak resulting in high drywell pressure and the failure of select components to automatically start as required. The inspectors evaluated operator performance during the simulated event 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 and the TS action statements entered 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 control room operations during blizzard conditions on January 7, 2017. Inspectors observed compliance with procedure 2.1.42, "Operation During Severe Weather," Revision 36, and operator response to worsening conditions and plant alarms. 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 – 2 samples)

a. Inspection Scope

The inspectors reviewed the samples listed below to assess the effectiveness of maintenance activities on structure, system, and component (SSC) performance and reliability. The inspectors reviewed system health reports, CAP documents, maintenance WOs, and maintenance rule (MR) basis documents to ensure that Entergy was identifying and properly evaluating performance problems within the scope of the MR. For each sample selected, the inspectors verified that the SSC was properly scoped into the MR 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 MR system boundaries.

- HPCI stop valve grease on February 17, 2017 (quality control)
- Main control room ventilation the week of March 6, 2017

b. Findings

Introduction. The inspectors identified that Entergy made alterations on February 2, 2017, to procedure 2.4.149, "Loss of Control Room Air Conditioning," that had the potential to render several emergency action levels (EALs) ineffective. As a result, the NRC opened an unresolved item related to this concern.

Description. The inspectors identified a concern regarding Entergy's ability to declare several EALs based on the actions required by site procedure 2.4.149, "Loss of Control Room Air Conditioning." Specifically, procedure 2.4.149 directs numerous loads to be shed in order to maintain the main control room temperature below 120 degrees Fahrenheit upon loss of control room air conditioning during extended period of outside temperature of 90 degrees Fahrenheit and above, as per FSAR section 7.1.8. Main control room air conditioning is not considered important to safety, based on the ability to control the heat up rate in the main control room, through the actions described in procedure 2.4.149. Upon updating the calculation to determine how much load must be shed to ensure design requirements were met, procedure 2.4.149 was updated with an attachment directing which loads that are required to be shed in order to meet the design calculation S&SA056, "Control Room and Cable Spreading Room Heatup Calculations," Revision 6. The main control room is required to remain at or below 120 degrees Fahrenheit to ensure the main control room equipment remains operable. Main control room equipment temperatures above 120 degrees Fahrenheit can result in multiple control equipment failures which could result in misleading indications and inadvertent system actuations.

The inspectors questioned how the procedure would be implemented, based on the lack of specific guidance in the procedure. The procedure includes the load shedding of numerous components, including both trains of reactor protection system, average power range monitors, intermediate range power monitors, source range power monitors, and process radiation monitors. Inspectors questioned how the site would declare numerous EALs without supporting equipment that has no redundancy or pre-established compensatory measures, as proceduralized in EN-AD-270, "Equipment Important to Emergency Response." Inspectors questioned at what point would the operators be required to shed equipment that is required to support the HOT (greater than 212 degrees Fahrenheit) condition EAL classifications. The inspectors questioned whether or not operators would be able to verify that the plant conditions were consistent with applicable EAL's at the time the components were removed from service. Entergy is reviewing the calculations to determine when load shedding of loads without compensatory measures would have been required and intends to report the results to the NRC by June 2, 2017. Inspectors verified that the procedure was changed to ensure minimum instrumentation requirements were maintained to declare EALs. The inspectors determined that procedure 2.4.149 had the potential to render EALs ineffective and is an unresolved item pending Entergy completing their evaluation of load shedding impact on the main control room heat up and NRC review of the evaluation and procedure implementation. **(URI 05000293/2017001-01, Concern Regarding Ability to Declare EALs during Loss of Control Room Air Conditioning)**

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 – 5 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 maintenance for RHR relay replacement on January 30, 2017
- Planned HPCI maintenance outage on February 5-9, 2017
- Planned RHR system and HPCI system maintenance on February 13 to 17, 2017
- Elevated risk associated with emergent work on 'A' recirculation flow converter with the SBODG OOS for planned maintenance on February 20, 2017
- Elevated risk associated with RHR relay replacement on March 1, 2017

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15 – 4 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:

- Fire protection system operator workaround (OWA) during valve repairs (12-D-9 and 12-D-1) the week of January 3, 2017
- A5/A6 4kV bus under voltage relays outside of testing values on January 12, 2017
- EDG radiator fan missile protection on January 31, 2017
- 'E' intermediate range monitor with preamplifier out of normal range on March 2, 2017

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, such as in the case of OWA, the inspectors determined whether the measures in place would function as intended and were properly controlled by Entergy. Based on the review of the selected OWA listed above, the inspectors verified that Entergy identified OWAs at an appropriate threshold and addressed them in a manner that effectively managed OWA-related adverse effects on operators and SSCs.

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18 – 1 sample)

Temporary Modification

a. Inspection Scope

The inspectors evaluated a temporary modification to the 'B' RHR heat exchanger implemented by engineering change package 69255, "RHR HX E-207B Upper and Lower Flange Leak Injection." 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 upgrade and design change. Inspectors performed field observations of the leak injection activity and reviewed the post-maintenance testing for effectiveness at resolving the leak.

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 point were performed and checked, and that results adequately demonstrated restoration of the affected safety functions.

- Replacement of degraded belt on 'B' standby gas treatment exhaust fan on January 26, 2017
- HPCI turbine steam supply valve (MO-2301-3) maintenance on February 9, 2017
- HPCI steam line instrument isolation valve (23-HO-28) body to bonnet leak repair on February 11, 2017

- SBODG planned maintenance on starting air compressor and overspeed trip lever the week of February 20, 2017
- 'B' RHR heat exchanger leak injection to repair upper and lower flange leak on February 22, 2017
- 23kV line F-15 circuit switcher repairs that impacted the shutdown transformer on February 24 to 27, 2017
- HPCI exhaust line vacuum breaker isolation valve (MO-2301-33) maintenance on February 28, 2017
- 'A' core spray (CS) and 'A' RHR fuse clip replacement due to arced fuses on March 1, 2017

b. Findings

Introduction. The inspectors identified a Green NCV of TS 5.4.1 "Procedures," when Entergy did not follow the site procedures for LCO entries, TS usage, and procedure adherence. Specifically, on March 1, 2017, Entergy did not implement procedure 1.3.6, "Technical Specifications-Adherence and Clarifications," and perform the procedural required preparation steps to commence a controlled and orderly shutdown when required by TS LCOs. Additionally, Entergy did not properly exit a TS LCO, based on procedure 1.3.34.2, "Limiting Conditions for Operation Log," requirements.

Description. EN-HU-106, "Procedure and Work Instruction Use and Adherence," Revision 3, step 1.3 states "this procedure applies to all Procedures and Work Instructions, fleet Nuclear Management Manual and site procedures." Step 5.3.2.3.b, requires in part, that performance of an "informational use" procedure may be completed from memory; however, the user is responsible for performing the activity in accordance with the procedure. The inspectors identified a number of examples where Entergy did not appropriately implement administrative procedures that ensure TS compliance. On March 1, 2017, Entergy entered an LCO (3.2.B Note 1) for the RHR system that required achieving a cold shutdown condition within 24 hours.

The LCO (3.2.B.1) was incorrectly exited, upon an Instrumentation & Control supervisor reporting the procedure was field complete, per the control room logs. Inspectors entered the control room directly after maintenance was complete, and asked the senior reactor operators (SROs) for the basis of exiting the LCO. The response was a control room alarm clearing and a review of the post work testing completed prior to system restoration. This was contrary to procedure 1.3.34.2, "Limiting Conditions for Operation Log," step 6.5.2, which states, in part, "the LCO should be cleared in a timely manner once all the following conditions are met: (a) the condition causing the LCO is corrected or no longer exists, and (b) all maintenance postwork testing is complete. This shall be verified by personal observation by the SRO signing off the WO from the LCO that the maintenance postwork testing is signed off." While the condition causing the inoperability was corrected, the postwork testing under WO 52689084, procedure 8.M.2-2.10.2-5, "Loop Selection Logic System A," completing the postwork test restoration was not signed by an SRO prior to exiting the LCO.

While in TS LCO action statement 3.2.B.1, Entergy did not perform the required actions to contact management or complete the infrequently performed test or evolution (IPTE) brief in preparation for an orderly shutdown as required by Entergy procedure, 1.3.6, "Technical Specifications-Adherence and Clarifications." Procedure 1.3.6 establishes a

timeline upon entering a 24-hour cold shutdown LCO. Section 5.1(d) states “the following guidance will be followed when entering, exiting, and escalating Technical Specifications.” Section 5.1.1.10 states, in part at “T-16 hours, notify Operations Management, Reactor Engineering, and Station Management, if not previously notified”; and at “T-14 hours, perform an IPTE brief for the shutdown. The “T” is the time cold shutdown conditions are required to be established in accordance with the TS LCO. These procedure steps were established in response to CR 2011-3554, which was an apparent cause evaluation to address receiving three cross-cutting aspects in the area of H.1.a, Risk Significant Decisions. A corrective action determined that specific guidance was necessary to direct operators on how to perform a controlled and orderly shutdown when required by TS.

Entergy initially entered this issue into the CAP under CR 2017-1784 but determined that all procedures were followed as required. Following additional discussion with the inspectors, the issue was again entered into the CAP as CR 2017-3724.

Analysis. The inspectors determined that Entergy did not follow the procedural requirements of procedures 1.3.6 and 1.3.34.2 to ensure TS compliance for commencing an orderly shutdown, which is a performance deficiency that was within Entergy’s ability to foresee and correct. The finding is more than minor because if left uncorrected, would have the potential to lead to a more significant safety concern. Specifically, the Entergy operations staff exited the LPCI LCO without personal observation by the SRO signing off the WO that the maintenance postwork testing was complete and failed to implement the procedural required preparation steps to perform a controlled and orderly shutdown when required by TS LCOs.

Inspectors evaluated this finding using IMC 0609.04, “Initial Characterization of Findings,” and IMC 0609, Appendix A, “The Significance Determination Process for Findings At-Power,” issued June 19, 2012, and determined that the finding was of very low safety significance (Green), because the finding was not a design or qualification deficiency, did not represent a loss of safety system function, and did not screen as potentially risk significant due to external initiating events. The inspectors determined that this finding had a cross-cutting aspect in the area of Human Performance, Procedure Adherence, in that individuals follow processes, procedures, and work instructions. Specifically, Entergy did not use procedural guidance explicitly put in place to provide operators clear direction on how to prepare and perform an orderly shutdown upon entering a TS LCO with shutdown requirements. [H.8]

Enforcement. Entergy’s TS 5.4.1.c, “Procedures” requires that written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in RG 1.33, Revision 2, Appendix A, February 1978. RG 1.33, Appendix A, Section 1.d, recommends procedures on Procedures Adherence. EN-HU-106, “Procedure and Work Instruction Use and Adherence,” Revision 3, states that “this procedure applies to all Procedures and Work Instructions, fleet Nuclear Management Manual and site procedures,” and “that performance of an “informational use” procedure may be completed from memory, however, the user is responsible for performing the activity in accordance with the procedure.” Contrary to the above, on March 1, 2017, Entergy did not adhere to the requirements of procedure 1.3.34.2, “Limiting Conditions for Operation Log,” by exiting a TS LCO without required SRO review of the maintenance postwork testing, and did not implement requirements of procedure 1.3.6, “Technical Specifications–Adherence and Clarifications,” to perform the procedural

required preparation steps to commence a controlled and orderly shutdown. Because this issue is of very low safety significance (Green) and Entergy entered the issue into their CAP as CR 2017-3724, this finding is being treated as a NCV, consistent with section 2.3.2.a of the Enforcement Policy. **(NCV 05000293/2017001-02, Failure to Follow Procedures for Controlled Shutdown)**

1R20 Refueling and Other Outage Activities (71111.20 – 1 sample)

a. Inspection Scope

The inspectors reviewed the outage schedule and shutdown risk assessments for a forced outage for blizzard conditions performed from February 9 to 12, 2017. During this outage, the inspectors observed plant shutdown and startup activities, 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
- Fuel receipt

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22 – 4 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:

- 8.M.2-1.5.8.2, 'B' primary containment isolation system functional test on January 20, 2017
- 8.M.2-1.5.10, HPCI vacuum breaker isolation valve testing on February 8, 2017
- 8.9.1, EDG 'A' monthly surveillance test on February 28, 2017
- 8.5.1.1, CS pump 'A' biennial and quarterly operability test on March 7, 2017 (IST)

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

.1 Safety System Functional Failures (1 sample)

a. Inspection Scope

The inspectors sampled Entergy's submittals for the Safety System Functional Failures performance indicator for the period of January 1, 2016, through December 31, 2016. To determine the accuracy of the performance indicator data reported during those periods, inspectors used definitions and guidance contained in Nuclear Energy Institute (NEI) Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, and NUREG-1022, "Event Reporting Guidelines 10 CFR 50.72 and 10 CFR 50.73." The inspectors reviewed Entergy's operator narrative logs, operability assessments, MR records, maintenance WOs, CRs, event reports, and NRC integrated inspection reports to validate the accuracy of the submittals.

b. Findings

No findings were identified.

.2 RCS Specific Activity and RCS Leak Rate (2 samples)

a. Inspection Scope

The inspectors reviewed Entergy's submittal for the RCS specific activity and RCS leak rate performance indicators for the period of January 1, 2016, through December 31, 2016. To determine the accuracy of the performance indicator data reported during those periods, the inspectors used definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7. The inspectors also reviewed RCS sample analysis and control room logs of daily measurements of RCS leakage, and compared that information to the data reported by the performance indicator.

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution (71152 – 1 sample)

.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: Spent Fuel Pool Boraflex Degradation

a. Inspection Scope

Pilgrim has three different types of fuel racks that are used in the SFP: boraflex, boral, and metamic. Approximately two-thirds of the racks are made of boraflex material; the remaining one-third are metamic or boral. Pilgrim Station Boraflex Monitoring Program is described in FSAR, Appendix S, License Renewal Commitments, as a program that assures degradation of the boraflex panels in the spent fuel racks does not compromise the criticality analysis in support of the design of the spent fuel storage racks. The program relies on testing, chemistry sampling, and analysis to assure that the required five percent subcriticality margin is maintained. The program uses the analytical code, RACKLIFE, every operating cycle to predict future degradation of boraflex in its SFP. In addition, to determine actual degradation levels, Pilgrim implemented in-situ testing of a pre-determined population of its racks using the BADGER testing method. The results are then compared to the RACKLIFE predictions to quantify the loss of boron in the SFP.

The inspectors performed an in-depth review of Entergy's evaluation, extent of condition, and associated corrective actions related to the identified condition of Pilgrim's SFP. This includes boraflex degradation monitoring and evaluation to ensure margin to criticality is maintained in the SFP, following testing that identified a cumulative gap in (panel RR35 South) boraflex absorber material exceeded design assumptions. The inspectors reviewed the criticality analysis, corrective action reports, operating experience, and the associated follow-up actions that were generated since Entergy identified potential degradation in the SFP to ensure that issues were entered into the CAP, prioritized, and evaluated commensurate with their safety significance.

The inspectors observed and evaluated Entergy's BADGER testing in March 2016. The inspectors reviewed Entergy's activities related to operation, selection, and monitoring of the panels and methodology. The inspectors verified compliance with station procedures.

The inspectors observed and evaluated fuel handling activities to restore SFP configuration to required conditions.

The inspectors reviewed Entergy's monitoring and assessment program associated with the different rack types currently used for spent fuel for storage. The inspectors reviewed the procedures to verify that Entergy was following licensing commitments, and using appropriate codes and methods approved by the NRC.

The inspectors reviewed Entergy's configuration control method that is used to track and manage fuel in the SFP.

b. Observations

The inspectors reviewed the evaluations, extent of condition, and corrective actions to address boraflex degradation in the SFP. Inspectors concluded that once the condition was identified, the station took appropriate interim actions to evaluate the condition and implement corrective actions to restore SFP configuration to required subcriticality condition. However, during review of the causal evaluation, the inspectors concluded that Entergy did not take timely corrective action to address a condition adverse to quality. This finding is described in Section c below.

Additionally, the inspectors concluded that Entergy did not effectively use operating experience to identify and correct a condition adverse to quality. Specifically, Pilgrim received information related to a similar occurrence at Grand Gulf in 2012. The applicability review was screened as not applicable to Pilgrim. This was not identified as a contributing cause in the causal evaluation. This performance deficiency was not more than minor because although the station may have found similarities requiring action sooner, the results would not have reasonably led to a conclusion requiring the SFP to be declared inoperable. The station has entered this issue into the CAP as CR 2017-2131.

Although boral and metamic racks are not subject to the same type of degradation mechanisms seen by boraflex, they are still required to be managed as part of license renewal commitments. Pilgrim tests boral and metamic racks using the coupon tree specimen surveillance program and has observed no degradation of the boral coupons. Recently, the station identified CR 2017-1551 for pitting observed in the metamic coupons during normal surveillance frequency. The station is currently evaluating the condition; however, initial indications show results are within the acceptance criteria. There are no other issues relating to the degradation of the metamic coupons. The boral and metamic racks remain operable.

c. Findings

Introduction. The inspectors identified a Green NCV of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Actions," when Entergy did not take timely corrective action to correct a condition adverse to quality. Specifically, when BADGER testing results revealed gaps in neutron absorber material that exceeded spent fuel storage design feature assumptions and therefore did not ensure compliance with TSs, the station did not establish corrective actions to ensure configurations and limitations would meet analysis beyond September 2017.

Description. On May 12, 2016, an assessment of BADGER testing results for spent fuel storage racks at Pilgrim identified a single panel (RR35 South) with a 38 inch cumulative gap in boraflex (neutron absorber) material that exceeded the spent fuel storage design assumptions that ensure the SFP remains sufficiently subcritical. The design assumptions ensure compliance with TS Section 4.3.1.1.b to maintain a SFP Keff of less than or equal to 0.95. The range of analyzed gap sizes in the criticality analyses did not include locations with greater than 10 inch gaps, and therefore Entergy no longer had reasonable assurance that all storage locations in the SFP remained capable of maintaining compliance with the TS limit under worst case design conditions.

Entergy entered this into the CAP as CR 2016-2205, and evaluated condition as a 'B' level. A 'B' level condition is defined in EN-LI-102, "Corrective Action Program," Revision 26, as a "condition with moderate level of risk, moderate actual or potential consequences. A cause evaluation is required and corrective actions are needed to correct the condition and causes; thereby, mitigating the likelihood of recurrence." The site took interim actions to include declaring the SFP rack cells adjacent to the panel RR35 South inoperable, installing blade guides into cells adjacent to panel RR35S to prevent fuel from being loaded into those cells, and prohibiting fuel movement in boraflex racks. The station also performed analyses that confirmed that the SFP remained subcritical under all conditions, however it still did not meet the required TS values of Keff less than or equal to 0.95. Based on this information, an additional corrective action was taken to perform criticality evaluations that conservatively identified fuel storage configurations that ensured the boraflex racks Keff would be maintained less than or equal to 0.95. Fuel was subsequently moved to establish the acceptable configurations of the evaluation.

The analysis has projected the condition of the boraflex panels up to September 2017, by which point the station will have had to establish additional measures to maintain the SFP subcriticality requirements such as performing further analysis and/or establishing additional SFP configuration restrictions. The steps needed to be taken by Entergy to ensure continued compliance are complex and time intensive, and can reasonably challenge the station's ability to meet this date. The NRC inspectors identified that the site lacked appropriately planned corrective actions to confirm that SFP subcriticality requirements would be met beyond September 2017. Although the lack of planned corrective actions did not directly result in the compromise of the TS-required limit of Keff less than 0.95 in the SFP, the site would have exceeded the period of assured compliance had NRC inspectors not provided their observations. This could have resulted in a more significant safety concern, including the inability to maintain subcriticality requirements in accordance with TSs. The station entered this into their CAP as CR 2017-01650 to evaluate options and establish corrective actions to ensure compliance is met beyond this timeframe.

Analysis. The inspectors determined that Entergy did not take timely corrective action to correct a condition adverse to quality in accordance with the requirements of Entergy procedure EN-LI-102, "Corrective Action Program," was a performance deficiency reasonably within Entergy's ability to foresee and correct. Specifically, when BADGER testing results revealed gaps in neutron absorber material that exceeded spent fuel storage design analysis assumptions for boraflex degradation, the station took corrective actions to restore the spent fuel configuration to meet the assumptions of the criticality analysis but only projected the condition of the boraflex panels until September 2017. Additional corrective actions are needed to ensure the sub-criticality requirements continue to be met beyond September 2017 and are being addressed under CR 2017-01650.

The performance deficiency was more than minor because it was associated with the Barrier Integrity cornerstone attribute of configuration control (reactivity control) and adversely affected the cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events.

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,” the inspectors determined that this finding is of very low safety significance (Green) because the finding did not adversely affect any of the barrier integrity screening questions. The inspectors determined this finding had a cross-cutting aspect in Problem Identification and Resolution, Evaluation, because the organization did not thoroughly evaluate issues to ensure that resolutions address causes and extent of conditions commensurate with their safety significance. Specifically, the casual evaluation written to address the boraflex degradation was focused on restoring compliance and correcting immediate condition, and did not include longer term corrective actions to mitigate the likelihood of recurrence. [P.2]

Enforcement. 10 CFR Part 50, Appendix B, Criterion XVI, “Corrective Action,” requires, in part, that conditions adverse to quality such as equipment deficiencies and malfunctions shall be promptly identified and corrected. Contrary to this, on May 27, 2016, for a condition adverse to quality associated with the boraflex degradation in the spent fuel racks, Entergy did not assure that corrective actions to ensure compliance with design requirements beyond September 2017 were established. Entergy is conducting a root cause evaluation which will identify corrective actions to maintain boraflex racks within TS requirements beyond September 2017. Because this violation is of very low safety significance (Green) and has been entered into Entergy’s CAP as CR 2017-01650 and CR 2017-2125, this finding is being treated as an NCV consistent with Section 2.3.2.a of the NRC Enforcement Policy. **(NCV 05000293/2017001-03, Untimely Corrective Actions associated with Boraflex degradation in the Spent Fuel Pool)**

4OA3 Follow-Up of Events and Notices of Enforcement Discretion (71153 – 3 samples)

.1 Plant Events

a. Inspection Scope

For the plant events listed below, the inspectors reviewed and/or observed plant parameters, reviewed personnel performance, and evaluated performance of mitigating systems. The inspectors communicated the plant events to appropriate regional personnel, and compared the event details with criteria contained in IMC 0309, “Reactive Inspection Decision Basis for Reactors,” for consideration of potential reactive inspection activities. As applicable, the inspectors verified that Entergy made appropriate emergency classification assessments and properly reported the event in accordance with 10 CFR Parts 50.72 and 50.73. The inspectors reviewed Entergy’s follow-up actions related to the events to assure that Entergy implemented appropriate corrective actions commensurate with their safety significance.

- Hydrogen makeup to the turbine generator in excess of 10 pounds after September 6, 2016, and December 16, 2016, unplanned shutdowns
- Rapid downpower to 45 percent power due to high chlorides in the main condenser from condenser tube leak on February 6, 2017

b. Findings

Introduction. The inspectors identified a Severity Level IV NCV of 10 CFR 50.72, "Immediate Notification Requirements for Operating Nuclear Power Reactors," because a TS required shutdown was not reported to the NRC within four hours of the occurrence, as required by 10 CFR 50.72(b)(2)(i). Specifically, on December 16, 2016, PNPS initiated a shutdown, as required by TS, as a result of the discovery of leakage associated with MSIVs 2C and 2D, leading to the required isolation of the 'C' and 'D' main steam lines.

Description. The PNPS main steam system is comprised of four main steam lines, including two MSIVs in each steam line. There is one MSIV inside of primary containment, and one MSIV outside of primary containment in each main steam line. The functions of the MSIVs are to prevent reactor coolant inventory loss in the event of a steam line break outside primary containment, and to provide a primary containment boundary after a loss of coolant accident inside primary containment.

On December 15, 2016, Entergy personnel were performing inspections of the area where the outboard MSIVs are located, and discovered steam leaks on the 2C and 2D MSIVs while at approximately 20 percent power. Specifically, the unit was downpowered to test the main turbine stop valve (SV-4) by tripping the main generator to verify SV-4 closure. While at low power, the main steam tunnel was entered and leakage was identified on the 2C and 2D MSIVs. The 2D MSIV was discovered to have a body to bonnet steam leak, and was declared inoperable in accordance with TS LCO 3.7.A.2.b. As required by the TS LCO, the 'D' main steam line was isolated by closing and deactivating the 1D and 2D MSIVs. At the time of discovery, the leak discovered on the 2C MSIV was not suspected to challenge the immediate operability of the valve; however, an engineering input to operability was requested. On December 16, 2016, it was concluded that there was not reasonable assurance of operability, and the 2C MSIV was declared inoperable. Actions were taken in accordance with LCO 3.7.A.2.b to isolate the 'C' main steam line, which included a unit shutdown in order to reduce reactor pressure below the MSIV closure scram bypass setpoint of 576 psig. Closing the 2C MSIV at the time the valve was declared inoperable would have resulted in a half-scrum condition. TS 3.7.A.2.b required that the inoperable valve be isolated and de-energized. The valve was not isolated and de-energized, therefore TS 3.7.A.5 applied, which required an orderly shutdown be initiated and that the reactor be in cold shutdown condition within 24 hours. The unit was placed in cold shutdown on December 17, 2016, in order to perform repairs on the 2C and 2D MSIVs. The valves were successfully repaired, tested, and inspected prior to returning to service.

10 CFR 50.72 requires that the NRC be formally notified within four hours of "the initiation of any nuclear plant shutdown required by the plant's Technical Specifications." The inspectors determined that the shutdown was required by TS 3.7.A.5 because the 2C MSIV was not closed per TS 3.7.A.2. Inspectors determined this was required to be reported to the NRC in accordance with 10 CFR 50.72(b)(2)(i). The shutdown was subsequently reported on February 13, 2017, in Licensee Event Report (LER) 2016-010-00, as required by 10 CFR 50.73(a)(2)(i)(A).

Analysis. The inspectors determined that Entergy's failure to notify the NRC within four hours of initiating a TS required shutdown, as required by 10 CFR 50.72(b)(2)(i) was a performance deficiency that was within Entergy's ability to foresee and correct and

should have been prevented. Because the issue had the potential to affect the NRC's ability to perform its regulatory function, the inspectors evaluated this performance deficiency in accordance with the traditional enforcement process. Using example 6.9.d.9 from the NRC Enforcement Policy (the failure of a licensee to make a report as required by 10 CFR 50.72 or 10 CFR 50.73), the inspectors determined that the violation was a Severity Level IV violation. Because this violation involves the traditional enforcement process and does not have an underlying technical violation, inspectors did not assign a cross-cutting aspect to this violation in accordance with IMC 0612, Appendix B.

Enforcement. 10 CFR 50.72(b)(2)(i) requires, in part, that licensees shall report to the NRC within four hours "the initiation of any nuclear plant shutdown required by the plant's Technical Specifications." Contrary to the above, on December 16, 2016, Entergy did not report to the NRC within four hours the initiation of a nuclear plant shutdown required by the plant's Technical Specifications. The condition was reported on February 13, 2017, 59 days after the event, via LER 2016-010-00. Because this issue was of Severity Level IV and has been entered into Entergy's CAP under CR 2017-3723, this violation is being treated as an NCV, consistent with Section 2.3.2.a of the NRC Enforcement Policy. **(NCV 05000293/2017001-04, Failure to Submit a Required 50.72 Notification)**

.2 (Closed) LER 05000293/2016-009-00: HPCI Declared Inoperable Due to Failure of IST Surveillance Test

On November 7, 2016, during the quarterly surveillance test of HPCI, Entergy discovered HPCI pump vibration data exceeded in-service test Action Range limits, which resulted in the pump being inoperable. As a result, Entergy determined that HPCI inoperability could have prevented the fulfillment of a safety function needed to mitigate the consequences of an accident. Inspectors reviewed the root cause evaluation, the LER, and corrective actions. The enforcement aspects of this issue are discussed in inspection report 05000293/2016004, section 4OA3.4 (ML17045A524). The inspectors did not identify any new issues during the review of the LER. This LER is closed.

4OA5 Other Activities (2 samples)

.1 Temporary Instruction (TI) 2515/192, "Inspection of the Licensee's Interim Compensatory Measures Associated with the Open Phase Condition Design Vulnerabilities in Electric Power Systems."

a. Inspection Scope

The objective of this performance based TI is to verify implementation of interim compensatory measures associated with an open phase condition (OPC) design vulnerability in electric power system for operating reactors. The inspectors conducted an inspection to determine if Entergy had implemented the following interim compensatory measures. These compensatory measures are to remain in place until permanent automatic detection and protection schemes are installed and declared operable for OPC design vulnerability. The inspectors verified the following:

- Entergy had identified and discussed with plant staff the lessons-learned from the OPC events at U.S. operating plants, including the Byron station OPC event and its

consequences. This includes conducting operator training for promptly diagnosing, recognizing consequences, and responding to an OPC event.

- Entergy had updated plant operating procedures to help operators promptly diagnose and respond to OPC events on off-site power sources credited for safe shutdown of the plant.
- Entergy had established and continue to implement periodic walkdown activities to inspect switchyard equipment such as insulators, disconnect switches, and transmission line and transformer connections associated with the offsite power circuits to detect a visible OPC.
- Entergy had ensured that routine maintenance and testing activities on switchyard components have been implemented and maintained. As part of the maintenance and testing activities, Entergy assessed and managed plant risk in accordance with 10 CFR 50.65(a) (4) requirements.

b. Findings and Observations:

No findings were identified.

The inspectors verified the criteria were met. Information gained from this TI has been provided to the program office for further review.

.2 Inspection Procedure 92702, "Follow Up on Traditional Enforcement Actions Including Violations, Deviations, Confirmatory Action Letters, Confirmatory Orders, and Alternate Dispute Resolution Confirmatory Orders"

a. Inspection Scope

During the week of February 27, 2017, the inspectors performed an onsite review of Pilgrim's records related to corrective actions taken in response to a Severity Level III Notice of Violation issued to Entergy. On April 11, 2016, the NRC issued a Severity Level III Notice of Violation of 10 CFR 50.48(a)(1), "Fire Protection," and 10 CFR 50.9(a), "Completeness, and Accuracy of Information," (VIO 05000293/2016010-01, Failure to Conduct Fire Watch and Falsified Fire Watch Records). Specifically, Entergy did not perform compensatory fire watches as required by the Pilgrim fire protection program, and did not maintain information that was complete and accurate. The log sheets for hourly fire watches established to compensate for inoperable fire suppression systems indicated that hourly fire watches were performed when, in fact, they were not. Consistent with the guidance in Inspection Procedure 92702, the objectives of the inspection were to verify that adequate corrective actions have been implemented, verify that the root causes of these enforcement actions have been identified, that their generic implications have been addressed, and that Entergy's programs and practices have been appropriately enhanced to prevent recurrence.

The inspectors reviewed procedures, causal evaluations, and CAP documents. The inspectors observed a shift brief of a fire watch by the lead security shift supervisor, and observed an initial brief by the Fire Marshall as part of an individual's training and qualification. The inspectors accompanied contract fire watches on two of their tours;

conducted interviews of various security, contractor, and plant staff; and verified the badge histories for three completed fire watch tours.

b. Findings and Observations:

No findings were identified.

The inspectors concluded that Entergy staff completed a timely and adequate evaluation to identify the causes of the traditional enforcement violation. Entergy's corrective actions include revising the fire tour sheets to include additional reviews and approvals, implementing a daily shift pre-job brief for fire watch tours, putting a contract work force in place solely to perform fire watch tours, and enhancing the fire watch training and qualification program. Pilgrim procedure 8.B.14, "Fire Protection Technical Requirements," was also revised, and requires running badge histories of individuals performing fire watches to validate tours. The inspectors concluded that Entergy's actions were timely, appropriate, and sufficient to address the identified deficiency.

4OA6 Meetings, Including Exit

On April 20, 2017, the inspectors presented the inspection results to Mr. John Dent, Site Vice President, and other members of the Entergy 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
 P. Beabout, Security Manager
 P. Bradford, Lead Security Shift Supervisor
 R. Byrne, Regulatory Assurance
 B. Chenard, Director of Engineering
 K. Connerton, Senior Reactor Operator
 F. DiCristofaro, Work Week Manager
 B. DeMello, Fire Watch, Day and Zimmerman
 G. Flynn, Operations Manager
 J. Falconieri, Electrical Engineer
 J. Falconeri, Electrical System Engineer
 P. Gallant, Assistant Operations Manager
 P. Gresh, Licensed Operator Requal Program Coordinator
 J. Grotton, Work Week Manager
 K. Kampschneider, System Engineer
 C. Littleton, PRA Engineer
 C. McMorrow, Fire Marshall
 M. McNulty, Fire Watch, Day and Zimmerman
 P. Miner, Regulatory Assurance Lead
 R. Morris, Diesel System Engineer
 R. O'Neil, Senior Reactor Operator
 C. Pepple, Fire Watch, Day and Zimmerman
 E. Perkins, Regulatory Assurance Manager
 M. Romeo, Director of Performance Improvement
 E. Simpson, Work Week Manager
 G. Sterling, Security Supervisor
 B. Sheridan, Senior Reactor Operator

LIST OF ITEMS OPENED, CLOSED, DISCUSSED, AND UPDATEDOpened/Closed

05000293/2017001-02	NCV	Failure to Follow Procedures for Controlled Shutdown (Section 1R19)
05000293/2017001-03	NCV	Untimely Corrective Actions associated with Boraflex degradation in the Spent Fuel Pool (Section 4OA2.2)
05000293/2017001-04	NCV	Failure to Submit a Required 50.72 Notification (Section 4OA3.1)

Opened

05000293/2017001-01	URI	Concern Regarding Ability to Declare EALs during Loss of Control Room Air Conditioning (Section 1R12)
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Closed

05000293/2016-009-00	LER	HPCI Declared Inoperable Due to Failure of IST Surveillance Test (Section 4OA3.2)
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05000293/2016010-01	VIO	Failure to Conduct Fire Watch and Falsified Fire Watch Records (Section 4OA5.2)
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LIST OF DOCUMENTS REVIEWED**Section 1R01: Adverse Weather Protection**Procedures

2.1.42, Operation during Severe Weather, Revision 33 & 36
 2.1.37, Coastal Storm Preparations, Revision 41

Condition Reports

2016-9304 2017-2180

Maintenance Orders/Work Orders

462069

Section 1R04: Equipment AlignmentProcedures

2.1.12.1, Emergency Diesel Generator Surveillance, Revision 82
 2.2.21, High Pressure Coolant Injection System (HPCI), Revision 85
 8.7.2.7, Measure Flow and Pressure Drop Across Control Room High Efficiency Air Filtration System, Revision 38

Drawings

M219, P&ID Diesel Generator Air Start System, Revision 24
 M223, P&ID Diesel Oil Storage & Transfer System, Revision 33
 M243, P&ID HPCI System, Revision 55
 M259, P&ID Diesel Generator Turbo Air Assist System, Revision E10
 M271, P&ID Emergency Diesel Generator Lube Oil System, Revision 6
 M272, P&ID Emergency Diesel Generator Jacket Water Cooling System, Revision 9
 M286, Heating & Ventilation & Air Conditioning Temperature Control Diagram for Control Room Cable Spreading & Computer Room, Revision 19

Section 1R05: Fire ProtectionProcedures

5.5.2, Special Fire Procedure, Revision 56

5.2.3, Tornado, Revision 25

8.B.17.2, Inspection of Fire Damper Assemblies, Revision 15 & 16

EN-TQ-125, Fire Brigade Drills, Revision 4

Condition Reports

2015-1855 2015-8725 2016-9239 2017-2200

Maintenance Orders/Work Orders408704 428460 461917 52479060 52519930 52519930
52520769Miscellaneous

89XM1ERQ, Updated Fire Hazard Analysis, Revisions 5 & 16

EC 55641

Fire Hazards Analysis – Fire Area 1.9, Fire Zone 1.10A, RCIC Pipe/T.I.P. Room

Fire Watch Logs for Air Compressor Room, 3/10/17

Fire Watch Logs for Cable Spreading Room, 3/6/17

Fire Watch Logs for 'B' Switchgear Room, 3/6/17

LCOTR 16-0038, FSAR 12.2.3.3 & App H Tornado Warning or Flooding or HELB, 3/7/16

Section 1R11: Licensed Operator Regualification ProgramProcedures

1.3.34, Operations Administrative Policies and Processes, Revision 145

2.1.6, Reactor Scram, Revision 70

2.4.41, Loss of TBCCW, Revision 32

5.3.23, Alternate Rod Insertion, Revision 33

EN-OP-115, Conduct of Operations, Revision 16 & 18

EN-OP-115-01, Operator Rounds, Revision 1

EN-OP-115-02, Control Room Conduct and Access Control, Revision 4

EN-OP-115-04, Operations Briefs, Revision 2

EN-OP-115-05, Operation of Components, Revision 0

EN-OP-115-08, Annunciator Response, Revision 4

EN-OP-115-09, Log Keeping, Revision 2

EOP-01, RPV Control, Revision 3

EOP-02, RPV Control: Failure to Scram, Revision 14

EOP-03, Primary Containment Control, Revision 11

Condition Reports

2017-1203 2017-1461 2017-1479

Miscellaneous

AFG-2017-01, LORT As-Found Simulator Exam Scenario, Revision 0

Section 1R12: Maintenance Effectiveness

Procedures

2.4.149, Loss of Control Room Air Conditioning, Revision 15
3.M.4-79, HPCI Turbine Preventive Maintenance Inspection: Critical Maintenance, Revision 19

Condition Reports

2017-1174 2017-1611

Maintenance Orders/Work Orders

52423077

Miscellaneous

EC 65239
PMAR 268659, {2A} 3.M.4-79 AH 20 Insp/Clean HPCI Stop Valve & Gov. Cntrl Sys Frequency Change Request, 2/8/17
V-2098, Terry Turbine Maintenance Guide: HPCI Application, 11/8/16
Work Week 1705 (2/5/17-2/10/17) Schedule, 2/3/17

Calculations

IN1-297, Control Room Heat Loads, Revision 4
S&5A056, Control Room & Cable Spreading Room Calculations, Revisions 0 & 1

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Procedures

1.3.142, PNPS Risk Review and Disposition, Revision 6
1.5.10, Control of Fuses, Revision 3
1.5.22, Risk Assessment Process, Revision 27
2.2.20, Core Spray, Revision 87
8.5.4.6, HPCI Pump & Valve Operability from Alternate Shutdown Panel, Revision 43
8.M.2-2.-10.2-10, RHR System Pump P-203A Automatic Start Functional Test, Revisions 48, 49 and 50
EN-WM-104, On Line Risk Assessment, Revision 15

Condition Reports

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Miscellaneous

EOOS Risk Evaluation for work week 1709 (2/27-3/3), 2/26/17 & 2/27/17
EOOS Risk Evaluation for 1/30/17
EOOS Risk Evaluation for 3/1/17
Risk Assessment sheets dated 2/21/17, 2/22/17, 2/23/17
Risk Assessment for the week of 2/6-2/11, Revisions 0, 1 & 2
Work Week 1705 (2/5-2/10) Schedule, 2/3/17

Drawings

M1H5-1-15, Sh. 1, Residual Heat Removal System, Revision 18
M1H7-12, Sh. 3, Residual Heat Removal System, Revision E21
M1H8-10, Sh. 4 of 19, Elementary Diagram: RHR, Revision E20
M6-22-14, Sh. 1, Diesel Generator 'A' x107A Engine Control, Revision 39

E18, Diesel Generator Load Shedding, Revision E18
 E40, 4160V System Breakers 152-509 and 152-609, Revision 26

Section 1R15: Operability Determinations and Functionality Assessments

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2.1.1, Startup from shutdown, Revision 195
 2.1.4, Approach to Critical and Plant Heatup, Revision 41
 2.1.5, Controlled Shutdown from Power, Revision 130
 8.M.2-2.1.10, 4160 Volt Emergency Busses A5 & A6 Loss of Voltage and Degraded Voltage Relays Critical Maintenance, Revision 41
 8.M.2-2.10.8.6, Diesel Generator "B" Initiation by Loss of Offsite Power Logic Critical Maintenance, Revision 52

Condition Reports

2009-04543 2016-10016 2017-00193 2017-00278 2017-00479 2017-01912

Maintenance Orders/Work Orders

463502	52024042	52031559	52314314	52407875	52415752
52479927	52592355	52660004	52715376	52715377	52719956
52719971	52725083	52725085			

Miscellaneous

PM Change Form: 236894
 Vendor Manual GEI-44220B, A-C Under Voltage Relay Type RAV11B

Drawings

E5-200, Sh. 5, 4160 Volt Switchgear Relay Settings, Revision 16
 E35, 4160 Volt System Auxiliary Relays and Miscellaneous Schemes, Revision 12
 E17, Schematic Meter and Relay Diagram 4160 Volt System, Revision 15

Section 1R18: Plant Modifications

Procedures

TRP-3101, Engineering Repair Procedure Manual, Revision 0
 3.M.4-42, Temporary Repair of Leaks – Critical Maintenance, Revision 39

Condition Reports

2017-1661 2017-1859

Maintenance Orders/Work Orders

51533968

Miscellaneous

ECs 69255, 70046
 Vendor Manual V-0403, Feedwater Heaters, Drain Coolers, and Residual Heat Exchangers, Revision 15

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3.M.3-24.16, Quiklook Operations Procedure, Revision 18
 3.M.3-51, Electrical Termination Procedure, Revision 31
 3.M.3-60, Infrared Thermography, Revision 12
 3.M.3-61.6, Blackout Diesel Generator and Preventive Maintenance, Revision 26
 3.M.4-14, Rotating Equipment Inspection Assembly and Disassembly – Critical Maintenance, Revision 50
 8.Q.3-8.2, Limitorque Type HBC, SB/SMB-0 Through SB/SMB-3 Valve Operator Maintenance – Critical Maintenance, Revision 23
 EN-WM-105, Post Maintenance Testing, Revision 5
 EN-MA-125, Trouble Shooting Control, Revision 25

Condition Reports

2016-5785	2017-0550	2017-1320	2017-1321	2017-1332	2017-1580
2017-1661	2017-1709	2017-1724	2017-1785	2017-1859	

Maintenance Orders/Work Orders

422033	466136	467334	468525	468534	51533968
52621958	52648866	52651885	52742076		

Miscellaneous

ECs 69255, 70098
 TRP-3101, Engineering Repair Procedure Manual, Revision 0

Drawings

M243, HPCI System, Revision 55

Section 1R20: Refueling and Other Outage ActivitiesProcedures

2.1.1, Startup from Shutdown, Revision 195
 2.1.5, Controlled Shutdown from Power, Revision 13
 2.1.6, Reactor Scram, Revision 70
 2.1.7, Vessel Heatup and Cooldown, Revision 54
 2.1.42, Operation during Severe Weather, Revision 35
 2.1.49, Flex Equipment Prestaging Prior to Reactor Head Detensioning and Retensioning, Revision 2
 2.2.19.1, Residual Heat Removal System – Shutdown Cooling Mode of Operation, Revision 42
 2.2.20, Core Spray, Revision 87
 3.M.1-45, Outage Shutdown Risk Assessment, Revision 21
 3.M.2-40, Refuel Outage Temp Modification Reactor Shutdown/Floodup Level Indication, Revision 14
 3.M.4-48.2, Opening and Closing of Reactor Pressure Vessel Disassembly, Revision 43
 4.3, Fuel Handling, Revision 136

Condition Reports

2017-1259	2017-1271	2017-1285
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Miscellaneous
EC 71102

Section 1R22: Surveillance Testing

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8.5.1.1, Core Spray Operability – Pump Quarterly and Biennial Comprehensive Flow Rate Tests and Valve Tests, Revision 64
 8.9.1, Emergency Diesel Generator and Associated Emergency Bus Surveillance, Revision 136
 8.M.2-1.5.8.2, High Drywell Pressure, Low Water Level, and High Radiation Logic System B - Outboard Functional Test, Revision 40
 8.M.2-1.5.10, HPCI Vacuum Breaker Isolation Valve Testing, Revision 16
 EN-HU-102, Human Performance Traps & Tools, Revision 14
 EN-HU-106, Procedure and Work Instruction Use and Adherence, Revision 3

Condition Reports

2010-3815 2010-4541 2017-2001

Maintenance Orders/Work Orders

468513 52579672 52580453 52618344 52731953 52740621

Drawings

M6-29-8, Piping Schematic Starting Air System, Revision 8
 M219, P&ID Diesel Generator Air Start System, Revision 24
 M243, P&ID HPCI System, Revision 55

Section 40A1: Performance Indicator Verification

Procedures

EN-LI-114, Regulatory Performance Indicator Process, Revision 7

Section 40A2: Problem Identification and Resolution

Procedures

4.3, Fuel handling, Revision 134
 4.8, Spent Fuel Pool Rack Coupon Retrieval, Revision 10
 4.10, Boraflex Monitoring Program, Revision 2
 EN-DC-153, Component Classification Guide, Revision 13
 EN-LI-102, Corrective Action program
 EN-LI-118, Casual Evaluation Process, Revision 18
 EN-LI-118, Casual Evaluation Process, Revision 22
 EN-NF-200, Special Nuclear Material, Revision 13
 EN-IT-104, Software QA Program, Revision 13

Condition Reports

2015-08989 2016-02205 2017-01060 2017-01551 2017-01650 2017-02125
 2017-02131

Miscellaneous

ECH-NE-16-00020, Revision 1
 ECH-NE-16-00022, Revision 0
 ECH-NE-16-00024, Revision 0

ECH-NE-16-00035, Revision 0
 ECs 68110, 68054, 65626, 66819, 41181, 66825
 Fuel bundle Design Report, NEDE-30044
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 FSAR
 ICAs 2017-01, 2017-02, 2016-26
 NEAD-SR-09-022, Revision 2
 NEAD-SR-14-012, Revision 0
 NEAD-NS-16/012, Revision 0
 NEAD-NS-16/006
 NET-28087-000-01, Revision 0
 Operability Evaluation OE_CR-2016-02205
 Pilgrim Technical Specifications
 Pilgrim Spent Fuel Pool Maps

Operating Experience

NRC-21-2012-16-00, Decrease in average BADGER measured boraflex B10 Aerial Density at Grand Gulf

Non-Cited Violations and Findings (LERs)

05000293/2016-003-02, Spent fuel Storage Design Feature Exceeded

Section 40A3: Follow-up of Events and Notices of Enforcement Discretion

Procedures

2.4.33, Condenser Chloride Intrusion, Revision 27

Section 40A5: Other Activities

Procedures

8.B.14, Fire Protection Technical Requirements, Revisions 52, 55 & 57
 EN-DC-127, Control of Hot Work and Ignition Sources, Revision 16
 EN-DC-161, Control of Combustibles, Revision 16
 EN-HU-102, Revision 14
 EN-NS-221, Security Organization, Standards, and Expectations, Revision 10
 EN-OP-139, Fire Watch Program, Revision 1

Condition Reports

2014-4812	2015-3366	2015-5425	2015-5711	2016-0423	2016-0447
2016-0993	2016-2572	2016-2632	2016-3076	2016-3489	2016-4028
2016-4045	2016-6124	2016-7404	2016-7564	2016-7959	2016-9368
2017-0865	2017-1704	2017-1844	2017-1850	2017-1851	2017-1860

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FRR-ADM-ADMFW, Admin Fire Watch Required Reading
 PNPS Security Newsletter, Issue 7, dated December 2014
 Quality Assurance Audit Report, Fire Protection, dated February 16, 2016
 SECI-JPM-8.1, Conduct Firewatch Duties & Observe for Suspicious Behaviors, dated June 9, 2016
 SO 2017-002, Performance of Fire Watch Hourly Card Reader History Report, dated, January 11, 2017

LIST OF ACRONYMS

BADGER	boron areal density gauge for evaluating racks
CAP	corrective action program
CFR	<i>Code of Federal Regulations</i>
CR	condition report
CS	core spray
EAL	emergency action level
EDG	emergency diesel generator
FSAR	Final Safety Analysis Report
HPCI	high pressure coolant injection
IMC	Inspection Manual Chapter
IPTe	infrequently performed test or evolution
Keff	K-effective
LCO	limiting condition for operation
LER	licensee event report
LPCI	low pressure coolant injection
MR	maintenance rule
MSIV	main steam isolation valve
NCV	non-cited violation
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission, U.S.
OOS	out of service
OPC	open phase condition
OWA	operator workaround
PNPS	Pilgrim Nuclear Power Station
RCS	reactor coolant system
RHR	residual heat removal
SBODG	station blackout diesel generator
SFP	spent fuel pool
SRO	senior reactor operator
SSC	structure, system, and component
TI	temporary instruction
TS	technical specification
WO	work order