



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

February 13, 2019

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

**SUBJECT: PILGRIM NUCLEAR POWER STATION – INTEGRATED INSPECTION REPORT  
05000293/2018004 AND INDEPENDENT SPENT FUEL STORAGE  
INSTALLATION REPORT 07201044/2018201**

Dear Mr. Sullivan:

On December 31, 2018, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Pilgrim Nuclear Power Station (Pilgrim). On January 23, 2019, 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 one finding of very low safety significance (Green) in this report. The finding did not involve a violation of NRC requirements. Additionally, NRC inspectors documented one licensee-identified violation, which was determined to be of very low safety significance in this report. The NRC is treating this violation as a non-cited violation (NCV) consistent with Section 2.3.2.a of the Enforcement Policy.

If you contest the finding or violation or the significance, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. 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 Pilgrim. 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 Pilgrim.

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 Title 10 of the *Code of Federal Regulations* (10 CFR), Part 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

**/RA/**

Anthony Dimitriadis, Chief  
Reactor Projects Branch 5  
Division of Reactor Projects

Docket Number: 50-293  
License Number: DPR-35

Enclosure:  
Inspection Report 05000293/2018004 and  
07201044/2018201

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SUBJECT: PILGRIM NUCLEAR POWER STATION – INTEGRATED INSPECTION REPORT  
05000293/2018004 AND INDEPENDENT SPENT FUEL STORAGE  
INSTALLATION REPORT 07201044/2018201 DATED FEBRUARY 13, 2019

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**U.S. NUCLEAR REGULATORY COMMISSION**  
**Inspection Report**

Docket Number: 50-293

License Number: DPR-35

Report Number: 05000293/2018004 and 07201044/2018201

Enterprise Identifier: I-2018-004-0062

Licensee: Entergy Nuclear Operations, Inc. (Entergy)

Facility: Pilgrim Nuclear Power Station (PNPS)

Location: Plymouth, Massachusetts

Inspection Dates: October 1, 2018 to December 31, 2018

Inspectors: E. Burket, Senior Resident Inspector  
B. Pinson, Resident Inspector  
S. Wilson, Health Physicist  
M. Hardgrove, Project Engineer  
E. Love, Senior Transportation and Storage Safety Inspector  
J. Lilliendahl, Senior Emergency Response Coordinator  
J. DeBoer, Emergency Preparedness Inspector  
P. Ott, Operations Engineer  
P. Boguszewski, Project Engineer  
J. Ayala, Senior Project Engineer

Approved By: Anthony Dimitriadis, Chief  
Reactor Projects Branch 5  
Division of Reactor Projects

Enclosure

## SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring Entergy's performance at Pilgrim by conducting the baseline inspections described in this report in accordance with the Reactor Oversight Process. The Reactor Oversight Process is the NRC's program for overseeing the safe operation of commercial nuclear power reactors. Refer to <https://www.nrc.gov/reactors/operating/oversight.html> for more information. NRC-identified and self-revealing findings, violations, and additional items are summarized in the table below. Licensee-identified non-cited violations (NCVs) are documented in Section 71153 of this report.

### List of Findings and Violations

| Failure to Adequately Implement Work Order for Feedwater Regulating Valve 'A'   |  |  |                            |
|---|--|--|----------------------------|
| Cornerstone   | Significance   | Cross-Cutting Aspect                                     | Inspection Results Section |
| Initiating Events   | Green<br>Finding 0500293/2018004-01<br>Opened/Closed | P.3 – Problem Identification and Resolution – Resolution | 71111.19                   |
| A self-revealing finding was identified for the inadequate implementation of a work order on feedwater regulating valve 'A,' as required by EN-WM-102, "Work Implementation and Closeout." Specifically, Entergy did not install the encoder and stepper motor connectors correctly, as required by vendor manual instructions located in the work order. |  |  |                            |

### Additional Tracking Items

| Type | Issue number         | Title   | Inspection Results Section | Status |
|------|----------------------|---|----------------------------|--------|
| URI  | 05000293/2017002-02  | Reporting of Unplanned Scrams with Complications Performance Indicator for Feedwater Regulating Valve Scram | 71151                      | Closed |
| LER  | 05000293/2017-006-00 | Source Range Monitor Inoperable During Fuel Movement  | 71153                      | Closed |
| LER  | 05000293/2017-012-00 | Start-up Transformer Degraded Voltage Relay Found Outside Technical Specification Limit                     | 71153                      | Closed |
| LER  | 05000293/2017-012-01 | Supplement to Start-up Transformer Degraded Voltage Relay Found Outside Technical Specification Limit       | 71153                      | Closed |
| LER  | 05000293/2018-006-00 | Automatic Reactor Scram Due to Feedwater Regulating Valve Malfunction                                       | 71153                      | Closed |

## PLANT STATUS

The unit began the inspection period at rated thermal power. On October 5, 2018, the unit automatically scrammed on low reactor water level due to a feedwater regulating valve 'A' failing closed. On October 12, 2018, operations personnel commenced a reactor startup and returned the unit to rated thermal power. On November 1, 2018, the station reduced power to 35 percent to troubleshoot feedwater regulating valve 'B.' On November 5, 2018, operations personnel returned the unit to rated thermal power and remained at or near rated thermal power for the remainder of the inspection period.

## INSPECTION SCOPES

Inspections were conducted using the appropriate portions of the inspection procedures in effect at the beginning of the inspection unless otherwise noted. Currently approved inspection procedures with their attached revision histories are located on the public website at <http://www.nrc.gov/reading-rm/doc-collections/insp-manual/inspection-procedure/index.html>. Samples were declared complete when the inspection procedure requirements most appropriate to the inspection activity were met consistent with Inspection Manual Chapter (IMC) 2515, "Light-Water Reactor Inspection Program - Operations Phase." The inspectors performed plant status activities described in IMC 2515, Appendix D, "Plant Status," and conducted routine reviews using Inspection Procedure 71152, "Problem Identification and Resolution." The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel to assess Entergy's performance and compliance with Commission rules and regulations, license conditions, site procedures, and standards.

## REACTOR SAFETY

### 71111.04 - Equipment Alignment

#### Partial Walkdown (3 Samples)

The inspectors evaluated system configurations during partial walkdowns of the following systems/trains:

- (1) High pressure coolant injection system walkdown post maintenance on November 13, 2018
- (2) Emergency diesel generator ventilation following realignment for winter readiness on November 15, 2018
- (3) Core spray 'A' train restoration walkdown following maintenance on December 11, 2018

#### Complete Walkdown (1 Sample)

The inspectors evaluated system configurations during a complete walkdown of the 'A' train of the residual heat removal system on October 18, 2018.

#### 71111.05A/Q - Fire Protection Annual/Quarterly

##### Quarterly Inspection (5 Samples)

The inspectors evaluated fire protection program implementation in the following selected areas:

- (1) Screenhouse fire areas 5.1, 5.2, and 5.3 on October 23, 2018
- (2) Station blackout diesel generator enclosure on October 23, 2018
- (3) 'B' residual heat removal/high pressure coolant injection reactor building quad on November 20, 2018
- (4) 'B' reactor building closed cooling water auxiliary bay on December 11, 2018
- (5) Reactor building 23' west on December 12, 2018

#### 71111.06 - Flood Protection Measures

##### Internal Flooding (1 Sample)

The inspectors evaluated internal flooding mitigation protections in the diesel building the week of December 10, 2018.

#### 71111.11 - Licensed Operator Regualification Program and Licensed Operator Performance

##### Operator Regualification (1 Sample)

The inspectors observed and evaluated the following:

- (1) Simulator evaluation that involved a stuck open bypass valve, rapid lowering of main condenser vacuum, a manual scram, and an anticipated transient without a scram on October 16, 2018

##### Operator Performance (1 Sample)

The inspectors observed and evaluated activities associated with the following licensed operator performance in the control room:

- (1) Post-scram response after the low reactor water level automatic scram on October 5, 2018

##### Operator Exams (1 Sample)

The inspectors reviewed and evaluated requalification examination results on October 24, 2018.

#### 71111.12 - Maintenance Effectiveness

##### Routine Maintenance Effectiveness (1 Sample)

The inspectors evaluated the effectiveness of routine maintenance activities associated with the following equipment and/or safety significant functions:

- (1) Emergency core cooling system instrumentation (System 45) on November 21, 2018

#### 71111.13 - Maintenance Risk Assessments and Emergent Work Control (3 Samples)

The inspectors evaluated the risk assessments for the following planned and emergent work activities:

- (1) Verification of emergent shutdown risk during forced outage on October 6, 2018
- (2) Elevated risk condition during planned high pressure coolant injection maintenance window on November 5, 2018
- (3) Elevated risk condition during planned 'A' emergency diesel generator maintenance on November 28, 2018

#### 71111.15 - Operability Determinations and Functionality Assessments (3 Samples)

The inspectors evaluated the following operability determinations and functionality assessments:

- (1) Safety relief valve 3B elevated far tailpipe temperatures on October 16, 2018
- (2) Standby liquid control squib valve past-operability on November 8, 2018
- (3) Operability of salt service water system following identification of pinhole leak on December 16, 2018

#### 71111.19 - Post Maintenance Testing (4 Samples)

The inspectors evaluated post maintenance testing for the following maintenance/repair activities:

- (1) Feedwater regulating valve 'A' pneumatic control assembly replacement following October 5, 2018 scram
- (2) 'A' control room high efficiency air filtration system temperature switch calibration and prefilter replacement on November 8, 2018
- (3) 'A' emergency diesel generator push button start replacement on November 28, 2018
- (4) 'B' emergency diesel generator turbo air assist solenoid valve replacement on December 11, 2018

#### 71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance tests:

##### Routine (3 Samples)

- (1) 8.5.3.14, Salt Service Water Loop 'A' Operability Test on October 30, 2018
- (2) 8.M.2-2.1.11, Emergency Buses A5 and A6 4.16kV Startup Transformer Undervoltage and Degraded Voltage Relays on November 27, 2018
- (3) 8.9.1, 'B' Emergency Diesel Generator surveillance run on December 11, 2018

##### Inservice (1 Sample)

- (1) 8.5.4.1, High Pressure Coolant Injection System Pump and Valve Quarterly and Biennial Comprehensive Operability on November 9, 2018



#### 71114.04 - Emergency Action Level and Emergency Plan Changes (1 Sample)

The inspectors verified that the changes made to the emergency plan were done in accordance with 10 CFR 50.54(q)(3), and any change made to the Emergency Action Levels, Emergency Plan, and its lower-tier implementing procedures, had not resulted in any reduction in effectiveness of the Plan. This evaluation does not constitute NRC approval.

#### 71114.06 - Drill Evaluation

##### Drill/Training Evolution (1 Sample)

The inspectors observed a simulator evaluation that involved a loss of all offsite power during defueled operations on November 14, 2018.

### **OTHER ACTIVITIES – BASELINE**

#### 71151 - Performance Indicator Verification (4 Samples)

The inspectors verified Entergy's performance indicator submittals listed below:

- (1) Occupational exposure control effectiveness for the period October 1, 2017 through October 31, 2018
- (2) Radiological effluent technical specifications/Offsite Dose Calculation Manual radiological effluent occurrences for the period October 1, 2017 through June 30, 2018
- (3) Emergency alternating current power systems for the period July 1, 2017 through June 30, 2018
- (4) Cooling water support systems for the period July 1, 2017 through June 30, 2018

#### 71152 - Problem Identification and Resolution

##### Semiannual Trend Review (1 Sample)

The inspectors reviewed Entergy's corrective action program for trends that might be indicative of a more significant safety issue.

#### 71153 - Follow-up of Events and Notices of Enforcement Discretion

##### Events (1 Sample)

The inspectors evaluated response to the following events:

- (1) Automatic reactor scram due to low reactor vessel water level on October 5, 2018

##### Licensee Event Reports (4 Samples)

The inspectors evaluated the following licensee event reports (LERs) which can be accessed at <https://lersearch.inl.gov/LERSearchCriteria.aspx>:

- (1) LER 05000293/2017-006-00, Source Range Monitor Inoperable During Fuel Movement (ADAMS Accession No. ML17171A231). The circumstances surrounding this LER are documented in the Inspection Results section of the report.

- (2) LER 05000293/2017-012-00, Start-up Transformer Degraded Voltage Relay Found Outside Technical Specification Limit (ADAMS Accession No. ML17325A986). The inspectors determined that it was not reasonable to foresee or correct the cause discussed in the LER; therefore, no performance deficiency was identified. The inspectors also concluded that no violation of NRC requirements occurred.
- (3) LER 05000293/2017-012-01, Supplement to Start-up Transformer Degraded Voltage Relay Found Outside Technical Specification Limit (ADAMS Accession No. ML18304A331). The inspectors determined that it was not reasonable to foresee or correct the cause discussed in the LER; therefore, no performance deficiency was identified. The inspectors also concluded that no violation of NRC requirements occurred.
- (4) LER 05000293/2018-006-00, Automatic Reactor Scram Due to Feedwater Regulating Valve Malfunction (ADAMS Accession No. ML18338A107). The circumstances surrounding this LER are documented in the Inspection Results section of the report.

## **OTHER ACTIVITIES – TEMPORARY INSTRUCTIONS, INFREQUENT, AND ABNORMAL**

### **60853.1 - On-Site Fabrication of Components and Construction of an Independent Spent Fuel Storage Installation**

The inspectors witnessed Entergy's Independent Spent Fuel Storage Installation repair of a multi-purpose canister, S/N MPC-422, stuck lift cleat stud in a multi-purpose canister lid on October 9–11, 2018. In addition, the inspectors reviewed project specific documentation to verify that the transportation and storage systems for which Holtec is the holder of a Certificate of Compliance, complied with design basis and 10 CFR Part 72 requirements. Specifically, the inspectors:

- (1) Interviewed individuals supervising and performing activities
- (2) Reviewed site work orders, procedures, and corrective action reports
- (3) Assessed workers awareness of radiological conditions in their work area and the radiation work permit controls/limits
- (4) Attended Entergy pre-job briefings that assessed critical steps of the evolution, potential failure scenarios, and human performance tools to prevent errors
- (5) Observed radiological field surveys to ensure that radiation worker doses were as low as reasonably achievable, and that project dose goals could be achieved
- (6) Observed heavy load movement of HI-STORM 100, S/N 703 and loaded multi-purpose canister into the reactor containment building
- (7) Observed multi-purpose canister lift cleat rework in accordance with established site work orders and procedures. Activities included removal of the lift cleat stud and residual material within the threaded multi-purpose canister lift hole, as well as, in-process inspections of the reworked threaded cleat hole using "Go – No/Go" gauges
- (8) Reviewed quality control inspector qualification records
- (9) Reviewed measuring and test equipment (go – no/go) calibration records
- (10) Verified documented activities were consistent with the design commitments and requirements in accordance with Final Safety Analysis Report (No. HI2002444, Revision 9) and HI-STORM, Certificate of Compliance No. 72-1014, Amendment 7

**92723 - Follow-up Inspection for Three or More Severity Level IV Traditional Enforcement Violations in the Same Area in a 12-Month Period**

The inspectors performed a follow-up inspection in accordance with Inspection Procedure 92723 for three Severity Level (SL) IV traditional enforcement violations in the area of potential for impeding the regulatory process that occurred between the fourth quarter of 2016 and the second quarter of 2017. This inspection reviewed Entergy's evaluation of the following traditional enforcement violations.

- NCV 05000293/2016011-07, Failure to Report Condition Prohibited by Technical Specifications and a Safety System Functional Failure
- NCV 05000293/2017001-04, Failure to Submit a Required 50.72 Notification
- NCV 05000293/2017002-07, Untimely 10 CFR 50.72 Notification of a Secondary Containment System Inoperable

The objectives of the inspection were:

- To provide assurance that the cause(s) of multiple SL IV traditional enforcement violations are understood by Entergy
- To provide assurance that the extent of condition and extent of cause of multiple SL IV traditional enforcement violations are identified
- To provide assurance that Entergy's corrective actions to traditional enforcement violations are sufficient to address the causes

The inspectors reviewed the cause evaluation associated with each of the three issues as well as the common cause analysis, condition reports, procedures, and relevant references to the violations. The inspectors also discussed the evaluations with management and staff personnel who were familiar with the violations and participated in the evaluation or corrective actions.

**INSPECTION RESULTS**

| Failure to Adequately Implement Work Order for Feedwater Regulating Valve 'A'  |   |  |                                      |
|--|---|--|--------------------------------------|
| Cornerstone  | Significance                                      | Cross-Cutting Aspect                                     | Report Section                       |
| Initiating Events  | Green FIN<br>05000293/2018004-01<br>Opened/Closed | P.3 – Problem Identification and Resolution – Resolution | 71111.19<br>Post Maintenance Testing |
| A self-revealing finding was identified for the inadequate implementation of a work order on feedwater regulating valve 'A,' as required by EN-WM-102, "Work Implementation and Closeout." Specifically, Entergy did not install the encoder and stepper motor connectors correctly, as required by vendor manual instructions located in the work order.  |   |  |                                      |
| <u>Description:</u> The feedwater regulating valves receive a signal from the feedwater level control system and adjust flow from the signals received from the encoder. The digital valve controller directs the movement of the stepping motor, which controls the spool valve. The spool valve movement adjusts the force on the piston, causing movement on the feedwater regulating valve. The connectors on the stepper motor were of a design that required a specific orientation to ensure a secure fit. The connectors were most recently replaced in April 2018, using Work Order 00500571. The work order stated to "insert locking clip |   |  |                                      |

contacts into connectors per instructions in V2036, Appendix C markup and drawing,” and referenced vendor manual V2036, “Feedwater Regulating Valves,” for specific installation instructions. However, according to the technician who performed the maintenance, the vendor manual also contained a large amount of extraneous information that was not directly related to the installation of the connectors thereby making the instructions difficult to follow. The locking clips on the connectors must be oriented correctly in order to prevent the wires from loosening during valve operation. Additionally, a subsequent step in the work order required pulling on each wire to ensure they were secure in the connector housing.

On October 5, 2018, an automatic reactor scram from 100 percent power occurred due to reactor water level perturbations and receipt of a low reactor water level reactor protection system signal. The level perturbations were caused by feedwater regulating valve ‘A’ opening abruptly past its expected position and then promptly closing, which caused a sudden increase in flow followed by a rapid decrease in flow through feedwater loop ‘A’.

A similar failure of feedwater regulating valve ‘A’ occurred in September 2016 (the specifics are documented in Inspection Report 05000293/2016004.) One of the corrective actions from the 2016 failure resulted in the development of a site-specific procedure to implement a checklist to be used for critical maintenance work orders to verify the correct use of vendor and technical information. Procedure 1.13.2, “Vendor and Technical Information Reviews,” was developed and made effective on January 26, 2017, and included a checklist that was required to be included in critical maintenance work packages. During investigation of the October 5, 2018, feedwater regulating valve failure, it was discovered that the checklist was not included in the work package as required, and that the applicable steps from vendor manual V2036 were not referenced as required.

EN-WM-102, “Work Implementation and Closeout,” Revision 10, step 5.3, states, in part, that the work activity is performed in accordance with the work package, site procedures, and company policies and guidelines. Work Order 00500571 required installation of the encoder and stepper motor connectors in accordance with the vendor manual instructions. During troubleshooting of the system, Entergy discovered that all 13 locking pins of the encoder and stepper motor connectors on feedwater regulating valve ‘A’ were installed in the reverse orientation than that required by the vendor manual. This positioning did not allow the locking pins to engage the connector properly, resulting in some of the connectors being partially backed out from the locked position. Specific locking pin installation steps contained in V2036 were not adequately translated into Work Order 00500571, contributing to the pins being installed incorrectly. Entergy contracted an engineering firm to perform a forensic analysis on the removed feedwater regulating valve ‘A’ assembly in order to identify any anomalies that may have contributed to the degraded performance. The results of the analysis determined that “damage to the stepper motor connector” was the most probable cause of poor valve performance, and that “the damage was a likely result of difficulty with complete insertion and mating of the stepper motor connector.”

Entergy performed a root cause evaluation and identified that management oversight during the preparation, acceptance, and implementation of critical maintenance activities was less than effective, and that worker proficiency and field constructability of the connectors was not adequately addressed in previous station guidance. More specifically, increased oversight during the planning and preparation stages of the work order would have identified inadequacies associated with the work instructions.

**Corrective Actions:** Entergy replaced the pneumatic assemblies, including the encoder and stepper motor for both feedwater regulating valves 'A' and 'B' during the forced outage following the automatic plant scram. Entergy also developed a modification to the design of the feedwater regulating valve connectors to allow them to be constructed in a controlled shop environment, with increased management oversight, and more specific guidance was placed in the work orders related to proper installation of the locking pins on the feedwater regulating valves connectors. Additionally, procedure 1.13.2 was revised to require additional manager review of critical work packages, and field observations of the critical maintenance activities. Entergy submitted LER 05000293/2018-006-00 on November 29, 2018, associated with this issue.

**Corrective Actions Reference:** CR-PNP-2018-7927

**Performance Assessment:**

**Performance Deficiency:** Entergy personnel failed to implement work order requirements on feedwater regulating valve 'A' encoder and stepper motor connectors as required by EN-WM-102.

**Screening:** This performance deficiency is more than minor because it is associated with the equipment performance attribute of the Initiating Events cornerstone and adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during a shutdown as well as power operations. Specifically, the performance deficiency affected the reliability of feedwater regulating valve 'A,' which resulted in an automatic plant scram.

**Significance:** The inspectors assessed the significance of the finding using IMC 0609.04, "Initial Characterization of Findings," and IMC 0609, Appendix A, Exhibit 1, "Initiating Events Screening Questions." The inspectors determined that this finding was of very low safety significance (Green) because although the performance deficiency caused a reactor scram, it did not cause the loss of mitigation equipment relied upon to transition the plant from the onset of the scram to a stable shutdown condition.

**Cross-Cutting Aspect:** The cause of the finding was assigned a cross-cutting aspect of Problem Identification and Resolution – Resolution (P.3), because Entergy did not take effective corrective actions to address issues in a timely manner commensurate with their safety significance. Specifically, corrective actions developed as a result of the September 2016 feedwater regulating valve failure were not adequately implemented. The instructions in the work order did not fully meet station requirements, and coordination between the planning and maintenance departments during work package preparation was not effective in ensuring the critical maintenance could be completed adequately.

**Enforcement:**

Inspectors did not identify a violation of regulatory requirements associated with this finding.

The disposition of this finding closes LER 05000293/2018-006-00.

|   |  |       |
|---|--|-------|
| Unresolved Item<br>(Closed)   | Reporting of Unplanned Scrams with Complications<br>Performance Indicator for Feedwater Regulating Valve<br>Scram (URI 05000293/2017-02) | 71151 |
| <p><u>Description:</u> On September 6, 2016, Pilgrim operators initiated a manual reactor scram based on oscillating feed flow as a result of a malfunction with feedwater regulating valve 'A.' As a result of high reactor vessel water level, all of the reactor feed pumps tripped, the high pressure coolant injection and reactor core isolation coolant systems isolated, and a Group 1 isolation signal was present, initiating closure of the main steam isolation valves. In order to maintain pressure control of the reactor, safety relief valve 3B was manually cycled.</p> <p>During the scram response, Pilgrim operators were required to use a safety relief valve to maintain reactor pressure control, but Entergy's submittal of performance indicator data for the third quarter of 2016 did not count the scram as an unplanned scram with complications, which was required by EN-LI-114, "Regulatory Performance Indicator Process."</p> <p>The inspectors opened an unresolved item to determine if a performance deficiency existed pending resolution of the differing interpretation of guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guidance," Revision 7, at the next scheduled Reactor Oversight Process Working Group meeting.</p> <p>Corrective Action Reference: CR-PNP-2018-09798</p> <p>Closure Basis: Pilgrim staff developed a Frequently Asked Question to be presented at the Reactor Oversight Process Working Group meeting. Entergy Fleet concluded the Frequently Asked Question would not be presented. The inspectors verified that Entergy submitted the corrected data for Pilgrim for the third quarter of 2016 that included one unplanned scram with complication. The failure to report the correct data initially was a performance deficiency associated with EN-LI-114, "Regulatory Performance Indicator Process," and was reasonably within Entergy's ability to foresee and correct. However, because there was no change from the Green threshold that would impact the Action Matrix, the performance deficiency was minor.</p> <p>The disposition of this URI closes LER 05000293/2016-007-00.</p> |  |       |

|   |                                     |
|---|-------------------------------------|
| Observations  | 71152<br>Semiannual Trend<br>Review |
| <p>The inspectors reviewed Entergy's corrective action program for trends that might be indicative of more significant safety issues. The inspectors reviewed condition reports, maintenance backlogs, system health reports, and control room deficiencies. The inspectors also evaluated the trend codes assigned to several condition reports (CR-PNP-2018-09610, CR-PNP-2018-07385, and CR-PNP-2018-07183) for rescheduled work activities associated with safety-related or risk-significant components to determine whether the postponed maintenance impacted equipment reliability. The inspectors determined that trend codes were applied to condition reports in accordance with Entergy procedures, and that trend analyses were performed as required by EN-LI-121, "Trending and Performance Review Process."</p> |                                     |

Equipment reliability continued to challenge full power operation over the previous two quarters, including a downpower on August 17, 2018, in response to main condenser degraded parameters (CR-PNP-2018-06646), a scram caused by the failure of feedwater regulating valve 'A' on October 5, 2018 (CR-PNP-2018-07927), and a downpower to troubleshoot feedwater flow line 'B' oscillations on October 31, 2018 (CR-PNP-2018-08649). These issues required timely response by control room operators, and inspectors noted improved operator performance relative to past events. The August 17, 2018, and October 31, 2018, transients were determined to be minor in accordance with MC 0612 Appendix B because they did not challenge critical safety functions. The October 5, 2018, automatic scram resulted in a Green finding and is discussed above.

The inspectors also evaluated whether there was a trend in the number of condition reports generated over the six-month period to identify a potential indication of a lack of worker engagement. The inspectors noted there was not a significant reduction in condition report generation during the second half of 2018 as compared to the first half of the year. Based on the overall results of the semiannual trend review, the inspectors determined that issues were appropriately evaluated by Entergy staff for potential trends and resolved within the scope of the corrective action program.

| Licensee Identified Non-Cited Violation   | 71153 |
|---|-------|
| This violation of very low safety significance was identified by the licensee and has been entered into the licensee's corrective action program and is being treated as an NCV, consistent with Section 2.3.2 of the Enforcement Policy.   |       |
| <p>Violation: Technical Specification 3.10.B, "Core Alterations," states, in part, that two source range monitors shall be operable during core alterations when fuel is in the vessel, one in the core quadrant where fuel or control rods are being moved and one in an adjacent quadrant. The source range monitors provide operators an indication to monitor for reactor criticality. With the source range monitor inoperable, no fuel movement can occur in the vessel.</p> <p>Contrary to the above, from April 14 to April 15, 2017, fuel movements (core alterations) were conducted in reactor quadrant 'B,' while source range monitor channel 'B' was inoperable due to not meeting the signal to noise ratio of no less than 2 to 1 required by Final Safety Analysis Report, Section 7.5.4.1. This condition was not recognized as being required or validated by the stations procedures.</p> |       |
| <p>Significance/Severity Level: The inspectors evaluated this finding using IMC 0609.04, "Initial Characterization of Findings," and IMC 0609, Appendix G, Table G1, "Generic Shutdown Key Safety Functions and System Dependencies," and Exhibit 2, "Initiating Event Screening Questions." The inspectors determined that the finding was of very low safety significance (Green) because during the time period that the source range monitor was inoperable, there was no impact to the public health and safety since an inadvertent criticality event did not occur.</p>  |       |
| Corrective Action Reference: CR-PNP-2017-03952  |       |
| The disposition of this NCV closes LER 050000293/2017-006-00.   |       |

**EXIT MEETINGS AND DEBRIEFS**

Inspectors verified no proprietary information was retained or documented in this report.

- On October 11, 2018, the inspectors presented the Independent Spent Fuel Storage Installation inspection results to Paul Kristian, Project Manager, Dry Fuel Storage.
- On January 23, 2019, the inspectors presented the results associated with the resident inspector quarterly baseline inspection results to Mr. Brian Sullivan, Site Vice President, and other members of Entergy's staff.



**DOCUMENTS REVIEWED****71111.05**Procedures

5.5.2, Special Fire Procedure, Revision 59

**71111.06**Condition Reports

2011-4161    2016-0866    2016-2313    2018-5293

Miscellaneous

Calculation M1374, Internal Flooding Calculation for Safe Shutdown, Revision 1

TDBD, Topical Design Basis Document for Internal and External Flooding, Revision 0

**71111.11**Procedures

EN-OP-115, Conduct of Operations, Revision 15

**71111.12**Procedures

EN-DC-205, Maintenance Rule Monitoring, Revision 6

**71111.13**Procedures

EN-WM-104, On-line Risk Assessment, Revision 18

**71111.15**Procedures

EN-OP-104, Operability Determination Process, Revision 16

**71111.18**Procedures

EN- DC-115, Engineering Change Process, Revision 26

EN- DC-136, Temporary Modifications, Revision 18

**71114.06**Procedures

EP-AD-601, Emergency Action Level Technical Basis Document, Revision 9

**71153**Condition Reports

2017-3541    2017-3659    2017-3660    2017-3773    2017-5294

**60853.1**Procedures

TP-18-008, Removal of Stuck Stud at Pilgrim Nuclear Power Plant, Revision 1  
 HPP-2852-100, Removal of Stuck Stud at Pilgrim Nuclear Power Plant, Revision 2

Drawings

1042, Sheet 3, MPC-68 Enclosure Vessel, Revision 53

Miscellaneous

00406430-01, Removal of the Remaining Cleat Stud in MPC #422  
 00406430-02, Shuffle HI-STORMS to Allow Access to MPC #422, HI-STORM  
 00406430-03, Transport MPC #422, HI\_STORM to Stackup Position RB Hoistway  
 00406430-06, Return MPC #422, HI-STORM to Storage & Restore Shuffled MPCs  
 EC79580, Design Equivalent Package, MPC- S/N 422 Stuck MPC Lift Cleat Stud in MPC Lid  
 FCR28521030, Holtec Field Condition Report, Validation of MPC Threads, dated 10/11/2018  
 RWP 2018-218, Cask #2, HI-STORM #703, MPC #422 – Removal Stuck Lifting Cleat Stud,  
 Revision 0

**92723**Procedures

1.3.6, Technical Specification – Adherence and Clarifications, Revision 30  
 1.3.12, Notification and Recall of Personnel, Revision 54  
 8.7.3, Secondary Containment Leak Rate Test, Revision 73

Condition Reports

|           |            |           |           |           |           |
|-----------|------------|-----------|-----------|-----------|-----------|
| 2016-7443 | 2016-7491  | 2016-7899 | 2016-9552 | 2017-2900 | 2017-3723 |
| 2017-8979 | 2018-9338* |           |           |           |           |

\*Generated as a result of this inspection

Miscellaneous

Work Order 52717647