



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
REGION IV  
1600 E. LAMAR BLVD  
ARLINGTON, TX 76011-4511

February 7, 2018

Mr. John Dinelli  
Site Vice President  
Entergy Operations, Inc.  
17265 River Road  
Killona, LA 70057-0751

**SUBJECT: WATERFORD STEAM ELECTRIC STATION, UNIT 3 – NRC INTEGRATED  
INSPECTION REPORT 05000382/2017004**

Dear Mr. Dinelli:

On December 31, 2017, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Waterford Steam Electric Station, Unit 3. On January 11, 2018, 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. Both of these findings involved violations of NRC requirements. The NRC is treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2.a of the Enforcement Policy.

If you contest the violations or significance of these NCVs, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region IV; the Director, Office of Enforcement; and the NRC resident inspector at the Waterford Steam Electric Station, Unit 3.

If you disagree with a cross-cutting aspect assignment 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 IV; and the NRC resident inspector at the Waterford Steam Electric Station, Unit 3.

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 at the NRC Public Document Room in accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

*/RA/*

Geoffrey Miller, Branch Chief  
Project Branch D  
Division of Reactor Projects

Docket No. 50-382  
License No. NPF-38

Enclosure:

Inspection Report 05000382/2017004

w/ Attachments:

1. Supplemental Information
2. Public Radiation Safety Inspection Request for Information

WATERFORD STEAM ELECTRIC STATION, UNIT 3 – NRC INTEGRATED INSPECTION  
 REPORT 05000382/2017004 – February 7, 2018

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**U.S. NUCLEAR REGULATORY COMMISSION**

**REGION IV**

Docket: 05000382  
License: NPF-38  
Report: 05000382/2017004  
Licensee: Entergy Operations, Inc.  
Facility: Waterford Steam Electric Station, Unit 3  
Location: 17265 River Road  
Killona, LA 70057  
Dates: October 1 through December 31, 2017  
Inspectors: F. Ramírez, Senior Resident Inspector  
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Approved By: Geoffrey Miller  
Chief, Project Branch D  
Division of Reactor Projects

Enclosure

## SUMMARY

IR 05000382/2017004; 10/01/2017 – 12/31/2017; Waterford Steam Electric Station, Unit 3; Surveillance Testing, Problem Identification and Resolution.

The inspection activities described in this report were performed between October 1 and December 31, 2017, by the resident inspectors at Waterford Steam Electric Station, Unit 3, inspectors from the NRC's Region IV office, and other NRC offices. Two findings of very low safety significance (Green) are documented in this report. Both of these findings involved violations of NRC requirements. The significance of inspection findings is indicated by their color (i.e., Green, greater than Green, White, Yellow, or Red), determined using Inspection Manual Chapter 0609, "Significance Determination Process," dated April 29, 2015. Their cross-cutting aspects are determined using Inspection Manual Chapter 0310, "Aspects within the Cross-Cutting Areas," dated December 4, 2014. Violations of NRC requirements are dispositioned in accordance with the NRC Enforcement Policy. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," dated July 2016.

### Cornerstone: Mitigating Systems

- Green. The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," for the licensee's failure to assure that all testing required to demonstrate that structures, systems, and components will perform satisfactorily in service is identified and performed in accordance with written test procedures which incorporate the requirements and acceptance limits contained in applicable design documents. Specifically, the licensee failed to properly perform testing of the containment spray pump A in accordance with site Procedure OP-903-035, "Containment Spray Pump Operability Check," Revision 25. The licensee entered the issue into the corrective action program as Condition Reports CR-WF3-2017-09109 and CR-WF3-2017-09207. The licensee's immediate corrective actions included performing an operability evaluation for the containment spray pump and determining the component remained operable.

The performance deficiency was more than minor because if left uncorrected, the performance deficiency had the potential to lead to a more significant safety concern. Specifically, the licensee's failure to perform pump testing in accordance with site procedures or the Operation and Maintenance Code could prevent identification of degrading performance adversely affecting the pump's capability to respond to an initiating event. The failure to correct the performance deficiency could also result in other safety-related pumps being incorrectly tested and failure of the licensee to identify the component might be degraded, deficient, and/or inoperable. The inspectors screened the finding in accordance with NRC Inspection Manual Chapter 0609, "Significance Determination Process," dated April 29, 2015. Inspection Manual Chapter 0609, Attachment 4, "Initial Characterization of Findings," dated October 7, 2016, instructed the inspectors to use Appendix A, "The Significance Determination Process for Findings At-Power," dated June 19, 2012. Using Appendix A, Exhibit 2 – "Mitigating Systems Screening Questions," the finding screened as Green because the finding was a deficiency affecting the design or qualification of a mitigating structure, system, or component, but the structure, system, or component maintained its operability.

The finding had a training cross-cutting aspect in the human performance area because the licensee did not provide training and ensure knowledge transfer to maintain a

knowledgeable, technically competent workforce and did not instill nuclear safety values. Specifically, licensee staff was under the incorrect impression that inservice testing could be repeated until acceptable results were obtained without the need to evaluate the reason for the failure [H.9]. (Section 1R22)

- Green. The inspectors reviewed a self-revealed, non-cited violation of Technical Specification 6.8, "Procedures and Programs," and Regulatory Guide 1.33 for the licensee's failure to properly perform maintenance on a safety-related component in accordance with site procedures. Specifically, the licensee failed to check the orientation of the operating springs for reactor trip circuit breaker 2 following maintenance as required per Procedure ME-004-155, "Reactor Trip Switchgear," Revision 308. As a result, one of the two springs became loose, dropped into the breaker operating mechanism, and caused a breaker failure that was discovered during testing. The licensee entered this condition into their corrective action program as Condition Report CR-WF3-2017-05046. The licensee's corrective actions included an extent of condition inspection of the other breakers in the reactor trip switchgear to ensure the springs were properly installed, and the addition of a critical step to Procedure ME-004-155, requiring an independent verification of the spring orientation following breaker maintenance.

The performance deficiency was more than minor because it affected the equipment performance attribute of the Mitigating Systems Cornerstone and its objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the breaker was placed in service while incorrectly assembled which resulted in the breaker failing to open. The failure decreased the redundancy of the reactor trip circuit breakers and placed the unit in a 1 hour shutdown technical specification limiting condition for operation action statement. The inspectors screened the finding in accordance with NRC Inspection Manual Chapter 0609, "Significance Determination Process," dated April 29, 2015. Inspection Manual Chapter 0609, Attachment 4, "Initial Characterization of Findings," dated October 7, 2016, instructed the inspectors to use Appendix A, "The Significance Determination Process for Findings At-Power," dated June 19, 2012. Using Appendix A, Exhibit 2 – "Mitigating Systems Screening Questions," the finding screened as Green because the finding: (1) was not a deficiency affecting the design or qualification of a mitigating structure, system, or component; (2) did not represent a loss of system and/or function; (3) did not represent an actual loss of function of at least a single train for greater than its technical specification allowed outage time or two separate safety systems out-of-service for greater than its technical specification allowed outage time; and (4) did not represent an actual loss of function of one or more nontechnical specification trains of equipment designated as high safety-significant in accordance with the licensee's maintenance rule program for greater than 24 hours.

The finding had an avoid complacency cross-cutting aspect in the area of human performance because individuals did not recognize and plan for the possibility of mistakes, latent issues, and inherent risk, even while expecting successful outcomes. Specifically, even with the different tools available, following each instance of maintenance on the reactor trip circuit breaker, the workers failed to recognize the improper installation of the breaker spring [H.12]. (Section 4OA2)

## PLANT STATUS

The Waterford Steam Electric Station, Unit 3, began the inspection period at 100 percent power and maintained 100 percent power for the duration of the inspection period.

## REPORT DETAILS

### 1. REACTOR SAFETY

#### Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

#### 1R04 Equipment Alignment (71111.04)

##### .1 Partial Walk-Down

###### a. Inspection Scope

The inspectors performed partial system walk-downs of the following risk-significant systems:

- October 10, 2017, main switchgear ventilation train B with train A out of service for maintenance
- November 7, 2017, high pressure safety injection train B with train A out of service for planned maintenance
- December 16, 2017, essential chiller B following train realignment

The inspectors reviewed the licensee's procedures and system design information to determine the correct lineup for the systems. They visually verified that critical portions of the systems or trains were correctly aligned for the existing plant configuration.

These activities constituted three partial system walk-down samples, as defined in Inspection Procedure 71111.04.

###### b. Findings

No findings were identified.

##### .2 Complete Walk-Down

###### a. Inspection Scope

On November 28, 2017, the inspectors performed a complete system walk-down inspection of the emergency feedwater system. The inspectors reviewed the licensee's procedures and system design information to determine the correct emergency feedwater system lineup for the existing plant configuration. The inspectors also reviewed outstanding work orders, open condition reports, temporary modifications, and other open items tracked by the licensee's operations and engineering departments. The inspectors then visually verified that the system was correctly aligned for the existing plant configuration.

These activities constituted one complete system walk-down sample, as defined in Inspection Procedure 71111.04.

b. Findings

No findings were identified.

**1R05 Fire Protection (71111.05)**

Quarterly Inspection

a. Inspection Scope

The inspectors evaluated the licensee's fire protection program for operational status and material condition. The inspectors focused their inspection on four plant areas important to safety:

- October 4, 2017, west wing area, Fire Area RAB 25
- November 29, 2017, -35 reactor auxiliary building general area containing emergency feedwater pump AB, Fire Area RAB 39-001
- December 16, 2017, emergency feedwater pump room A, Fire Area RAB 37-001
- December 28, 2017, fire water pump house, Fire Area FWPH

For each area, the inspectors evaluated the fire plan against defined hazards and defense-in-depth features in the licensee's fire protection program. The inspectors evaluated control of transient combustibles and ignition sources, fire detection and suppression systems, manual firefighting equipment and capability, passive fire protection features, and compensatory measures for degraded conditions.

These activities constituted four quarterly inspection samples, as defined in Inspection Procedure 71111.05.

b. Findings

No findings were identified.

**1R11 Licensed Operator Requalification Program and Licensed Operator Performance (71111.11)**

.1 Review of Licensed Operator Requalification

a. Inspection Scope

On October 19, 2017, the inspectors observed an evaluated simulator scenario performed by an operating crew. The inspectors assessed the performance of the operators and the evaluators' critique of their performance.

These activities constituted completion of one quarterly licensed operator requalification program sample, as defined in Inspection Procedure 71111.11.



b. Findings

No findings were identified.

.2 Review of Licensed Operator Performance

a. Inspection Scope

On December 18, 2017, the inspectors observed the performance of on-shift licensed operators in the plant's main control room. At the time of the observations, the plant was in a period of heightened activity due to testing of emergency diesel generator B and associated engineered safety feature actuations. The inspectors observed the operators' performance of the following activities:

- Communications with field personnel
- Pump and valve manipulations
- Alarm response
- Crew briefs

In addition, the inspectors assessed the operators' adherence to plant procedures, including Procedure EN-OP-115, "Conduct of Operations," Revision 23, and other operations department policies.

These activities constituted completion of one quarterly licensed operator performance sample, as defined in Inspection Procedure 71111.11.

b. Findings

No findings were identified.

**1R12 Maintenance Effectiveness (71111.12)**

.1 Routine Maintenance Effectiveness

a. Inspection Scope

On December 15, 2017, the inspectors reviewed one instance of degraded performance of safety-related structures, systems, and components (SSCs) on the site's spent fuel pool cooling and purification system.

The inspectors reviewed the extent of condition of possible common cause SSC failures and evaluated the adequacy of the licensee's corrective actions. The inspectors reviewed the licensee's work practices to evaluate whether these may have played a role in the degradation of the SSCs. The inspectors assessed the licensee's characterization of the degradation in accordance with 10 CFR 50.65 (the Maintenance Rule), and verified that the licensee was appropriately tracking degraded performance and conditions in accordance with the Maintenance Rule.

On November 21, 2017, the inspectors reviewed the licensee's periodic evaluation required by 10 CFR 50.65(a)(3) that evaluates performance and condition monitoring

activities, and associated goals and preventive maintenance for SSCs. The inspectors verified that the periodic evaluation had been completed within the time constraints of the Maintenance Rule, and that the licensee had reviewed its 10 CFR 50.65(a)(1) goals, 10 CFR 50.65(a)(2) performance criteria, monitoring, and preventive maintenance activities, and effectiveness of corrective actions. In addition, the inspectors verified that industry operating experience had been taken into account where practical and the licensee made appropriate adjustments as a result of the periodic evaluation.

These activities constituted completion of two maintenance effectiveness samples, as defined in Inspection Procedure 71111.12.

b. Findings

No findings were identified.

.2 Quality Control

a. Inspection Scope

On December 22, 2017, the inspectors reviewed the licensee's quality control activities through a review of parts installed in the emergency feedwater system that were purchased as commercial-grade parts but were dedicated prior to installation in a quality-grade application.

These activities constituted completion of one quality control sample, as defined in Inspection Procedure 71111.12.

b. Findings

No findings were identified.

**1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13)**

a. Inspection Scope

On November 3, 2017, the inspectors reviewed a risk assessment performed by the licensee prior to changes in plant configuration and the risk management actions taken by the licensee in response to planned Yellow risk due to transformer yard work and planned auxiliary component cooling water maintenance work window.

The inspectors verified that this risk assessment was performed timely and in accordance with the requirements of 10 CFR 50.65 (the Maintenance Rule) and plant procedures. The inspectors reviewed the accuracy and completeness of the licensee's risk assessment and verified that the licensee implemented appropriate risk management actions based on the results of the assessments.

The inspectors also observed portions of three emergent work activities that had the potential to cause an initiating event and to affect the functional capability of mitigating systems:

- October 19, 2017, emergent work related to the inoperability of main feedwater isolation valve 2
- November 16, 2017, emergent work and Yellow risk due to missed emergency diesel generator surveillance
- November 27, 2017, emergent work related to elevated vibrations on main feedwater pump B

The inspectors verified that the licensee appropriately developed and followed a work plan for these activities. The inspectors verified that the licensee took precautions to minimize the impact of the work activities on unaffected SSCs.

These activities constituted completion of four maintenance risk assessments and emergent work control inspection samples, as defined in Inspection Procedure 71111.13.

b. Findings

No findings were identified.

**1R15 Operability Determinations and Functionality Assessments (71111.15)**

a. Inspection Scope

The inspectors reviewed three operability determinations that the licensee performed for degraded or nonconforming SSCs:

- October 31, 2017, operability determination of charging pump AB after pulsation dampener pressure was found low
- November 15, 2017, operability determination of high pressure safety injection cold legs 1A, 1B, and 2A degraded flow reading
- December 29, 2017, operability determination of essential chiller B following an unexpected trip

The inspectors reviewed the timeliness and technical adequacy of the licensee's evaluations. Where the licensee determined the degraded SSC to be operable, the inspectors verified that the licensee's compensatory measures were appropriate to provide reasonable assurance of operability or functionality. The inspectors verified that the licensee had considered the effect of other degraded conditions on the operability of the degraded SSC.

These activities constituted completion of three operability review samples, as defined in Inspection Procedure 71111.15.

b. Findings

No findings were identified.

## **1R19 Post-Maintenance Testing (71111.19)**

### a. Inspection Scope

The inspectors reviewed four post-maintenance testing activities that affected risk-significant SSCs:

- October 13, 2017, low pressure safety injection system, train A, following planned maintenance
- October 31, 2017, control room ventilation air handling unit and emergency filtration unit, train A, following planned maintenance
- November 7, 2017, high pressure safety injection, train A, following planned maintenance
- November 30, 2017, emergency feedwater header B to steam generator 2 primary flow control valve following planned maintenance

The inspectors reviewed licensing- and design-basis documents for the SSCs and the maintenance and post-maintenance test procedures. The inspectors observed the performance of the post-maintenance tests to verify that the licensee performed the tests in accordance with approved procedures, satisfied the established acceptance criteria, and restored the operability of the affected SSCs.

These activities constituted completion of four post-maintenance testing inspection samples, as defined in Inspection Procedure 71111.19.

### b. Findings

No findings were identified.

## **1R22 Surveillance Testing (71111.22)**

### a. Inspection Scope

The inspectors observed five risk-significant surveillance tests and reviewed test results to verify that these tests adequately demonstrated that the SSCs were capable of performing their safety functions:

Reactor coolant system leak detection tests:

- November 17, 2017, reactor coolant system increased unidentified leakage

Other surveillance tests:

- October 5, 2017, auxiliary component cooling water pump A
- October 17, 2017, emergency feedwater loop B flow calibration
- November 6, 2017, emergency diesel generator A monthly operability run
- November 8, 2017, containment spray pump A comprehensive test

The inspectors verified that these tests met technical specification requirements, that the licensee performed the tests in accordance with their procedures, and that the results of the tests satisfied appropriate acceptance criteria. The inspectors verified that the licensee restored the operability of the affected SSCs following testing.

These activities constituted completion of five surveillance testing inspection samples, as defined in Inspection Procedure 71111.22.

b. Findings

Introduction. The inspectors identified a Green, non-cited violation of 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," for the licensee's failure to assure that all testing required to demonstrate that structures, systems, and components will perform satisfactorily in service is identified and performed in accordance with written test procedures which incorporate the requirements and acceptance limits contained in applicable design documents. Specifically, the licensee failed to properly perform testing of containment spray pump A in accordance with site Procedure OP-903-035, "Containment Spray Pump Operability Check," Revision 25.

Description. On November 8, 2017, the licensee performed a comprehensive pump test of containment spray pump A, in accordance with Procedure OP-903-035, "Containment Spray Pump Operability Check," Revision 25. This procedure is used, among other things, to satisfy the site's inservice testing program. Many of the procedural steps stated in Procedure OP-903-035 are obtained from code requirements established by the code of record. For this particular activity, the inservice testing was implemented in accordance with the American Society of Mechanical Engineers Operation and Maintenance (ASME OM) Code 2001, addenda through 2003, which was the code of record at the time of the inspection.

Comprehensive pump testing is a biennial test required by the licensee's inservice testing program and the ASME OM Code. To perform the test, the licensee declares the system inoperable, aligns the system to permit full flow, and then adjusts backpressure via a manually operated valve until measured pump flow is within an allowable band. Procedure OP-903-035 establishes a desired nominal pump flow value of 2,015 gpm and establishes an acceptable band of 2,000 – 2,025 gpm. Once flow is stabilized, the procedure requires that a number of parameters such as pump discharge pressure, suction pressure, and vibration data be measured and recorded. With this data, the licensee calculates the differential pressure as required by Procedure OP-903-035, records it, and compares it to the acceptance criteria. Procedure OP-903-035 establishes the differential pressure acceptance criteria as greater than or equal to 181.8 psid and less than or equal to 187.8 psid. Anything outside this band falls under the "Required Action" range. When test results fall under "Required Action" range, Procedure OP-903-035 provides instructions to declare the pump inoperable until cause of deviation has been determined and the condition corrected, to initiate a work order in accordance with Procedure EN-WM-100, "Work Request (WR) Generation, Screening, and Classification," and to initiate a condition report in accordance with Procedure EN-LI-102, "Corrective Action Program."

As stated in Procedure OP-903-035, the licensee recognizes that the test's differential pressure acceptance criteria is very restrictive, and flow should be established as close as possible to the nominal value. The inspectors noted that various factors influence the

very restrictive acceptance criteria such as inservice testing program and design bases requirements. Compliance with these acceptance criteria ensures the pump will be able to perform its safety-related function during a postulated design bases event.

While observing the test, the inspectors noted the licensee set flow within the allowed band, measured discharge pressure and suction pressure, calculated differential pressure, and compared it to the applicable acceptance criteria. The licensee recognized the differential pressure fell into the “Required Action” range, which would also be considered a test failure. After consulting with control room personnel, the licensee adjusted system backpressure (i.e. adjusted pump flow), repeated the test, and again, the test failed. The licensee completed this iteration approximately four times, each time attempting to get closer to the nominal flow of 2015 gpm, until they obtained differential pressure test results that fell in the acceptable range. Once this was completed, the licensee then took vibration data. Repeating the test until satisfactory results were obtained was contrary to both the instructions provided by Procedure OP-903-035 and the ASME OM Code.

After completing the test, the inspectors questioned the licensee on the practice to repeat pump tests multiple times until obtaining passing results. The licensee explained it was not uncommon and not limited to the containment spray pump. Further, the inspectors learned that the licensee considered these test results satisfactory. In addition, the inspectors noted that even though it was required by Procedure OP-903-035, a condition report had not been generated documenting the problems in obtaining satisfactory differential pressure results, no determination regarding the cause of the deviation had been obtained, no work request had been initiated, and no operability assessment had been performed on the containment spray pump prior to restoring it to operable status. The inspectors also noticed that the official test record only documented the results of the last test (i.e successful results).

The inspectors concluded that the licensee’s failure to follow Procedure OP-903-035 could result in an invalid test; multiple flow adjustments to obtain acceptable differential pressure values (which could be considered unacceptable preconditioning based on the guidance provided in Part 9900: Technical Guidance, “Maintenance – Preconditioning of Structures, Systems, and Components Before Determining Operability”); and multiple retests which could mask pump degradation, a negative trend, or other SSC problems. In addition, documenting only the last test (the passing results) prevents the corrective action program from evaluating the above-mentioned concerns. The objective of entering the corrective action program after obtaining results in the required action range is to ensure the licensee understands the reason the test is failing before proceeding (e.g. for engineering to evaluate the results). Retesting without evaluation effectively bypasses the corrective action program.

The licensee entered this issue into their corrective action program as CR-WF3-2017-09109 and CR-WF3-2017-09207. The licensee performed an operability evaluation, reviewed the results of the latest technical specification surveillance test, reviewed the trend results of the last few inservice tests and determined the containment spray pump A remained operable.

Analysis. The inspectors determined that the failure to perform comprehensive and operability pump testing for the containment spray pump A, in accordance with site Procedure OP-903-035, "Containment Spray Pump Operability Check," was a performance deficiency, which was reasonably within the licensee's ability to foresee and correct. The performance deficiency was determined to be more than minor because if left uncorrected, the performance deficiency had the potential to lead to a more significant safety concern. Specifically, the licensee's failure to perform inservice and operability pump testing in accordance with site procedures or the Operation and Maintenance Code could prevent identification of degrading performance adversely affecting the pump's capability to respond to an initiating event. The failure to correct the performance deficiency could also result in other safety-related pumps being incorrectly tested and failure of the licensee to identify the component might be degraded, deficient, and/or inoperable.

The inspectors screened the finding in accordance with NRC Inspection Manual Chapter (IMC) 0609, "Significance Determination Process," dated April 29, 2015. IMC 0609, Attachment 4, "Initial Characterization of Findings," dated October 7, 2016, instructed the inspectors to use Appendix A, "The Significance Determination Process for Findings At-Power," dated June 19, 2012. Using Appendix A, Exhibit 2 – "Mitigating Systems Screening Questions," the finding screened as Green because the finding was a deficiency affecting the design or qualification of a mitigating structure, system, or component, but the structure, system, or component maintained its operability.

The finding had a training cross-cutting aspect in the human performance area because the licensee did not provide training and ensure knowledge transfer to maintain a knowledgeable, technically competent workforce and did not instill nuclear safety values. Specifically, licensee staff was under the incorrect impression that inservice testing could be repeated until acceptable results were obtained without the need to evaluate the reason for the failure [H.9].

Enforcement. As required by 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," a test program shall be established to assure that all testing required to demonstrate that structures, systems, and components will perform satisfactorily in service is identified and performed in accordance with written test procedures which incorporate the requirements and acceptance limits contained in applicable design documents.

Contrary to the above, on November 8, 2017, for quality related components to which Appendix B applies, the licensee failed to assure that all testing required to demonstrate that structures, systems, and components will perform satisfactorily inservice was identified and performed in accordance with written test procedures which incorporate the requirements and acceptance limits contained in applicable design documents. Specifically, while performing Procedure OP-903-035, "Containment Spray Pump Operability Check," Revision 25, which is used to demonstrate that the safety-related containment spray pump is capable of meeting its safety-related function under design bases conditions, the licensee failed to properly collect and record test data and take required corrective actions when the test results fell in the "Required Action" range as specified in steps 6.4, and 7.1.19 through 7.1.21.1 of OP-903-035. As a result, the licensee failed to perform the procedurally-required actions established to ensure test failures are evaluated prior to returning the containment spray system to operable status.

The licensee entered this condition into their corrective action program as Condition Report CR-WF3-2017-09109 and CR-WF3-2017-09207. As part of immediate corrective actions the licensee performed an operability evaluation for the containment spray pump and determined the component remained operable. Because this violation was of very low safety significance (Green) and was entered into the licensee's corrective action program, this violation is being treated as a non-cited violation, consistent with Section 2.3.2.a of the NRC Enforcement Policy. (NCV 05000382/2017004-01, "Failure to Follow Testing Requirements for the Containment Spray Pump A")

### **Cornerstone: Emergency Preparedness**

#### **1EP1 Exercise Evaluation (71114.01)**

##### **a. Inspection Scope**

The inspectors observed the December 5, 2017, biennial emergency preparedness exercise to verify the exercise acceptably tested the major elements of the emergency plan and provided opportunities for the emergency response organization to demonstrate key skills and functions. The scenario demonstrated the licensee's capability to implement its emergency plan by simulating:

- Elevated concentrations of radioactive materials in the reactor coolant because of leaking fuel assemblies (as an initial condition of the exercise)
- Physical damage to the exterior of the fuel handling building
- Unexpected insertion of reactor control rods into the core
- Leaks from the instrument air system
- Failures on two charging pumps
- A failure of the reactor protection system to trip the reactor with successful manual actions
- A primary to secondary leak on a steam generator leading to a tube rupture
- An unfiltered unmonitored radiological release to the environment from a steam leak on the main steam isolation valves

During the exercise, the inspectors observed activities in the control room simulator, technical support center, operations support center, and the emergency operations facility. The inspectors focused their evaluation of the licensee's performance on the risk-significant activities of event classification, offsite notification, recognition of offsite dose consequences, and development of protective action recommendations.

The inspectors also assessed recognition of, and response to, abnormal and emergency plant conditions, the transfer of decision-making authority and emergency function responsibilities between facilities, on-site and offsite communications, protection of emergency workers, emergency repair evaluation and capability, and the overall implementation of the emergency plan to protect public health and safety. The inspectors reviewed the current revision of the facility emergency plan, emergency plan



implementing procedures associated with operation of the licensee's emergency response facilities, procedures for the performance of associated emergency functions, and other documents as listed in the attachment to this report.

The inspectors attended the post-exercise critiques in each emergency response facility to evaluate the initial licensee self-assessment of exercise performance. The inspectors also attended a formal presentation of critique items to plant management conducted Tuesday, December 12, 2017.

The inspectors reviewed the scenarios of previous licensee exercises and drills conducted between January 2016, and November 2017, to determine whether the December 5, 2017, exercise was independent and avoided participant preconditioning, in accordance with the requirements of 10 CFR Part 50, Appendix E, IV.F(2)(g). The inspectors also compared observed exercise performance with corrective action program entries and After-Action reports for drills and exercises conducted between January 2016 and November 2017 to determine whether previously-identified weaknesses had been corrected in accordance with the requirements of 10 CFR 50.47(b)(14), and 10 CFR Part 50, Appendix E, IV.F.

The inspectors also discussed exercise performance with staff at Federal Emergency Management Agency (FEMA) Region VI to determine whether the exercise adequately supported the FEMA exercise evaluation objectives.

These activities constituted one exercise evaluation sample, as defined in Inspection Procedure 71114.01.

b. Findings

No findings were identified.

**1EP6 Drill Evaluation (71114.06)**

Training Evolution Observation

a. Inspection Scope

On October 19, 2017, the inspectors observed simulator-based licensed operator training that included implementation of the licensee's emergency plan. The inspectors verified that the licensee's emergency classifications, off-site notifications, and protective action recommendations were appropriate and timely. The inspectors verified that any emergency preparedness weaknesses were appropriately identified by the evaluators and entered into the corrective action program for resolution.

These activities constituted completion of one training observation sample, as defined in Inspection Procedure 71114.06.

b. Findings

No findings were identified.

## **1EP8 Exercise Evaluation – Scenario Review (71114.08)**

### a. Inspection Scope

The licensee submitted the preliminary exercise scenario for the December 5, 2017, biennial exercise to the NRC on October 5, 2017, in accordance with the requirements of 10 CFR Part 50, Appendix E, IV.F(2)(b). The inspectors performed an in-office review of the proposed scenario to determine whether it would acceptably test the major elements of the licensee's emergency plan, and provide opportunities for the emergency response organization to demonstrate key skills and functions. The inspectors also discussed the preliminary scenario with staff at FEMA Region VI to determine whether the proposed exercise would support the FEMA exercise evaluation objectives.

These activities constituted completion of one exercise evaluation sample, as defined in Inspection Procedure 71114.08.

### b. Findings

No findings were identified.

## **2. RADIATION SAFETY**

### **Cornerstones: Public Radiation Safety and Occupational Radiation Safety**

## **2RS5 Radiation Monitoring Instrumentation (71124.05)**

### a. Inspection Scope

The inspectors evaluated the accuracy and operability of the radiation monitoring equipment used by the licensee to monitor areas, materials, and workers to ensure a radiologically safe work environment. This evaluation included equipment used to monitor radiological conditions related to normal plant operations, anticipated operational occurrences, and conditions resulting from postulated accidents. The inspectors interviewed licensee personnel, walked down various portions of the plant, and reviewed licensee performance associated with radiation monitoring instrumentation, as described below:

- The inspectors performed walk downs and observations of selected plant radiation monitoring equipment and instrumentation, including portable survey instruments, area radiation monitors, continuous air monitors, personnel contamination monitors, portal monitors, and small article monitors. The inspectors assessed material condition and operability, evaluated positioning of instruments relative to the radiation sources or areas they were intended to monitor, and verified performance of source checks and calibrations.
- The inspectors evaluated the calibration and testing program, including laboratory instrumentation, whole body counters, post-accident monitoring instrumentation, portal monitors, personnel contamination monitors, small article monitors, portable survey instruments, area radiation monitors, electronic dosimetry, air samplers, and continuous air monitors.

- The inspectors assessed problem identification and resolution for radiation monitoring instrumentation. The inspectors reviewed audits, self-assessments, and corrective action program documents to verify problems were being identified and properly addressed for resolution.

These activities constituted completion of the three required samples of radiation monitoring instrumentation, as defined in Inspection Procedure 71124.05.

b. Findings

No findings were identified.

**2RS6 Radioactive Gaseous and Liquid Effluent Treatment (71124.06)**

a. Inspection Scope

The inspectors evaluated whether the licensee maintained gaseous and liquid effluent processing systems and properly mitigated, monitored, and evaluated radiological discharges with respect to public exposure. The inspectors verified that abnormal radioactive gaseous or liquid discharges and conditions, when effluent radiation monitors are out-of-service, were controlled in accordance with the applicable regulatory requirements and licensee procedures. The inspectors verified that the licensee's quality control program ensured radioactive effluent sampling and analysis adequately quantified and evaluated discharges of radioactive materials. The inspectors verified the adequacy of public dose projections resulting from radioactive effluent discharges. The inspectors interviewed licensee personnel and reviewed licensee performance in the following areas:

- During walk downs and observations of selected portions of the radioactive gaseous and liquid effluent equipment, the inspectors evaluated routine processing and discharge of effluents, including sample collection and analysis. The inspectors observed equipment configuration and flow paths of selected gaseous and liquid discharge system components, effluent monitoring systems, filtered ventilation system material condition, and significant changes to effluent release points.
- Calibration and testing program for process and effluent monitors, including National Institute of Standards and Technology (NIST) traceability of sources, primary and secondary calibration data, channel calibrations, set-point determination bases, and surveillance test results.
- Sampling and analysis controls used to ensure representative sampling and appropriate compensatory sampling. Reviews included results of the inter-laboratory comparison program.
- Instrumentation and equipment, including effluent flow measuring instruments, air cleaning systems, and post-accident effluent monitoring instruments.
- Dose calculations for effluent releases. The inspectors reviewed a selection of radioactive liquid and gaseous waste discharge permits and abnormal gaseous or liquid tank discharges, and verified the projected doses were accurate. The

inspectors also reviewed 10 CFR Part 61 analyses and methods used to determine which isotopes were included in the source term. The inspectors reviewed land use census results, offsite dose calculation manual changes, and significant changes in reported dose values from previous years.

- Problem identification and resolution for radioactive gaseous and liquid effluent treatment. The inspectors reviewed audits, self-assessments, and corrective action program documents to verify problems were being identified and properly addressed for resolution.

These activities constituted completion of the six required samples of the radioactive gaseous and liquid effluent treatment program, as defined in Inspection Procedure 71124.06.

b. Findings

No findings were identified.

**2RS7 Radiological Environmental Monitoring Program (71124.07)**

a. Inspection Scope

The inspectors evaluated whether the licensee's radiological environmental monitoring program quantified the impact of radioactive effluent releases to the environment and sufficiently validated the integrity of the radioactive gaseous and liquid effluent release program. The inspectors also verified that the licensee continued to implement the voluntary Nuclear Energy Institute (NEI) Industry's Ground Water Protection Initiative (GPI). The inspectors reviewed or observed the following items:

- The inspectors observed selected air sampling and dosimeter monitoring stations, sampler station modifications, and the collection and preparation of environmental samples. The inspectors reviewed calibration and maintenance records for selected air samplers, composite water samplers, and environmental sample radiation measurement instrumentation, and inter-laboratory comparison program results. The inspectors reviewed selected events documented in the annual environmental monitoring report and significant changes made by the licensee to the offsite dose calculation manual as the result of changes to the land census. The inspectors evaluated the operability, calibration, and maintenance of meteorological instruments and assessed the meteorological dispersion and deposition factors. The inspectors verified the licensee had implemented sampling and monitoring programs sufficient to detect leakage from structures, systems, or components with credible mechanism for licensed material to reach ground water and reviewed changes to the licensee's written program for identifying and controlling contaminated spills/leaks to groundwater.
- Groundwater protection initiative implementation, including assessment of groundwater monitoring results, identified leakage or spill events and entries made into 10 CFR 50.75(g) records, licensee evaluations of the extent of the contamination and the radiological source term, and reports of events associated with spills, leaks, and groundwater monitoring results.

- Problem identification and resolution for the radiological environmental monitoring program. The inspectors reviewed audits, self-assessments, and corrective action program documents to verify problems were being identified and properly addressed for resolution.

These activities constituted completion of the three required samples of the radiological environmental monitoring program, as defined in Inspection Procedure 71124.07.

b. Findings

No findings were identified.

**2RS8 Radioactive Solid Waste Processing and Radioactive Material Handling, Storage, and Transportation (71124.08)**

a. Inspection Scope

The inspectors evaluated the effectiveness of the licensee's programs for processing, handling, storage, and transportation of radioactive material. The inspectors interviewed licensee personnel and reviewed the following items:

- Radioactive material storage, including waste storage areas including container labeling/marketing and monitoring containers for deformation or signs of waste decomposition.
- Radioactive waste system, including walk-downs of the accessible portions of the radioactive waste processing systems and handling equipment. The inspectors also reviewed or observed changes made to the radioactive waste processing systems, methods for dewatering and waste stabilization, waste stream mixing methodology, and waste processing equipment that was not operational or abandoned in place.
- Waste characterization and classification, including radio-chemical sample analysis results for radioactive waste streams and use of scaling factors and calculations to account for difficult-to-measure radionuclides, and processes for waste classification including use of scaling factors and 10 CFR Part 61 analyses.
- Shipment preparation, including packaging, surveying, labeling, marking, placarding, vehicle checking, driver instructing, and preparation of the disposal manifests.
- Shipping records for Low Specific Activity (LSA-I, LSA-II, and LSA-III), Surface Contaminated Objects (SCO-I and SCO-II), Type A, or Type B, radioactive material or radioactive waste shipments.
- Problem identification and resolution for radioactive solid waste processing and radioactive material handling, storage, and transportation. The inspectors reviewed audits, self-assessments, and corrective action program documents to verify problems were being identified and properly addressed for resolution.

These activities constituted completion of the six required samples of the radioactive solid waste processing, and radioactive material handling, storage, and transportation program, as defined in Inspection Procedure 71124.08.

b. Findings

No findings were identified.

4. **OTHER ACTIVITIES**

**Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, Emergency Preparedness, Public Radiation Safety, Occupational Radiation Safety, and Security**

**40A1 Performance Indicator Verification (71151)**

.1 Reactor Coolant System Specific Activity (BI01)

a. Inspection Scope

The inspectors reviewed the licensee's reactor coolant system chemistry sample analyses for the period of October 1, 2016, through September 30, 2017, to verify the accuracy and completeness of the reported data. The inspectors used definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, to determine the accuracy of the reported data.

These activities constituted verification of the reactor coolant system specific activity performance indicator, as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

.2 Reactor Coolant System Identified Leakage (BI02)

a. Inspection Scope

The inspectors reviewed the licensee's records of reactor coolant system identified leakage for the period of October 1, 2016, through September 30, 2017, to verify the accuracy and completeness of the reported data. The inspectors used definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, to determine the accuracy of the reported data.

These activities constituted verification of the reactor coolant system leakage performance indicator, as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

.3 Drill/Exercise Performance (EP01)

a. Inspection Scope

The inspectors reviewed the licensee's evaluated exercises, emergency plan implementations, and selected drill and training evolutions that occurred between April 2016, and September 2017, to verify the accuracy of the licensee's data for classification, notification, and protective action recommendation (PAR) opportunities. The inspectors reviewed a sample of the licensee's completed classifications, notifications, and PARs to verify their timeliness and accuracy. The inspectors used Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, to determine the accuracy of the reported data. The specific documents reviewed are described in the attachment to this report.

These activities constituted verification of the drill/exercise performance indicator, as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

.4 Emergency Response Organization Drill Participation (EP02)

a. Inspection Scope

The inspectors reviewed the licensee's records for participation in drill and training evolutions between April 2016, and September 2017, to verify the accuracy of the licensee's data for drill participation opportunities. The inspectors verified that all members of the licensee's emergency response organization (ERO) in the identified key positions had been counted in the reported performance indicator data. The inspectors reviewed the licensee's basis for reporting the percentage of ERO members who participated in a drill. The inspectors reviewed drill attendance records and verified a sample of those reported as participating. The inspectors used Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, to determine the accuracy of the reported data. The specific documents reviewed are described in the attachment to this report.

These activities constituted verification of the emergency response organization drill participation performance indicator, as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

.5 Alert and Notification System Reliability (EP03)

a. Inspection Scope

The inspectors reviewed the licensee's records of alert and notification system tests conducted between April 2016, and September 2017, to verify the accuracy of the licensee's data for siren system testing opportunities. The inspectors reviewed procedural guidance on assessing alert and notification system opportunities and the

results of periodic alert and notification system operability tests. The inspectors used Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, to determine the accuracy of the reported data. The specific documents reviewed are described in the attachment to this report.

These activities constituted verification of the alert and notification system reliability performance indicator, as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

**4OA2 Problem Identification and Resolution (71152)**

.1 Routine Review

a. Inspection Scope

Throughout the inspection period, the inspectors performed daily reviews of items entered into the licensee's corrective action program and periodically attended the licensee's condition report screening meetings. The inspectors verified that licensee personnel were identifying problems at an appropriate threshold and entering these problems into the corrective action program for resolution. The inspectors verified that the licensee developed and implemented corrective actions commensurate with the significance of the problems identified. The inspectors also reviewed the licensee's problem identification and resolution activities during the performance of the other inspection activities documented in this report.

b. Findings

No findings were identified.

.2 Semiannual Trend Review

a. Inspection Scope

The inspectors reviewed the licensee's corrective action program, performance indicators, system health reports, maintenance rule database, and other documentation to identify trends that might indicate the existence of a more significant safety issue. The inspectors verified that the licensee was taking corrective actions to address identified adverse trends.

These activities constituted completion of one semiannual trend review sample, as defined in Inspection Procedure 71152.

b. Observations and Assessments

The inspectors reviewed condition reports associated with issues with the actuators of the control and isolation valves of the emergency feedwater system. The inspectors noted that the licensee is already tracking and resolving these issues in Condition Reports CR-WF3-2016-06706, and CR-WF3-2017-03195.



c. Findings

No findings were identified.

.3 Annual Follow-up of Selected Issues

a. Inspection Scope

The inspectors selected one issue for an in-depth follow-up:

- On November 13, 2017, the inspectors completed a review of a licensee adverse condition evaluation documented in Condition Report CR-WF3-2013-05046. The licensee's evaluation was documented to assess the reactor trip circuit breaker 2 failure on June 11, 2017, during a surveillance test.

The inspectors assessed the licensee's problem identification threshold, cause analyses, and extent of condition review. The inspectors verified that the licensee appropriately prioritized the planned corrective actions and that these actions were adequate to correct the condition.

These activities constituted completion of one annual follow-up sample, as defined in Inspection Procedure 71152.

b. Findings

Introduction. The inspectors reviewed a self-revealed, non-cited violation of Technical Specification 6.8, "Procedures and Programs," and Regulatory Guide 1.33 for the licensee's failure to properly perform maintenance on a safety-related component in accordance with site procedures. Specifically, the licensee failed to check the orientation of the operating springs for reactor trip circuit breaker 2 following maintenance as required per Procedure ME-004-155, "Reactor Trip Switchgear," Revision 306. As a result, one of the two springs became loose, dropped into the breaker operating mechanism and caused a breaker failure that was discovered during testing.

Description. On June 11, 2017, the licensee was testing reactor trip circuit breakers 2 and 6 in accordance with Procedure OP-903-107, "Plant Protection System Channel A, B, C, D Functional Test," Revision 310. The reactor trip switchgear consists of eight electrically operated air circuit breakers for interrupting power to the control element drive mechanism coils and one electrically operated bus tie breaker. The reactor trip circuit breakers actuate upon a trip demand initiated by the reactor protection system. During the test, reactor trip circuit breaker 6 opened as expected; however, reactor trip circuit breaker 2 remained closed. Following the reactor trip circuit breaker 2 failure, at 8:47 a.m., the licensee entered Technical Specification 3.3.1, Action 5, which is a 1 hour limiting condition for operation (LCO) to isolate reactor trip circuit breaker 2 or be in hot standby within 6 hours. Operations personnel opened, racked out, and removed reactor trip circuit breaker 2, complying with the LCO action at 10:47 a.m. Since the 1 hour allowed outage time had elapsed, the licensee commenced preparations for performing a plant shutdown to hot standby, as required by Technical Specification 3.3.1. However, once in compliance with Technical Specification 3.3.1, operations personnel halted the preparations for a plant shutdown.

Maintenance personnel performed troubleshooting for reactor trip circuit breaker 2 and found that one of the two breaker operating springs had become loose, dropped into the operating mechanism, and prevented the breaker from opening. After verifying the spare breaker's closing springs were installed correctly and testing it, maintenance personnel replaced the failed circuit breaker with the spare breaker. In addition, maintenance personnel performed an extent of condition inspection of the other breakers in the reactor trip switchgear to ensure that their springs were installed correctly.

The licensee's adverse condition analysis concluded that the cause for the spring becoming loose and disengaging from the breaker was improper installation. Reactor trip circuit breaker 2 was overhauled on October 1, 2003, under Work Order 24317 and Procedure ME-004-154, "Reactor Trip Switchgear Overhaul Procedure," Revision 0. During this maintenance activity, the spring was installed incorrectly. Specifically, the left spring was incorrectly installed with respect to orientation, which caused it to completely disengage and fall. Additionally, the preventive maintenance frequency for reactor trip circuit breakers is 3 years and is performed in accordance with Procedure ME-004-155. Both Procedure ME-004-154 and Procedure ME-004-155 contain steps that require checking for spring orientation following any type of maintenance. In addition to the required steps to check for orientation, the procedure includes a reference diagram to compare the springs in the field to detect improper orientation. The last time preventive maintenance had been performed on reactor trip circuit breaker 2 was April 14, 2015. Even though there were multiple maintenance activities between 2003 and 2015, maintenance personnel failed to discover the improper spring orientation during these work activities. The last surveillance testing for reactor trip circuit breaker 2, per Procedure OP-903-006, "Reactor Trip Circuit Breaker Test," Revision 11, was satisfactorily completed on May 28, 2017, where the breaker cycled as required.

Analysis. The inspectors concluded that the licensee's failure to properly check the orientation of the operating springs for reactor trip circuit breaker 2 following maintenance as required per site Procedure ME-004-155 was a performance deficiency which was reasonably within the licensee's ability to foresee and correct. The performance deficiency was more than minor because it affected the equipment performance attribute of the Mitigating Systems Cornerstone and its objective to ensure availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the breaker was placed in service while it was assembled incorrectly. As a result, the failure decreased the redundancy of the reactor trip circuit breakers and placed the unit in a 1 hour shutdown technical specification LCO action statement.

The inspectors screened the finding in accordance with NRC Inspection Manual Chapter (IMC) 0609, "Significance Determination Process," dated April 29, 2015. IMC 0609, Attachment 4, "Initial Characterization of Findings," dated October 7, 2016, instructed the inspectors to use Appendix A, "The Significance Determination Process for Findings At-Power," dated June 19, 2012. Using Appendix A, Exhibit 2 – "Mitigating Systems Screening Questions," the finding screened as Green because the finding: (1) was not a deficiency affecting the design or qualification of a mitigating structure, system, or component; (2) did not represent a loss of system and/or function; (3) did not represent an actual loss of function of at least a single train for greater than its technical

specification allowed outage time or two separate safety systems out-of-service for greater than its technical specification allowed outage time; and (4) did not represent an actual loss of function of one or more nontechnical specification trains of equipment designated as high safety-significant in accordance with the licensee's maintenance rule program for greater than 24 hours.

The finding had an avoid complacency cross-cutting aspect in the area of human performance because individuals did not recognize and plan for the possibility of mistakes, latent issues, and inherent risk, even while expecting successful outcomes. Specifically, even with the different tools available, following each instance of maintenance on the reactor trip circuit breaker, the workers failed to recognize the improper installation of the breaker spring [H.12].

Enforcement. Technical Specification 6.8.1.a, requires, in part, that procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Regulatory Guide 1.33, Revision 2. Appendix A to Regulatory Guide 1.33, Section 9.a, requires, in part, that, "maintenance that can affect the performance of safety-related equipment be properly pre-planned and performed in accordance with written procedures, documented instructions, or drawings appropriate to the circumstances." The licensee established, in part, Procedure ME-004-155, "Reactor Trip Switchgear," Revision 306, to meet the Regulatory Guide 1.33 requirement. Step 9.3.9 of Procedure ME-004-155 states, "inspect the springs for proper orientation."

Contrary to the above requirements, between October 2003 and June 2017, the licensee did not inspect the springs for proper orientation. Specifically, following breaker preventive maintenance, the licensee did not adequately complete the procedure Step 9.3.9 to verify the breaker springs for proper orientation. As a result, the left spring in reactor trip circuit breaker 2 became loose, dropped into the operating mechanism, and prevented the breaker from opening during a surveillance test on June 11, 2017. This failure placed the unit in a 1 hour shutdown technical specification LCO action statement. The licensee entered this condition into their corrective action program as Condition Report CR-WF3-2017-05046. The licensee's corrective actions included an extent of condition inspection of the other breakers in the reactor trip switchgear to ensure the springs were properly installed, and the addition of a critical step to Procedure ME-004-155, requiring an independent verification of the spring orientation following breaker maintenance. Because this violation was of very low safety significance (Green) and was entered into the licensee's corrective action program, this violation is being treated as a non-cited violation (NCV) in accordance with Section 2.3.2.a of the NRC Enforcement Policy. (NCV 05000382/2017004-02, "Failure to Perform Adequate Maintenance on a Reactor Trip Circuit Breaker")

## **40A6 Meetings, Including Exit**

### Exit Meeting Summary

On November 2, 2017, the emergency preparedness inspectors discussed the in-office review of the preliminary scenario for the December 5, 2017, biennial exercise, submitted October 5, 2017, with Mr. J. Signorelli, Manager, Emergency Preparedness, and other members of the licensee staff. The licensee acknowledged the issues presented. The licensee confirmed that any proprietary information reviewed by the inspectors had been returned or destroyed.

On December 1, 2017, the radiation protection inspectors presented the radiation safety inspection results to Mr. J. Dinelli, Site Vice President, and other members of the licensee staff. The licensee acknowledged the issues presented. The licensee confirmed that any proprietary information reviewed by the inspectors had been returned or destroyed.

On December 13, 2017, the emergency preparedness inspectors presented the results of the on-site inspection of the biennial emergency preparedness exercise conducted December 5, 2017, to Mr. D. Brenton, General Manager, Plant Operations, and other members of the licensee staff. The licensee acknowledged the issues presented. The licensee confirmed that any proprietary information reviewed by the inspectors had been returned or destroyed.

On January 11, 2018, the resident inspectors presented the inspection results to Mr. J. Dinelli, Site Vice President, and other members of the licensee staff. The licensee acknowledged the issues presented. The licensee confirmed that any proprietary information reviewed by the inspectors had been returned or destroyed.

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### **Licensee Personnel**

J. Bradley, Manager, Operations  
D. Breaud, Radiological Effluent Specialist, Chemistry  
D. Brenton, General Manager, Plant Operations  
L. Brown, Licensing Specialist, Regulatory Assurance  
T. Burnett, Director, Entergy Corporate Emergency Preparedness  
R. DeVoe, Licensing Specialist  
J. Dinelli, Site Vice President  
J. Frederickson, Support Supervisor, Radiation Protection  
D. James, Shipping Technician, Radiation Protection  
N. Justice, Specialist, Radiation Protection and Chemistry  
B. Lanka, Director, Engineering  
J. Lewis, Senior Project Manager, Entergy Corporate  
J. McBrayer, Acting Manager, Performance Improvement  
D. McLaren, Manager, Radiation Protection  
S. Meiklejohn, Senior Licensing Specialist  
P. Moritzky, Radwaste Operations Supervisor, Radiation Protection  
E. Neal, Superintendent, Radiation Protection  
J. Signorelli, Manager, Emergency Preparedness

#### **Other Contacts**

D. Bordelon, Branch Chief, Technological Hazards, FEMA Region VI  
L. Gee, Site Specialist, Technological Hazards Branch, FEMA Region VI  
N. Williams, Chairperson, Radiological Assistance Committee, FEMA Region VI

### **LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED**

#### **Opened and Closed**

05000382/2017004-01	NCV	Failure to Follow Testing Requirements for the Containment Spray Pump A (Section 1R22)
05000382/2017004-02	NCV	Failure to Perform Adequate Maintenance on a Reactor Trip Circuit Breaker (Section 4OA2)

### **LIST OF DOCUMENTS REVIEWED**

#### **Section 1R04: Equipment Alignment**

##### **Miscellaneous Documents**

<b><u>Number</u></b>	<b><u>Title</u></b>	<b><u>Date</u></b>
1564-1801	4" – 900# Gate Valve Safety Injection System	February 25, 1976
G-153 Sh. 4	Feedwater, Condensate and Air Evacuation Systems	July 31, 1984

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Date</u>
G-160 Sh. 6	Component Closed Cooling Water System	November 29, 2016

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EN-LI-102	Corrective Action Program	30
EN-LI-118	Cause Evaluation Process	24
OP-002-004	Chilled Water System	315
OP-003-026	Cable Vault and Switchgear HVAC	304
OP-009-003	Emergency Feedwater System	309
OP-009-008	Safety Injection System	40
OP-903-062	Chilled Water System Valve Lineup Check	303

Condition Reports (CRs)

CR-WF3-2017-07550 CR-WF3-2017-07561 CR-WF3-2017-08199 CR-WF3-2017-08446  
CR-WF3-2017-08448

**Section 1R05: Fire Protection**

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
FWPH-001	Waterford-3 S.E.S Prefire Strategy Fire Water Pump House	3
RAB25-001	Waterford-3 S.E.S Prefire Strategy Elev. +21.00' RAB (RCA) West Wing Area	8
RAB37-001	Waterford-3 S.E.S Prefire Strategy Elev. -35.00 RAB (RCA) Motor Driven Emergency Feed Pump Room "A"	7
RAB 39-001	Waterford-3 S.E.S Prefire Strategy Elev. -35.00 RAB (RCA) General Area	13

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
FP-001-018	Pre-Fire Strategies, Development and Revision	303

**Section 1R11: Licensed Operator Requalification Program and Licensed Operator Performance**

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
WSXM-LOR-17HITEXM3	2017 HIT Cycle 5 Evaluated Scenario 3, E-205	0

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EN-OP-115	Conduct Of Operations	23
EP-001-001	Recognition & Classification of Emergency Conditions	32
EP-001-020	Alert	309
OP-009-002	Emergency Diesel Generator	342
OP-500-011	Control Room Cabinet M	39
OP-901-212	Rapid Plant Power Reduction	8
OP-901-220	Loss of Condenser Vacuum	302
OP-902-000	Standard Post Trip Actions	16
OP-902-007	Steam Generator Tube Rupture Recovery Procedure	17
OP-902-009	Standard Appendices	317
OP-903-013	Monthly Channel Checks	18
OP-903-068	Emergency Diesel Generator and Subgroup Relay Operability Verification	319

**Section 1R12: Maintenance Effectiveness**

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
	Maintenance Rule Scoping Document for Emergency Feedwater System	December, 2017
	System Health Report – Emergency Feedwater System	December 11, 2017

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
EC 74490	Cycle 21, Refuel 21 Maintenance Rule (a)(3) Periodic Assessment	0
QC-00135968	QC Inspection	October 20, 2015
TD-B260.0015	Bingham Williamette Horizontal Multi-Stage Pumps	6

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EN-DC-203	Maintenance Rule Program	4
EN-DC-205	Maintenance Rule Monitoring	6
EN-DC-206	Maintenance Rule (A)(1) Process	3
EN-DC-207	Maintenance Rule Periodic Assessment	3
EN-DC-306	Acceptance of Commercial-Grade Items/Services in Safety- Related Applications	5
OP-901-511	Instrument Air Malfunction	15
OP-902-000	Standard Post Trip Actions	16

Condition Reports (CRs)

CR-WF3-2014-04505	CR-WF3-2014-04556	CR-WF3-2014-04640	CR-WF3-2015-01136
CR-WF3-2015-08825	CR-WF3-2015-08872	CR-WF3-2015-08942	CR-WF3-2016-00842
CR-WF3-2016-01257	CR-WF3-2016-01703	CR-WF3-2016-04495	CR-WF3-2016-06706
CR-WF3-2016-06997	CR-WF3-2016-07084	CR-WF3-2016-07308	CR-WF3-2017-02579
CR-WF3-2017-02645	CR-WF3-2017-02653	CR-WF3-2017-03417	CR-WF3-2017-03744
CR-WF3-2017-04065	CR-WF3-2017-05695	CR-WF3-2017-05899	CR-WF3-2017-06195
CR-WF3-2017-06542			

Work Orders (WOs)

214932-13	414538	52684412
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## **Section 1R13: Maintenance Risk Assessments and Emergent Work Control**

### Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EN-OP-119	Protected Equipment Postings	8
EN-WM-104	On Line Risk Assessment	15
EN-WM-107	Post Maintenance Testing	5
OI-037-000	Operations' Risk Assessment Guideline	310

### Condition Reports (CRs)

CR-WF3-2017-06484	CR-WF3-2017-06703	CR-WF3-2017-07670	CR-WF3-2017-08326
CR-WF3-2017-08357	CR-WF3-2017-08393	CR-WF3-2017-08399	CR-WF3-2017-09081

### Work Orders (WOs)

00487188

## **Section 1R15: Operability Determinations and Functionality Assessments**

### Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
B425, F311	SI-HPSI Flow (Cold Leg 1A) Control Loop Diagram	2
B425, F321	SI-HPSI Flow (Cold Leg 1B) Control Loop Diagram	2
B425, F331	SI-HPSI Flow (Cold Leg 2A) Control Loop Diagram	2
B425, F341	SI-HPSI Flow (Cold Leg 2B) Control Loop Diagram	2
G-167, Sheet 1	Safety Injection System	50
G-167, Sheet 2	Safety Injection System	53
G-167, Sheet 4	Safety Injection System	17
G-172	Reactor Coolant System	40

### Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EC 71074	NRC Questions regarding charging pump pulsation dampers.	0

### Condition Reports (CRs)

CR-WF3-2017-04346	CR-WF3-2017-05397	CR-WF3-2017-08371	CR-WF3-2017-08600
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Condition Reports (CRs)

CR-WF3-2017-09026 CR-WF3-2017-09494

**Section 1R19: Post-Maintenance Testing**

Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
G-167	Safety Injection System, Sheet 1	50

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Date</u>
EOS 17-0645	EOS Checklist for HVCMFAN0002	October 31, 2017

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
MI-003-335	Reactor Shutdown Cooling Flow Loop Check and Calibration SI IF1307 A or SI IF1306 B	301
OP-903-030	Safety Injection Operability Verification	34
OP-903-068	Emergency Diesel Generator and Subgroup Relay Operability Verification	318
OP-903-094	ESFAS Subgroup Relay Test – Operating	30
OP-903-121	Safety Systems Quarterly IST Valve Tests	27
STA-001-005	Leakage Testing of Air and Nitrogen Accumulators for Safety Related Valves	319

Work Orders (WOs)

00452148	52657331-01	52679372	52681070
52684412	52687504-01	52687504-02	52687504-03
52726388-01	52726388-03		

**Section 1R22: Surveillance Testing**

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
EC 2624	Evaluate the New Redesigned LOOP Power Supply NLP Card P/N #2837A12G05 for Replacing the Current In-Service NLP Card Groups	November 19, 2007

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
EC 16470	Diesel Fuel Procurement Engineering Evaluation	April 4, 2005
EC 33918	Revise MNQ6-41 to Account for Upper Design Basis Containment Spray Flow Rate Limit	0
EC 38553	Containment Spray Pump Performance Acceptance Criteria	N/A
EC 52000	Evaluate the Redesigned LOOP Power Supply NLP Card (2837A12G05) for Replacing the Current NLP Cards Used in All PAC Cabinets Not Associated with the Plant Protection System (PPS)	October 9, 2014
ECE 90-006	Emergency Diesel Generator Loading and Fuel Oil Consumption	20
ECR 16601	Establish CS Pump Comprehensive and Group B Acceptance Criteria for IST Testing CR-WF3-2013-04561 Margin Concern	March 12, 2014
SD-CS	Containment Spray Training Material	12

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
MI-003-400	Emergency Feedwater Discharge Header Flow Loop Check and Calibration EFWIF8330 A or B	305, 306
OI-040-000	Reactor Coolant System Leak Monitoring	14
OP-903-035	Containment Spray Pump Operability Check	25
OP-903-050	Component Cooling Water and Auxiliary Component Cooling Water Pump and Valve Operability Test	36

Condition Reports (CRs)

CR-WF3-2017-02180	CR-WF3-2017-04561	CR-WF3-2017-05731	CR-WF3-2017-08363
CR-WF3-2017-08900	CR-WF3-2017-09109	CR-WF3-2017-09130	CR-WF3-2017-09207
CR-WF3-2017-09867	CR-WF3-2017-09880		

Work Orders (WOs)

52683950	52688869-01	52767957	52786881-01
52786881-02	52786881-03		

## Section 1EP1: Exercise Evaluation (71114.01)

### Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EN-EP-610	Technical Support Center (TSC) Operations	4
EP-001-001	Recognition and Classification of Emergency Conditions, March 9, 2016	32
EP-001-030	Site Area Emergency, January 31, 2017	308
EP-001-040	General Emergency, January 31, 2017	309
EP-002-001	Technical Support Center Activation, Operation, and Deactivation, April 4, 2017	48
EP-002-010	Notifications and Communications, November 7, 2017	315
EP-002-015	Emergency Responder Activation, September 12, 2016	303
EP-002-030	Emergency Radiation Exposure Guidelines and Controls, February 15, 2011	10
EP-002-033	Administration of Iodine Blocking Agents, April 4, 2017	306
EP-002-050	Offsite Dose Projection, December 19, 2016	307
EP-002-052	Protective Action Guidelines, January 21, 2016	25
EP-002-071	Site Protective Measures, November 27, 2015	303
EP-002-100	Technical Support Center (TSC) Activation, Operation and Declaration	48
EP-002-102	Emergency Operations Facility Activation, Operation, and Deactivation, April 4, 2017	308
EP-002-130	Emergency Team Assignments, December 19, 2016	24
EP-002-190	Personnel Accountability	21
EP-003-020	Emergency Preparedness Drills and Exercises, December 19, 2016	304

### Condition Reports (CRs)

CR-WF3-2016-01854	CR-WF3-2016-01907	CR-WF3-2016-02235	CR-WF3-2016-02354
CR-WF3-2016-02374	CR-WF3-2016-02530	CR-WF3-2016-02908	CR-WF3-2016-03044
CR-WF3-2016-03938	CR-WF3-2016-03969	CR-WF3-2016-03971	CR-WF3-2016-04802
CR-WF3-2016-06017	CR-WF3-2016-06918	CR-WF3-2017-00490	CR-WF3-2017-05494
CR-WF3-2017-05875	CR-WF3-2017-07707	CR-WF3-2017-09548	CR-WF3-2017-09549
CR-WF3-2017-09559	CR-WF3-2017-09616	CR-WF3-2017-09628	CR-WF3-2017-09638

Condition Reports (CRs)

CR-WF3-2017-09639 CR-WF3-2017-09641 CR-WF3-2017-09642 CR-WF3-2017-09643  
CR-WF3-2017-09645 CR-WF3-2017-09647 CR-WF3-2017-09654 CR-WF3-2017-09656  
CR-WF3-2017-09740 CR-WF3-2017-09745 HQN-2017-00970

**Section 1EP6: Drill Evaluation**

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EP-001-001	Recognition & Classification of Emergency Conditions	32
WSXM-LOR-17HITEXM3	2017 HIT Cycle 5 Evaluated Scenario 3, E-205	0

**Section 2RS5: Radiation Monitoring Instrumentation**

Audits and Self-Assessments

<u>Number</u>	<u>Title</u>	<u>Date</u>
LO-HQNLO-2015-00045	Central Calibration Facility Instrumentation Program	July 14, 2015
LO-WLO-2017-00032	Pre-NRC Self-Assessment: IP71124.05 Radiation Monitoring Instrumentation	September 20, 2017
QA-14/15-2017-GGNS-01	Combined Radiation Protection and Radwaste Audit Notification/Audit Plan Memo	September 12, 2017

Installed Radiation Instrument Calibration Records

<u>Number</u>	<u>Title</u>	<u>Date</u>
52562932	ARM-IR-5001, RAB Control Room North Wall Radiation Monitor	August 8, 2016
52592420	PRM-IR-0110, Plant Stack Vent Wide Range Gas Monitor Loop	August 2, 2016
52597352	PRM-IR-0647, Waste Condensate and Laundry Waste Discharge Liquid Effluent Radiation Monitor	May 17, 2016
52615454	PRM-IR-0648, Gaseous Waste System Noble Gas Monitor Loop	November 22, 2016
52627973	PRM-IR-7050-A, Component Cooling Water System Area Radiation Monitor	March 3, 2017
52645078	ARM-IR-5400-A, Containment Area Radiation Monitor Hi Range	February 7, 2017

### Installed Radiation Instrument Calibration Records

<u>Number</u>	<u>Title</u>	<u>Date</u>
52675543	PRM-IR-0110, Plant Stack Vent Wide Range Gas Monitor	September 18, 2017
52685298	PRM-IR-0100-2, Plant Stack Vent Radiation Monitor	October 26, 2017
52686904	ARM-IR-5400-A, Containment Area Radiation Monitor Hi Range	May 7, 2017

### Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
	Annual Radioactive Effluent Release Report	April 25, 2016
	Annual Radioactive Effluent Release Report	April 6, 2017
	Log Entries Reports: Radiation Monitors	2015 – 2017
	Maintenance Rule Table for Waterford-3: Structure, Systems, and Components List – Radiation Monitors	2017
	WSES-FSAR-Unit-3: Chapter 12.5, "Health Physics Program"	309
HP-CD-047	JL Shepherd Model 89 Routine Maintenance	March 21, 2017

### Portable Radiation Instrument Calibration Records

<u>Number</u>	<u>Title</u>	<u>Date</u>
ASP-131	ASP-1 Neutron Remball	June 19, 2017
CHP-C-036	iSolo Scaler	April 3, 2017
CHP-CR-109	Ludlum 177 Frisker	January 9, 2017
CHP-CR-191	Ludlum 177 Frisker	October 11, 2016
CHP-DR-515	Ludlum 9-3 Survey Meter	August 9, 2017
HP-CS-019	iSolo Scaler	April 6, 2017
HP-DR-344	MGP Telepole Detector	August 9, 2017
HP-RD-250	AMS-4 (DET)	August 16, 2017

### Portable Radiation Instrument Calibration Records

<u>Number</u>	<u>Title</u>	<u>Date</u>
HP-RD-263	AMS-4 (DET)	May 1, 2017

### Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
CE-003-516	Calculation and Adjustment of Radiation Monitoring Setpoints	302
CE-003-517	Operation of the Radiation Monitoring System	2
EN-CY-102	Laboratory Analytical Quality Control	10
EN-FAP-RP-007	Operation of the Radiation Protection Central Calibration Facility	2
EN-RP-143	Source Control	13
EN-RP-301	Radiation Protection Instrument Control	10
EN-RP-303	Source Checking of Radiation Protection Instrumentation	4
EN-RP-317-10	Calibration of Portable Dose Rate Instruments	1
HP-CALC-93-006	Gaseous Effluent Radiation Monitors Setpoints Calculation	0
UNT-007-029	Control of the Radiation Monitor System Database	4

### Stationary Radiation Instrument Calibration Records

<u>Number</u>	<u>Title</u>	<u>Date</u>
FastScan	2017 Recalibration of the "FastScan" Counting System	March 28, 2017
FastScan West	2017 Recalibration of the "FastScan West" Counting System	March 29, 2017
HP-DS-075	PCM-2 Calibration Data Sheet	February 2, 2017
HP-DS-076	Annual Calibration on ARGOS 5AB PCM	July 31, 2017
HP-DS-080	Annual Calibration on Canberra GEM-5	July 31, 2017
HP-DS-081	Annual Calibration on ARGOS 5AB PCM	July 31, 2017
HP-DS-088	Canberra GEM-5 Data Calibration Sheet	January 17, 2017
HP-DS-090	Annual Calibration on CRONUS 4	March 30, 2017

### Stationary Radiation Instrument Calibration Records

<u>Number</u>	<u>Title</u>	<u>Date</u>
HP-DS-092	Annual Calibration on CRONUS 4	August 31, 2017
HP-DS-093	CRONOS Calibration Data Sheet	November 8, 2017

### Condition Reports (CRs)

CR-HQN-2015-00520	CR-HQN-2017-00319	CR-WF3-2015-01076	CR-WF3-2015-01218
CR-WF3-2015-06828	CR-WF3-2016-07787	CR-WF3-2017-02930	CR-WF3-2017-04729
CR-WF3-2017-06823	CR-WF3-2017-06980	CR-WF3-2017-07158	CR-WF3-2017-07692

## **Section 2RS6: Radioactive Gaseous and Liquid Effluent Treatment**

### Audits, Self-Assessments, and Surveillances

<u>Number</u>	<u>Title</u>	<u>Date</u>
LO-WLO-2017-00032	Pre-NRC Inspection Self-Assessment (Radioactive Effluents and Radiological Environmental Monitoring Program) Inspection Procedures 71124.06 and 71124.07	September 20, 2017
QA-2/6-2013-W3-01	Quality Assurance Audit Report: Combined Chemistry, Effluents, and Environmental Monitoring	September 26, 2013
QA-14/15-2017-GGNS-01	Combined Radiation Protection and Radwaste Audit Notification/Audit Plan Memo	September 12, 2017

### Effluent Release Permits

<u>Permit Number</u>	<u>Type</u>	<u>Release System</u>	<u>Date</u>
W3LB2017-162	Liquid	Waste Condensate Tank A	June 30, 2017
W3LC2017-024	Liquid	Dry Cooling Tower Sump 2 (DTCS 2)	February 18, 2017
W3LC2015-211	Liquid	Dry Cooling Tower Sump 1 (DTCS 1)	October 21, 2015
W3LC2016-064	Liquid	Turbine Building Industrial Waste Tank (TBIWS)	April 19, 2016
W3GB2017-042	Gaseous	Containment	April 5, 2017
W3GB2015-135	Gaseous	Gas Decay Tank B	November 6, 2015
W3GC2015-119	Gaseous	Fuel Handling Building	October 6, 2015



### In-Place Filter Testing Records

<u>Work Order</u>	<u>System</u>	<u>Train</u>	<u>Test</u>	<u>Date</u>
52604512	Control Room Emergency Filtration Unit	B	HEPA Filter	April 18, 2016
52606700	Shield Building Ventilation	B	HEPA Filter	April 20, 2016
52620374	Control Room Emergency Filtration Unit	B	HEPA Filter	July 12, 2016
52637461	Shield Building Ventilation	A	HEPA Filter	October 7, 2016
52658867	Controlled Ventilation Area	A	HEPA Filter	April 4, 2017

### Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Date</u>
	2015 Annual Radioactive Effluent Release Report	April 25, 2016
	2016 Annual Radioactive Effluent Release Report	April 6, 2017
	WSES Updated Final Safety Analysis Report: Chapters 11 and 12	
4 <sup>th</sup> Qtr 2015	Intra-Laboratory Comparison Results	November 4, 2015
4 <sup>th</sup> Qtr 2016	Intra-Laboratory Comparison Results	November 5, 2016
DM-OP-046-161017	Operation of the Advanced Liquid Waste Processing at Waterford-3	August 22, 2017
ER-W3-2001-0097	Boric Acid Concentrator	January 26, 2001
LBDCR 16-022	FSAR DCT Sumps Radioactive Effluents	May 31, 2016

### Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
CE-001-004	Periodic Analysis Scheduling Program	302
CE-003-509	Routine Filter Replacement and Grab Sampling on PIG Monitors WRGMs	306
CE-003-513	Gaseous Radioactive Waste Release Permit (Manual)	303
CE-003-514	Liquid Radioactive Waste Release Permit (Computer)	302
CE-003-515	Gaseous Radioactive Waste Release Permit (Computer)	303
CE-003-516	Calculation and Adjustment of Radiation Monitoring Setpoints	302
CE-003-517	Operation of the Radiation Monitoring System	2

## Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
CE-003-700	General Grab Sampling Techniques	312
EN-CY-102	Laboratory Analytical Quality Control	10
EN-CY-108	Monitoring of Non-Radioactive Systems	006
EN-CY-111	Radiological Groundwater Monitoring Program	006
MM-003-044	Shield Building Ventilation System Surveillance	301
MM-003-045	Control Room Air Conditioning Surveillance	307
MM-003-046	Controlled Ventilation Area System Surveillance (CVAS)	304
UNT-005-014	Offsite Dose Calculation Manual	305

## Condition Reports (CRs)

CR-HQN-2017-01911	CR-WF3-2015-01053	CR-WF3-2015-03413	CR-WF3-2016-01985
CR-WF3-2016-03937	CR-WF3-2016-04007	CR-WF3-2016-05446	CR-WF3-2017-04611

## **Section 2RS7: Radiological Environmental Monitoring Program**

### Audits and Self-Assessments

<u>Number</u>	<u>Title</u>	<u>Date</u>
	Environmental Dosimetry Company Annual Quality Assurance Status Report January – December 2016	March 8, 2017
LO-WLO-2017-32	Pre-NRC Inspection Self-Assessment (Radioactive Effluents and Radiological Environmental Monitoring Program) Inspection Procedures 71124.06 and 71124.07	September 20, 2017
NUPIC 24191	Teledyne Brown Engineering – Environmental Services	July 6, 2016

### Annual Reports

<u>Title</u>	<u>Date</u>
2015 Annual Meteorological Monitoring Program Report	April 25, 2016
2015 Annual Radioactive Effluent Release Report	April 25, 2016
2015 Annual Radioactive Environmental Operating Report	April 19, 2016
2016 Annual Meteorological Monitoring Program Report	
2016 Annual Radioactive Effluent Release Report	April 6, 2017
2016 Annual Radioactive Environmental Operating Report	April 6, 2017

### Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
	Groundwater Monitoring Plan	4
52704419	EM IM0100 Calibrate Primary Met Tower as Per MI-003-395	January 18, 2017
52716249	EM IM0110 Calibrate Secondary Met Tower as Per MI-003-396	April 4, 2017
52738717	EM-IM0100 Calibrate Primary Met Tower as Per MI-003-395	August 3, 2017
52752774	EM IM0110 Calibrate Secondary Met Tower as Per MI-003-396	October 4, 2017
ENV-FT-012	M&TE Laboratory Calibration Report	September 10, 2016
ENV-FT-018	M&TE Laboratory Calibration Report	September 5, 2017
ENV-FT-020	M&TE Laboratory Calibration Report	September 5, 2017

### Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
CE-003-522	Meteorological Data Collection and Processing	5
CE-003-523	Meteorological Monitoring Program	1
CE-003-526	Collection and Preparation of REMP Liquid Samples	303
CE-003-527	Collection Of Milk Samples	2
CE-003-528	Collection of Sediment Samples	2
CE-003-529	Collection of Vegetation Samples	2
CE-003-530	Collection of Fish Samples	2
CE-003-531	Collection and Preparation of REMP Air Samples	301
CE-003-532	Preparation and Distribution of REMP Thermoluminescent Dosimeters	302
CE-003-533	REMP Shipping	002
CE-003-534	Land Use Census	003
EN-CY-111	Radiological Groundwater Monitoring Program	7
EN-RP-110-04	Radiation Protection Risk Assessment Process	7
EN-RP-113	Response to Contaminated Spills/Leaks	9
EN-WM-104	Online Risk Assessment	16

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
UNT-005-014	Offsite Dose Calculation Manual	307

Condition Reports (CRs)

CR-WF3-2015-00884	CR-WF3-2015-01889	CR-WF3-2015-01890	CR-WF3-2015-02533
CR-WF3-2015-05290	CR-WF3-2015-05303	CR-WF3-2015-05357	CR-WF3-2015-05586
CR-WF3-2015-06608	CR-WF3-2016-04335	CR-WF3-2016-06821	CR-WF3-2017-02236
CR-WF3-2017-05106	CR-WF3-2017-06636	CR-WF3-2017-07033	

**Section 2RS8: Radioactive Solid Waste Processing, and Radioactive Material Handling, Storage, and Transportation**

Audits and Self-Assessments

<u>Number</u>	<u>Title</u>	<u>Date</u>
WLO-2017-0032	Radioactive Waste Management Self-Assessment	November 2017

Miscellaneous Documents

<u>Title</u>	<u>Date</u>
2015 Annual Radioactive Effluent Release Report	April 25, 2016
2016 Annual Radioactive Effluent Release Report	April 6, 2017
WSES Updated Final Safety Analysis Report Chapter 11	
WSES Updated Final Safety Analysis Report Chapter 12	

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EN-RP-121	Radioactive Material Control	13
EN-RW-101	Radioactive Waste Management	3
EN-RW-102	Radioactive Shipping Procedure	16
EN-RW-104	Scaling Factors	13
EN-RW-105	Process Control Program	5
EN-RW-106	Integrated Transportation Security Plan	6
EN-RW-108	Radioactive Shipment Accident Response	3
RW-002-210	Radioactive Waste Solidification/Dewatering	302
RW-002-310	Storage of Radioactive Waste and Radioactive Materials	10

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
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Radioactive Material and Waste Shipments

<u>Number</u>	<u>Title</u>	<u>Date</u>
16-022	High Rad Dry Active Waste	August 9, 2016
16-1011	RWM Mixed Bed Resin	April 14, 2016
17-1016	High Rad Dry Active Waste/Metal Waste	June 8, 2017
17-1023	LWM Resin in Shielded Cask	October 18, 2017
17-1025	Liner of Filters in Shielded Cask	November 30, 2017

**Section 40A1: Performance Indicator Verification**

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
EN-LI-114	Attachment 9.1; NRC Performance Indicator Technique/Data Sheet	7
EP-003-070	Emergency Communications Systems Routine Testing, April 3, 2013	304
EP-EP-005	Attachment 7.2; Ops DEP Data Collection Form	9
EPP-422	Siren and Helicopter Warning System Maintenance, November 7, 2017	11
EPP-424	Siren Testing and Siren System Administrative Controls, February 22, 2016	19
W3F1-2017-0007	NRC Performance Indicator (PI) Data – 4 <sup>th</sup> Quarter 2016 (October, November and December)	October 6, 2017
W3F1-2017-0036	NRC Performance Indicator (PI) Data – 1 <sup>st</sup> Quarter 2017 ROP Data	April 12, 2017
W3F1-2017-0058	NRC Performance Indicator (PI) Data – 2 <sup>nd</sup> Quarter 2017 ROP Data	July 13, 2017
W3F1-2017-0076	NRC Performance Indicator (PI) Data – 3 <sup>rd</sup> Quarter 2017 ROP Data	October 6, 2017

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
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EN-LI-114	Regulatory Performance Indicator Process	9
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Condition Reports (CRs)

CR-WF3-2016-02359	CR-WF3-2016-02917	CR-WF3-2016-03323	CR-WF3-2016-03492
CR-WF3-2016-03890	CR-WF3-2016-04383	CR-WF3-2016-04524	CR-WF3-2016-04592
CR-WF3-2016-05464	CR-WF3-2016-05506	CR-WF3-2016-05544	CR-WF3-2016-05942
CR-WF3-2016-06044	CR-WF3-2016-06918	CR-WF3-2016-07032	CR-WF3-2016-07493
CR-WF3-2017-00368	CR-WF3-2017-00511	CR-WF3-2017-01138	CR-WF3-2017-01295
CR-WF3-2017-03937	CR-WF3-2017-04831	CR-WF3-2017-04956	CR-WF3-2017-05525
CR-WF3-2017-05600	CR-WF3-2017-05767	CR-WF3-2017-05829	CR-WF3-2017-06505
CR-WF3-2017-06628	CR-WF3-2017-06752	CR-WF3-2017-07310	CR-WF3-2017-07707
CR-WF3-2017-08036	CR-WF3-2017-08367	CR-WF3-2017-08790	CR-WF3-2017-09512

**Section 4OA2: Problem Identification and Resolution**

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Date</u>
EN-OP-115	Control Room Logs – June 11, 2017	June 11, 2017

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EN-LI-118	Cause Evaluation Process	24
EN-WM-105	Planning	19
ME-004-155	Reactor Trip Switchgear	307, 308
ME-004-154	Reactor Trip Switchgear Overhaul Procedure	3
OP-903-107	Plant Protection System Channel A & B & C & D Functional Test	312

Condition Reports (CRs)

CR-WF3-2017-05046	CR-WF3-2017-05107	CR-WF3-2017-05302
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Work Orders (WOs)

393027	477985	478120	52477769
52741686			

**The following items are requested for the  
Public Radiation Safety Inspection  
at Waterford-3  
November 27<sup>th</sup> thru December 1, 2017  
Integrated Report 2017004**

Inspection areas are listed in the attachments below.

Please provide the requested information on or before **November 3, 2017**.

Please submit this information using the same lettering system as below. For example, all contacts and phone numbers for Inspection Procedure 71124.01 should be in a file/folder titled "1- A," applicable organization charts in file/folder "1- B," etc.

If information is placed on *ims.certrec.com*, please ensure the inspection exit date entered is at least 30 days later than the on-site inspection dates, so the inspectors will have access to the information while writing the report.

In addition to the corrective action document lists provided for each inspection procedure listed below, please provide updated lists of corrective action documents at the entrance meeting. The dates for these lists should range from the end dates of the original lists to the day of the entrance meeting.

If more than one inspection procedure is to be conducted and the information requests appear to be redundant, there is no need to provide duplicate copies. Enter a note explaining in which file the information can be found.

If you have any questions or comments, please contact Louis Carson at (817) 200-1221 or [Louis.Carson@nrc.gov](mailto:Louis.Carson@nrc.gov).

**PAPERWORK REDUCTION ACT STATEMENT**

This letter does not contain new or amended information collection requirements subject to the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.). Existing information collection requirements were approved by the Office of Management and Budget, control number 3150-0011.

**5. Radiation Monitoring Instrumentation (71124.05)**

Date of Last Inspection: **January 12, 2015**

- A. List of contacts and telephone numbers for the following areas:
1. Effluent monitor calibration
  2. Radiation protection instrument calibration
  3. Installed instrument calibrations
  4. Count room and Laboratory instrument calibrations
- B. Applicable organization charts
- C. Copies of audits, self-assessments, vendor or NUPIC audits for contractor support and LERs, performed since January 12, 2015, related to:
1. Area radiation monitors, continuous air monitors, criticality monitors, portable survey instruments, electronic dosimeters, teledosimetry, personnel contamination monitors, or whole body counters
  2. Installed radiation monitors
- D. Procedure index for:
1. Calibration, use, and operation of continuous air monitors, criticality monitors, portable survey instruments, temporary area radiation monitors, electronic dosimeters, teledosimetry, personnel contamination monitors, and whole body counters.
  2. Calibration of installed radiation monitors
- E. Please provide specific procedures related to the following areas noted below. Additional procedures may be requested by number after the inspector reviews the procedure index.
1. Calibration of portable ion chambers
  2. Whole body counter calibration
  3. Laboratory instrumentation quality control
- F. A summary list of corrective action documents (including corporate and sub-tiered systems) written since January 12, 2015, related to the following programs:
1. Area radiation monitors, continuous air monitors, criticality monitors, portable survey instruments, electronic dosimeters, teledosimetry, personnel contamination monitors, whole body counters
  2. Installed radiation monitors
  3. Count room radiation instruments
- NOTE: The lists should indicate the significance level of each issue and the search criteria used. Please provide in document formats which are "searchable" so that the inspector can perform word searches.
- G. Most recent calibration data for the whole body counter's.
- H. Radiation Monitoring System health report for the previous 12 months



**6. Radioactive Gaseous and Liquid Effluent Treatment (71124.06)**

Date of Last Inspection: **January 12, 2015**

- A. List of contacts and telephone numbers for the following areas:
  - 1. Radiological effluent control
  - 2. Engineered safety feature air cleaning systems
- B. Applicable organization charts
- C. Audits, self-assessments, vendor or NUPIC audits of contractor support, and LERs written since January 12, 2015, related to:
  - 1. Radioactive effluents
  - 2. Engineered Safety Feature Air cleaning systems
- D. Procedure indexes for the following areas
  - 1. Radioactive effluents
  - 2. Engineered Safety Feature Air cleaning systems
- E. Please provide specific procedures related to the following areas noted below. Additional procedures may be requested by number after the inspector reviews the procedure indexes.
  - 1. Sampling of radioactive effluents
  - 2. Effluent monitor setpoint determination
  - 3. Generating radioactive effluent release permits
  - 4. Laboratory instrumentation quality control
  - 5. In-place testing of HEPA filters and charcoal absorbers
- F. List of corrective action documents (including corporate and sub-tiered systems) written since January 12, 2015, associated with:
  - 1. Radioactive effluents
  - 2. Effluent radiation monitors
  - 3. Engineered Safety Feature Air cleaning systems

NOTE: The lists should indicate the significance level of each issue and the search criteria used. Please provide in document formats which are "searchable" so that the inspector can perform word searches.
- G. 2016 Annual Radioactive Effluent Release Reports for calendar years 2015 and 2016, or the two most recent reports.
- H. Current revision of the Offsite Dose Calculation Manual
- I. The 2015 and 2016 inter-laboratory comparison results for laboratory quality control performance of effluent sample analysis, or the two most recent results.
- J. Effluent sampling schedule for the week of the inspection
- K. New entries into 10 CFR 50.75(g) files since January 12, 2015
- L. Operations department (or other responsible dept.) log records for effluent monitors removed from service or out of service
- M. Listing or log of liquid and gaseous release permits since January 12, 2015
- N. A list of the technical specification-required air cleaning systems with the two most recent surveillance test dates of in-place filter testing (of HEPA filters and charcoal

absorbers) and laboratory testing (of charcoal efficiency) and the work order numbers associated with the surveillances

- O. System Health Report for radiation monitoring instrumentation. Also, please provide a specific list of all effluent radiation monitors that were considered inoperable for 7 days or more January 12, 2015. If applicable, please provide the relative Special Report and condition report(s).
- P. A list of significant changes made to the gaseous and liquid effluent process monitoring system since January 12, 2015. If applicable, please provide the corresponding UFSAR section in which this change was documented.
- Q. A list of any occurrence in which a non-radioactive system was contaminated by a radioactive system since January 12, 2015. Please include any relevant condition report(s).

**7. Radiological Environmental Monitoring Program (71124.07)**

Date of Last Inspection: **January 12, 2015**

- A. List of contacts and telephone numbers for the following areas:
  - 1. Radiological environmental monitoring
  - 2. Meteorological monitoring
- B. Applicable organization charts
- C. Audits, self-assessments, vendor or NUPIC audits of contractor support, and LERs written since January 12, 2015, related to:
  - 1. Radiological environmental monitoring program (including contractor environmental laboratory audits, if used to perform environmental program functions)
  - 2. Environmental TLD processing facility
  - 3. Meteorological monitoring program
- D. Procedure index for the following areas:
  - 1. Radiological environmental monitoring program
  - 2. Meteorological monitoring program
- E. Please provide specific procedures related to the following areas noted below. Additional procedures may be requested by number after the inspector reviews the procedure indexes.
  - 1. Sampling, collection and preparation of environmental samples
  - 2. Sample analysis (if performed on-site)
  - 3. Laboratory instrumentation quality control
- F. A summary list of corrective action documents (including corporate and sub-tiered systems) written since January 12, 2015, related to the following programs:
  - 1. Radiological environmental monitoring
  - 2. Meteorological monitoring

NOTE: The lists should indicate the significance level of each issue and the search criteria used. Please provide in document formats which are "searchable" so that the inspector can perform word searches.

- G. Copies of the 2 most recent calibration packages for the meteorological tower instruments
- H. Copies of the 2015 and 2016 Annual Radiological Environmental Operating Reports and Land Use Census, and current revision of the Offsite Dose Calculation Manual.
- I. Copy of the environmental laboratory's inter-laboratory comparison program results for 2015 and 2016, or the two most recent results, if not included in the annual radiological environmental operating report
- J. Data from the environmental laboratory documenting the analytical detection sensitivities for the various environmental sample media (i.e., air, water, soil, vegetation, and milk)
- K. Quality Assurance audits (e.g., NUPIC) for contracted services
- L. Current NEI Groundwater Initiative Plan and status
- M. Technical requirements manual or licensee controlled specifications which list the meteorological instruments' calibration requirements
- N. If applicable, per NEI 07-07, provide any reports that document any spills/leaks to groundwater since January 12, 2015.

**8. Radioactive Solid Waste Processing, and Radioactive Material Handling, Storage, and Transportation (71124.08)**

Date of Last Inspection: **January 12, 2015**

- A. List of contacts and telephone numbers for the following areas:
  - 1. Solid Radioactive waste processing
  - 2. Transportation of radioactive material/waste
- B. Applicable organization charts (and list of personnel involved in solid radwaste processing, transferring, and transportation of radioactive waste/materials)
- C. Copies of audits, department self-assessments, and LERs written since January 12, 2015 related to:
  - 1. Solid radioactive waste management
  - 2. Radioactive material/waste transportation program
- D. Procedure index for the following areas:
  - 1. Solid radioactive waste management
  - 2. Radioactive material/waste transportation
- E. Please provide specific procedures related to the following areas noted below. Additional procedures may be requested by number after the inspector reviews the procedure indexes.
  - 1. Process control program
  - 2. Solid and liquid radioactive waste processing
  - 3. Radioactive material/waste shipping
  - 4. Waste stream sampling and analysis
- F. A summary list of corrective action documents (including corporate and sub-tiered systems) written since January 12, 2015, related to:
  - 1. Solid radioactive waste
  - 2. Transportation of radioactive material/waste

NOTE: The lists should indicate the significance level of each issue and the search criteria used. Please provide in document formats which are “searchable” so that the inspector can perform word searches.

- G. Copies of training lesson plans for 49 CFR Part 172, Subpart H, for radwaste processing, packaging, and shipping.
- H. A summary of radioactive material and radioactive waste shipments made from January 12, 2015, to present
- I. Waste stream sample analysis results and resulting scaling factors for 2015 and 2016, or the two most recent results.
- J. A listing of on-site radwaste storage facilities. Please include a summary or list of the items stored in each facility.